# End Semester Examination, May 2023 <br> BCA - Third Semester <br> OBJECT ORIENTED PROGRAMMING USING C++ <br> (BCA-302A (CB) / (BCA-DS-301) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 1
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Answer the following in brief:
a) List two distinguished features of object oriented programming languages.
b) Data types available in C++ can be $\qquad$ and $\qquad$ .
c) Inpassing parameters by reference, the $\qquad$ of variable is passed.
d) $\qquad$ conditional statement has exit condition mentioned in itself.
e) Constructors are special type of $\qquad$ .
f) $\qquad$ and $\qquad$ operators help in dynamic memory management.
g) Exception handling deals with errors which occur during $\qquad$ .
h) Give syntax of While statement in C++.
i) $\qquad$ operator is used as exponent operator in C++.
j) The purpose of operator overloading is $\qquad$ .

## CO-5 L1 $\mathbf{2 \times 1 0}$

## PART-A

Q. 2 a) "Data Security is the main objective of object oriented programming languages". Do you agree with this statement? Justify your answer with the help of an example.
[CO2] [L4] 10
b) Explain the following concepts by taking $\mathrm{C}++$ as a programming language:
i) Dynamic memory management.
ii) Array of objects.
[CO1] [L2] $\mathbf{5 \times 2}$
Q. 3 a) Differentiate between:
i) Default arguments.
ii) Constant arguments.
[CO2] [L4] $\mathbf{5 \times 2}$
b) "Passing parameters by reference may result in change in original values of the calling function". Justify the statement using suitable examples. [CO3] [L5] 10
Q. 4 Demonstrate the implementation the following in C++ language:
a) Access specifier.
b) Passing object as an argument.
c) Inline function.
d) Array within a class.
[CO3] [L2| $\mathbf{5 \times 4}$

## PART-B

Q. 5 a) List the advantages of using multiple constructors in class with the help of examples.
[CO3] [L3] 10
b) "The need of destructor arises when there is a usage of dynamic memory management in a class". Do you agree with this statement? Give reasons in support of your answer.
[CO3] [L4] 10
Q. 6 a) Explain the use of pure virtual function in $\mathrm{C}++$.
[CO5] [L2] 10
b) Differentiate between single and multiple inheritances.
[CO3] [L3] 10
Q. 7 "Avoiding the use of exception handing may lead to abrupt exit from the execution of the code". Justify the statement with the help of an example.

# End Semester Examination, May 2023 <br> BCA - First Semester <br> ELEMENTS OF MATHEMATICS <br> ((BCA-DS-101) / (BCA 102A(CB)) / (BCA-102(CB))) 

Time: 3 hrs.

Max Marks: 100
No. of pages: 2

Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 a) Which of the following matrix having only one row and multiple columns?
i) Diagonal Matrix
ii) Row Matrix
iii) Column Matrix
iv) None of the above
b) $X Y=Y X$ is a true or false statement if the order of $A$ matrix and $B$ matrix is the same.
i) False
ii) True
c) The value of $\sin \theta$ and $\cos \left(90^{\circ}-\theta\right)$
i) Are same
ii) Are different
iii) No relation
iv) Information insufficient
d) $1-\cos 2 x=$
ii) $\cos x$
i) $\sin x$
iv) $\cos 2 x$
e) The necessary condition for the maclaurin expansion to be true for function $f(x)$ is
$\qquad$
i) $f(x)$ should be continuous
ii) $f(x)$ should be differentiable
iii) $f(x)$ should exists at every point
iv) $f(x)$ should be continuous and differentiable
f) An event in the probability that will never be happened is called as
i) Unsure event
ii) Sure event
iii) Possible event
iv) Impossible event720
g) The probability of getting two tails when two coins are tossed is
i) $1 / 6$
ii) $1 / 2$
iii) $1 / 3$
iv) $1 / 4$
h) What is the middle term of $\left(x^{2}+x\right)^{3}$ ?
i) $3 x^{4}$
ii) $6 x^{4}$
iii) $4 x^{4}$
iv) $3 x^{6}$
i) If set $X=\{2,3,5,7\}$, then $n[P(X)]$ is $\qquad$ -
i) 8
ii) 16
iii) 32
iv) None of above
j) Find the derivative of $e^{x^{2}}$.
i) $e^{x 2}$
ii) $2 x$
iii) $2 e^{x 2}$
iv) $2 x e^{x 2}$
$[C O 2,3,4,5][L 1,2,3] \mathbf{2 \times 1 0}$

## PART-A

Q. 2 a) Using Cramer's rule solve the following system of linear equations
$x+y+z+1=0$

$$
x+2 y+3 z+4=0
$$

$$
x+3 y+4 z+6=0
$$

b) Compute 3A + 4B if $A=\left(\begin{array}{ccc}1 & -2 & 3 \\ -4 & 2 & 5\end{array}\right)$ and $B=\left(\begin{array}{ccc}1 & -2 & 3 \\ -1 & 0 & 2\end{array}\right)$
Q. 3 a) Out of 6 boys and 4 Girls, a committee of 6 is to be formed .In how many ways can this be done if the committee contains.
i) Exactly 2 girls
ii) At least 2 Girls
iii) Not more than two Girls
iv) No Girls
v) 3 boys 3 Girls
[CO3] [L4] 10
b) Find the two middle terms in the expansion of $\left(2 x-\frac{x^{2}}{4}\right)^{9}$
Q. 4 a) If $3^{4 m+1}=3^{7 m-5}$, solve for $m$.
[CO4] [L5] 10
b) If $x=3-\sqrt{7}$, then find the value of $x+1 / x$.
[CO4] [L5] 10

## PART-B

Q. 5 Prove that
a) $\tan ^{4} \theta+\tan ^{2} \theta=\sec ^{4} \theta-\sec ^{2} \theta$
[CO3] [L5] 10
b) $\cos \theta /(1-\tan \theta)+\sin \theta /(1-\cot \theta)=\sin \theta+\cos \theta$
[CO4] [L5] 10
Q. 6 a) If $y=\sqrt{x}-\frac{1}{\sqrt{x}}$, show that $2 x \frac{d y}{d x}+y=2 \sqrt{x}$
b) Differentiate w.r.t. $\frac{2 x+3}{x^{2}-5}$
Q. 7 Expand $e^{x}$ in power of $x$ by maclarin's theorem.
[CO5] [L6] 20

# End Semester Examination, May 2023 <br> BCA - First Semester <br> ELEMENTS OF MATHEMATICS <br> (BCA-DS-101)/(BCA-102 (CB)/(BCA-102A (CB)) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. $\mathbf{1}$ is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Choose the correct option:
a) Which of the following matrix having only one row and multiple columns?
i) Diagonal Matrix
ii) Row Matrix
iii) Column Matrix
iv) None of the above
b) $X Y=Y X$ is a true or false statement if the order of $A$ matrix and $B$ matrix is the same.
i) False
ii) True
c) The value of $\sin \theta$ and $\cos \left(90^{\circ}-\theta\right)$
i) Are same
ii) Are different
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iv) Information insufficient
d) $1-\cos 2 x=$ $\qquad$ .
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e) The necessary condition for the Maclaurin expansion to be true for function $f(x)$ is
$\qquad$
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iv) $f(x)$ should be continuous and differentiable
f) An event in the probability that will never be happened is called as:
i) Unsure event
ii) Sure event
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iv) Impossible event
g) The probability of getting two tails when two coins are tossed is:
i) $1 / 6$
ii) $1 / 2$
iii) $1 / 3$
iv) $1 / 4$
h) What is the middle term of $\left(x^{2}+x\right)^{3}$ ?
i) $3 x^{4}$
ii) $6 x^{4}$
iii) $4 x^{4}$
iv) $3 x^{6}$
i) If set $X=\{2,3,5,7\}$, then $n[P(X)]$ is $\qquad$ .
i) 8
ii) 16
iii) 32
iv) None of the above
j) Find the derivative of $e^{x 2}$.
i) $e^{x 2}$
ii) $2 x$
iii) $2 e^{x 2}$
iv) $2 x e^{12}$
$[C O 2,3,4,5][L 1,2,3] \mathbf{2 \times 1 0}$

## PART-A

Q. 2 a) Using Cramer's rule solve the following system of linear equations:
$x+y+z+1=0$
$x+2 y+3 z+4=0$

$$
x+3 y+4 z+6=0
$$

b) Compute $3 \mathrm{~A}+4 \mathrm{~B}$ if $A=\left(\begin{array}{ccc}1 & -2 & 3 \\ -4 & 2 & 5\end{array}\right)$ and $B=\left(\begin{array}{ccc}1 & -2 & 3 \\ -1 & 0 & 2\end{array}\right)$
[CO2] [L4] 10
Q. 3 a) Out of 6 boys and 4 Girls, a committee of 6 is to be formed. In how many ways can this be done if the committee contains:
i) Exactly 2 girls
ii) At least 2 Girls
iii) Not more than two Girls
iv) No Girls
v) 3 boys 3 Girls
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b) Find the two middle terms in the expansion of $\left(2 x-\frac{x^{2}}{4}\right)^{9}$
[CO4] [L5] 10
Q. 4 a) If $3^{4 m+1}=3^{7 m-5}$, solve for $m$.
[CO4] [L5] 10
b) If $x=3-\sqrt{7}$, then find the value of $x+1 / x$.
[CO4] [L5] 10

## PART-B

Q. 5 Prove that
a) $\tan ^{4} \theta+\tan ^{2} \theta=\sec ^{4} \theta-\sec ^{2} \theta$
[CO3] [L5] 10
b) $\cos \theta /(1-\tan \theta)+\sin \theta /(1-\cot \theta)=\sin \theta+\cos \theta$
[CO4] [L5] 10
Q. 6 a) If $y=\sqrt{x}-\frac{1}{\sqrt{x}}$, show that $2 x \frac{d y}{d x}+y=2 \sqrt{x}$
[CO5] [L6] 10
b) Differentiate w.r.t. $\frac{2 x+3}{x^{2}-5}$
[CO5] [L5] 10
Q. 7 Expand $e^{x}$ in power of $x$ by Maclarin's theorem.
[CO5] [L6] 20

# End Semester Examination, May 2023 <br> BCA - First Semester <br> HARDWARE INTERFACES (BCA-DS-102) / (BCA-103A (CB)) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.

## Q. 1 Multiple choice questions:

a) In PIV processor, P stands for $\qquad$ .
i) Penta
ii) Pentium
b) The full form of DMP is $\qquad$ .
i) Direct Matter Printing
ii) Dot Matrix printer
iii) Data Matrix printer
c) ISA supports $\qquad$ bits.

CO-1 L1
i) 48 bits
ii) 32 bits
iii) 8 bits
d) A computer needs $\qquad$ volts for smooth working. CO-5 L1
i) 5 volts
ii) 240 volts
iii) 30 volts
e) No beep indicates $\qquad$ .
i) RAM issue
ii) Power supply issue
iii) HDD issue
f) A computer needs $\qquad$ power supply.
i) $A C$
ii) DC
iii) AC and DC both
g) In a laptop, the task of voltage regulation is done by $\qquad$ -
i) Motherboard
ii) Processor
iii) Adaptor
h) Which among the following is not a peripheral hardware device in a computer system?
i) Keyboard
ii) Printer
iii) HDD
i) Which of the flowing is the latest operating system?
i) Windows 10
ii) Windows 11
iii) Windows 8
j) What process does a ransomware hacker perform on a user's system?
i) Encrypting important files
ii) Moving operating system data
iii) Deleting key system data
iv) Copying a user's personal data
$[\mathrm{CO} 1,2,5][\mathrm{L} 1] \mathbf{2 \times 1 0}$
CO-5
L1
$2 \times 10$

## PART-A

Q. 2 "The i-series processors have taken the computation to a new level. The speed and computation capability offered by Pentium series has been increased manifold." Justify your answer with examples.
[CO1] [L5] 20
Q. 3 a) Compare the working of Laserjet and Deskjet printer? Why Laserjet is preferred over deskjet?
[CO1] [L4] 10
b) What do you mean by super controller, keyboard controller and serial controller?
Q. 4 Explain the different types of memories available in computer. Give the internal architecture of hard disk drive and explain the working of different components of Hard disk drive.
[CO4] [L2] 20

## PART-B

Q. 5 a) Explain the POST sequence and also give list of different beeps and meaning of beeps during POST sequence.
[CO2] [L2] 15
b) What do you mean by an expansion card?
Q. 6 a) Why there is a need for Accelerated Graphics Port (AGP) in computers? How it helps in improving the performance of the computer?
[CO1] [L4] 10
b) Explain the usefulness of Plug and Play and how it works?
[CO1] [L2] 10
Q. 7 What are the different types of malwares? Why Ransomware malware has become a prominent threat these days? Explain the working of Ransomware malware in detail along with examples.
[CO5] [L1] 20

# End Semester Examination, May 2023 <br> BCA - First Semester <br> INTRODUCTION TO IT AND PROGRAMMING IN C <br> ((BCA-DS-104) / (BCA-106(CB))) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. $\mathbf{1}$ is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Multiple choice questions:
a) C language is available for which of the following operating systems.
i) DOS
ii) Windows
iii) Unix
iv) All of these
b) Binary equivalent of the decimal number 25 is $\qquad$ .
i) 11001
ii) 10011
iii) 1001
iv) None of these.
c) Find the odd one:
i) Keyboard
ii) Mouse
iii) Scanner
iv) Printer
d) Which of the following is an impact printer?
i) Dot matrix printer
ii) Laser Printer,
iii) Inkjet printer
iv) None of these.
e) Flash memory is a type of $\qquad$ chip.
i) $R O M$
ii) PROM
iii) EEPROM
iv) EPROM
f) The software used to translate assembly language program into a machine language program is called $\qquad$ .
i) Assembler
ii) Compiler
iii) Interpreter
iv) Linker
g) Who is the father of computer?
i) Allen Turing
ii) Charles Babbage
ii) Simur Cray
iv) Augusta Adaming
h) What is a light pen?
i) A Mechanical Input device
ii) Electronic input device
iii) Optical input device
iv) Optical output device
i) Which of the following is a part of the central processing unit?
i) Printer
ii) Keyboard
iii) Mouse
iv) Arithmetic and Logic unit
j) What type of computers are client computers (most of the time) in a client-server system?
i) Mainframe
ii) Mini-computer
iii) Microcomputer
iv) PDA
[CO1, 2] [L1] $\mathbf{2 \times 1 0}$
Q. 2 a) Explain the concept of digital computer. Draw block diagram of digital computer and explain each component.
b) Differentiate between an impact printer and a non-impact printer. Which one is capable of higher speed?
Q. 3 a) Explain different data types in C with examples.
b) Discuss assignment, arithmetic and logical operators in C .
Q. 4 a) Give the syntax for:
i) If else.
ii) While.
iii) Do while
iv) For.
v) Break.
$2 \times 5$
b) Write an algorithm and draw the flowchart for determining the factorial of a number.
[CO4] [L5] 10

## PART-B

Q. 5 a) Differentiate between arrays and pointers.
[CO5] [L5] 10
b) Analyze the string manipulation functions with examples.
[CO5] [L5] 10
Q. 6 a) Write a program to copy the contents of one array into another in the reverse order.
[CO5] [L4] 10
b) Differentiate between structure and union. Explain the initialization of structure with example.
[CO5] [L4] 10
Q. 7 a) Describe dynamic memory allocation. How does it help in building complex programs?
b) Write a program in C for addition of two matrices.
[CO6] [L5] 10
[CO6] [L5] 10

# End Semester Examination, May 2023 <br> BCA - First / Second Semester <br> DATABASE MANAGEMENT SYSTEM <br> (BCA-DS-105) / (BCA-204A (CB)) / (BCA-204(CB) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Answer the following in brief:
a) Define the entity, attributes, table and tuple in relational model with examples.
b) Write down the difference between primary key and foreign key.
[CO1] [L1]
c) Explain the following SQL clauses constructs with example:
i) Select
ii) Create
[CO4] [L2]
d) Write the SQL statements used to insert, delete data from the database.
[CO4] [L6]
e) Write the full form of DDL and DML.
[CO4] [L3]
f) Define the role of DBA.
[CO2] [L2]
g) What is BCNF? This form is an extended version of which other normal form? [CO5] [L2]
h) Define the different types of locks.
[CO3] [L2]
i) Give different risks to the database security.
[CO3] [L2]
j) Define distributed database.
[CO6] [L2] $\mathbf{2 \times 1 0}$

## PART-A

Q. 2 a) Explain DBMS. What are its advantages and disadvantages of a DBMS? [CO1][L2] 10
b) Explain three level architecture of a DBMS How this level of architecture is different from first and second level of architecture of DBMS?
[CO2][L2] 10
Q. 3 Define 'data models' and also explain data models in detail.
[CO5] [L3] 20
Q. 4 Create a table named emp with the given specifications and execute the queries:

| S. No | Column Name | Data type and size | Constraint |
| :---: | :---: | :---: | :---: |
| 1 | Empno | Number $(4,0)$ | Primary Key |
| 2 | ename | Varchar2(10) |  |
| 3 | Job | Varchar2(9) |  |
| 4 | Hiredate | Date |  |
| 5 | Sal | Number(7, 2) |  |
| 6 | Commission | Number $(2,0)$ |  |
| 7 | deptno | Number(2,0) |  |

Run the following queries:
a) Display the structure of the table emp.
b) Insert 5 records in the created table.
c) Display all records of the table emp.
d) Display the records of the table in the ascending order of employee name.
e) Give the count of rows created in the table.
f) Display the names of the employees whose names start with ' $A$ ' or ' $S$ '.
g) Display the job names.
h) Display the names of the employees whose salary is between 20000 and 30000.
i) Display the commission of the employees if provided.
j) Display the empno, ename of the employees where dept no $=10$.
[CO5] [L3] 20

## PART-B

Q. 5 Explain normalization and its types in detail along with suitable examples. [CO5] [L3] 20
Q. 6 a) Define 'ACID'. Also explain different transaction states.
[CO3] [L3] 10
b) Which algorithms can be used to control the concurrency?
[CO3] [L3] 10
Q. 7 Describe database recovery. Explain different methods used to recover the data.
[CO3] [L3] 20

## End Semester Examination, May 2023

BCA / B.Sc. (Information Technology) - First Semester BUSINESS COMMUNICATION (BCA-DS-106) / (BSCIT-DS-104)

Time: 1 hrs.
Max Marks: 50
No. of pages: 4

## Please read the instructions carefully

Note: All questions are compulsory. Each question has FOUR options with ONE correct answer. Select the correct answer. All questions are of ONE mark each. There is no NEGATIVE marking. Mention the correct option for each question in the blank answer key given herein below. Calculator is not permitted. Use only black or blue pen.

| 1) | 2) | 3) | 4) | 5) | 6) | 7) | 8) | 9) | 10) |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 11) | 12) | 13) | 14) | 15) | 16) | 17) | 18) | 19) | 20) |
| 21) | 22) | 23) | 24) | 25) | 26) | 27) | 28) | 29) | 30) |
| 31) | 32) | 33) | 34) | 35) | 36) | 37) | 38) | 39) | 40) |
| 41) | 42) | 43) | 44) | 45) | 46) | 47) | 48) | 49) | 50) |

Q. 1 Which option helps you to save an unfinished email without sending it?
a) Trash
b) Inbox
c) Sent items
d) Save as a draft
[CO4] [L1]
Q. 2 E-mail is a method of exchanging messages between people using $\qquad$ -
a) Letters
b) Telephones
c) Electronic device
d) None of the above
Q. 3 Which of these do not provide free email?
a) Hotmail
b) Gmail
c) BSNL
d) Whatsapp
[CO4] [L1]
Q. 4 Which of the following icon is used to add attachment to an email?
a) Stationary icon
b) GIF icon
c) Paper clip icon
d) Emoji icon
Q. 5 Deleted emails are stored in:
a) Inbox
b) Trash
c) Sent items
d) Spam
[CO4] [L1]
Q. 6 Which one is a barrier to speaking?
a) Poor listening
b) Lack of time
c) Reluctant to read
d) Nervousness
[CO2] [L1]
Q. 7 Which one of these is a good communication process?
a) Message is clear and direct
b) Message is ambiguous
c) Sender attacks receiver
d) Receiver doesn't listen
[CO2] [L1]
Q. 8 What is the signal for OK?
a) Pointed finger
b) Thumbs up
c) Touch thumb and index finger
d) Thumbs down
Q. 9 Crossed arms are an example of $\qquad$ .
a) Closed body language
b) Aggression
c) Open body language
d) Approval
[CO2] [L1]
Q. 10 Women typically have larger personal distances with $\qquad$ ?
a) Each other
b) Male strangers
c) Friends
d) Male friends
Q. 11 A $\qquad$ speaker looks into the eyes of the audience.
a) confident
b) impatient
c) rude
d) impolite
Q. 12 The tone of the speaker should be $\qquad$ .
a) loud
b) clear
c) low
d) soft
[CO2][L1]
Q. 13 Which of the following is NOT an element of communication within the communication process cycle?
a) Channel
b) Receiver
c) Sender
d) Time
[CO3] [L1]
Q. 14 Communication is a skills.
a) Soft
b) Hard
c) Rough
d) Short
[CO3] [L1]
Q. 15 BCC is most important part of a professional Email.
a) True
b) False
c) Can't say
d) a) and b)
[CO3] [L1]
Q. 16 Dear Mr. Sharma Sir is an incorrect salutation.
a) True
b) False
c) Can't say
d) a) and b)
[CO3] [L1]
Q. 17 What are the steps of effective presentation?
a) Plan-Prepare-Present-Practice
b) Prepare-Practice-Present
c) Practice-Present
d) Plan-Prepare-Practice-Present
[CO5] [L1]
Q. 18 What all is included in Audience Analysis before giving presentation?
a) Age of audience
b) Level of Knowledge
c) Their interests and beliefs
d) All of the above
[CO5] [L1]
Q. 19 Important considerations in rehearsing a presentation are:
a) Timing and pace
b) Attire
c) Food and beverages
d) Audience
[CO5] [L1]
Q. 20 "Practice" comes under the following stage of Presentations:
a) Planning
b) Preparation
c) Delivery
d) None of the above
[CO5] [L1]
Q. 21 What is true about presentation skills from the following?
a) Grab the attention of your audience
b) Smile incessantly
c) Read every point from the slides
d) Dress informally
[CO5] [L1]
Q. 22 Listening is the ability to ___ and appropriately respond to the meaning of another person's verbal and nonverbal messages.
a) Understand
b) Analyze
c) Respect
d) All of the above
[CO2] [L1]
Q. 23 Reports present conclusions based on:
a) Belief
b) Impression
c) Investigation
d) Intuition
[CO2] [L1]
Q. 24 The terms of reference for producing a specific report are given by the:
a) Writer
b) Organization
c) Reader
d) Expert
[CO2] [L1]
Q. 25 The index forms a part of the:
a) Main body
b) Glossary
c) End matter
d) Front matter
[CO2] [L1]
Q. 26 How many basic parts of a formal report are there?
a) Five
b) Six
c) Three
d) Four
Q. 27 Which of the following is not a subsidiary part of a formal report?
a) Table of contents
b) Appendix
c) References
d) Glossary
[CO1] [L1]
Q. 28 Listening is the ability to $\qquad$ and appropriately respond to the meaning of another person's spoken and nonverbal messages.
a) Understand
b) Analyze
c) Respect
d) All of the above
[CO1] [L1]
Q. 29 How many types of memories are there?
a) One
b) Two
c) Three
d) Four
[CO1] [L1]
Q. 30 Types of memory $\qquad$ .
a) Short Term Memory
b) Working Term Memory
c) Both a) and b)
d) None of the above
Q. 31 What is the average number of words people think in a minute?
a) 200+ words per minute
b) 300+ words per minute
c) $400+$ words per minute
d) 500+ words per minute
[CO1] [L1]
Q. 32 Which of these is not a step in the listening process?
a) To stop talking
b) Receiving
c) Misinterpreting
d) Responding
[CO1] [L1]
Q. 33 What are the total number of listening levels?
a) One
b) Two
c) Four
d) Five
[CO1] [L1]
Q. 34 Mostly $\qquad$ emotional barriers are faced.
a) Introverts
b) Extroverts
c) Listeners
d) Talkative persons
[CO1] [L1]
Q. 35 Fear of rejection is a type of:
a) Depression
b) Failure
c) Sadness
d) Speech anxiety
[CO2] [L1]
Q. 36 I don't know the reason of my sad mood", is the:
a) Positive statement
b) Negative statement
c) Inaccurate statement
d) Neutral
[CO2] [L1]
Q. 37 Giving the spark of your project is:
a) Processing
b) Elevator Pitch
c) Description
d) Accuracy
[CO2] [L1]
Q. 38 An elevator pitch should be of:
a) $10-15$ seconds
b) $15-20$ seconds
c) 20-30 seconds
d) 30-60 seconds
[CO2] [L1]
Q. 39 Anticipating tone can promote:
a) Fear
b) Excitement
c) Aggression
d) None of the above
[CO2] [L1]
Q. 40 Communicating data from one location to another requires some form of pathway or medium. These pathways are called?
a) Information theory
b) Communication broadcast
c) Communication channels
d) Information signal
[CO4] [L1]
Q. 41 How many types of media used by communication channels?
a) 1
b) 2
c) 3
d) 4
[CO4] [L1]
Q. 42 Communication is $\qquad$ skills.
a) Soft
b) Hard
c) Rough
d) Short
[CO4] [L1]
Q. 43 Success of communication depends on $\qquad$ .
a) Written
b) Verbal
c) Both
d) Feedback
[CO4] [L1]
Q. 44 Barriers means:
a) Trouble in communication
b) Hurdle in communication
c) Obstacle in communication
d) All of the above
Q. 45 Communication $\qquad$ are anything that prevents us from receiving and understanding the messages that others use to convey their information, ideas and thoughts.
a) Language
b) Barriers
c) Skills
d) Messages
[CO4] [L1]
Q. 46 In communication barriers good quality of conversation is always.
a) Noticed
b) Lost
c) Neglected
d) None of the above
Q. 47 The general problem with communication is $\qquad$ .
a) Lost the need of conversation
b) Don't time for conversation
c) Both a) and b)
d) None of the above
[CO4] [L1]
Q. 48 Geographic distance is $\qquad$ type of communication barrier.
a) Verbal
b) Psychological
c) Written
d) Physical
[CO4] [L1]
Q. 49 Communication barriers are of $\qquad$ types.
a) Seven
b) Six
c) Five
d) Four
[CO4] [L1]
Q. 50 Communication barriers occurs when $\qquad$ is there.
a) Transferring of message
b) Lack of feedback
c) Poor timing
d) All of the above
[CO4][L1]

# End Semester Examination, May 2023 <br> BCA - Second Semester <br> DATA STRUCTURES USING C (BCA-DS-201/BCA-203A (CB)) 

Time: 3 hrs
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART A and TWO questions from PART B. Marks are indicated against each question.
Q. 1 Answer the following multiple choice questions:
a) Minimum number of fields in each node of a doubly linked list is:
i) 2
ii) 3
iii) 4
iv) None of the above
b) A graph in which all vertices have equal degree is known as:
i) Complete graph
ii) Regular graph
iii) Multi graph
iv) Simple graph
c) Which of following data structure is works on LIFO $\qquad$ .
i) Dequeue
ii) Queue
iii) Stack
iv) Priority queue
d) Finding the location of a given item in a collection of items is called $\qquad$ .
i) Discovering
ii) Finding
iii) Searching
iv) Mining
e) New nodes are added to the $\qquad$ of the queue.
i) Front
ii) Back
iii) Middle
iv) Both $A$ and $B$
f) The operation of processing each element in the list is known as $\qquad$ -.
i) Sorting
ii) rging
iii) Inserting
iv) traversal
g) Which of the following data structure can't store the non-homogeneous data elements?
i) Arrays
ii) Records
iii) Pointers
iv) Stacks
h) Which of the following is non-liner data structure?
i) Stacks
ii) List
iii) Strings
iv) Trees
i) Last node having $\qquad$ pointer in the list.
i) Null
ii) Back
iii) Middle
iv) A and B
j) The term push and pop is related to:
i) Array
ii) Lists
iii) Stacks
iv) Trees
$10 \times 2$

## PART-A

Q. 2 a) What is data structure? Explain types of data structures with suitable example.
b) Convert below given infix expression into postfix.
Infix Expression: $(A+B) *(C Y+A Y) /(B Y * C X)$.
[CO-2][L-4] 5
c) What is linked list? Write an algorithm to insert a node in the beginning.
[CO-3][L-4] 5
Q. 3 a) Convert below given infix expression into polish notation.

Infix Expression: : (( $A+(B * C)) /(D * E))$
[CO-2][L-4] 5
b) Differentiate between primitive and non-primitive data structure.
[CO-1][L-4] 5
c) What is doubly linked list? Explain with the help of block diagram
Q. 4 a) Differentiate between stacks and queues. Mention the complexities of insertion and deletion operation for the same data structure.
[CO-2][L-4] 10
b) What is searching? Explain with suitable example different types of searching techniques.
[CO-1][L-4] 5
c) Explain the block diagram of singly, doubly and circular linked list with suitable example.
[CO-3][L-4] 5

## PART-B

Q. 5 a) What is binary tree? Explain different types of trees with suitable example. [CO-4][L-4] 5
b) What is minimum cost spanning tree? Differentiate between prim's and Kruskal method with their algorithms.
[CO-5][L-4] 10
c) Explain selection sort algorithm with suitable example.
Q. 6 a) What is graph? Explain different types of graphs with suitable example.
b) Traverse the below given graph with DFS and BFS.

[CO-6][L-4] 10
c) Write the inorder, preorder and post order of a given binary tree.

[CO-4][L-4] 5
Q. 7 a) Draw a directed graph, the adjancy list and adjancy matrix of a graph. [CO-4][L-4] $\mathbf{1 0}$
b) Explain collision resolution techniques.
[CO-6][L-4] 5
c) Differentiate between binary and linear search techniques
[CO-6][L-4] 5

# End Semester Examination, May 2023 <br> BCA - Second Semester <br> DATA STRUCTURES USING C <br> (BCA-DS-201/BCA-203A (CB)/BCA-203(CB)) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.

## Q. 1 Choose the correct option:

a) A queue follows $\qquad$ .
i) LIFO principle
ii) FIFO principle
iii) Linear tree
iv) Ordered array
b) The time complexity used for inserting a node in a priority queue on the basis of key
is:
i) $O(n)$
ii) O(n2)
iii) O(nlogn)
iv) $\mathrm{O}(\operatorname{logn})$
c) Which of these is a postfix expression?
i) $a+b-c$
ii) $+a b$
iv) $\mathrm{abc} *+\mathrm{de}-+$
iv) $a$ * $b(c+d)$
d) Which data structure do we use for testing a palindrome?
i) Heap
ii) Tree
iv) Priority queue
iv) Stack
e) The tango tree is a type of:
i) Binary Search Tree
ii) K-ary Tree
iii) Ternary Tree
iv) AVL Tree
f) In an AA-tree, we can remove a left horizontal link by:
i) inserting a new element
ii) deleting both the elements
iii) performing left rotation
iv) performing right rotation
g) We can use a self-balancing binary search tree for implementing the:
i) Hash table
ii) Priority queue
iii) Heap sort and priority queue
iv) Heap sort
h) A splay operation refers to:
i) The removal of leaf node
ii) The movement of root to leaf
iii) The movement of a node to root
iv) The movement of parent node to a child node's down
i) Out of these, which one is NOT true about a 2-3 tree?
i) It is perfectly balanced
ii) The leaves are always at the same level
iii) It refers to a B-tree of the order 3
iv) Post order traversal would yield the elements in a sorted order
j) A recursive implementation would presumably fail in skew heaps because:
i) lack of stack space
ii) time complexity
iii) these heaps are self adjusting
iv) efficiency gets reduced
2×10

## PART-A

Q. 2 a) What is data structure? Explain types of data structures with suitable example.
b) Convert below given infix expression into postfix.
Infix Expression: $(A+B) *(C Y+A Y) /(B Y * C X)$.
[CO-2] [L-4] 5
c) What is linked list? Write an algorithm to insert a node in the beginning.
Q. 3 a) Convert below given infix expression into polish notation.

$$
\text { Infix Expression: }\left((A+(B * C)) /\left(D^{*} E\right)\right)
$$

b) Differentiate between 'primitive' and 'non-primitive' data structure. [CO-1] [L-4] 5
c) What is doubly linked list? Write an algorithm to insert a node in the beginning.
[CO-3] [L-4] 10
Q. 4 a) Differentiate between 'stacks and queues'. Mention the complexities of insertion and deletion operation for the same data structure.
[CO-2] [L-4] 10
b) What is searching? Explain with suitable example different types of searching techniques.
[CO-1] [L-4] 5
c) Differentiate between singly and doubly linked list with suitable example. [CO-3][L-4] 5

## PART-B

Q. 5 a) What is Binary tree? Explain different types of trees with suitable example.
[CO-4] [L-4] 5
b) What is minimum cost spanning tree? Differentiate between Prim's and Kruskal method with their algorithms.
[CO-5] [L-4] 10
c) Differentiate between 'selection and insertion sorting'.
Q. 6 a) What is Graph? Explain different types of graphs with suitable example.
b) Differentiate between merge sort and quick sort algorithm.
c) Write the in order, preorder and post order of a given binary tree.

Q. 7 a) Draw a directed graph, the adjacency list and adjacency matrix of a graph.
[CO-4] [L-4] 10
b) Explain collision resolution techniques.
[CO-6] [L-4] 5
c) Differentiate between 'Binary and Linear' search techniques.
[CO-6] [L-4] 5

# End Semester Examination, May 2023 <br> BCA - Second Semester <br> INTERNET TECHNOLOGIES <br> (BCA-DS-202/BCA-205A (CB)/BCA-205(CB)) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Multiple choice questions:
[CO-1,2] [L-2]
a) Computer on internet is identified by
i) Email address
ii) Street address
iii) IP address
iv) Server Address
b) Which of the following protocols is used for transmitting email messages over the Internet?
i) HTTP
ii) SMTP
iii) TCP
iv) UDPA
c) DHCP (dynamic host configuration protocol) provides $\qquad$ to the client.
i) IP address
ii) MAC address
iii) URL
iv) None of the above
d) DNS client is called $\qquad$ .
i) DNS updater
ii) DNS resolver
iii) DNS handler
iv) none of the above
e) Which of the following layers is an addition to OSI model when compared with TCP IP model?
i) Application layer
ii) Presentation layer
iii) Session layer
iv) Session and Presentation layer
f) Expansion of FTP is $\qquad$ -
i) Fine TRANSFER Protocol
ii) File Transfer Protocol
iii) First TRANSFER Protocol
iv) Fast Transfer PROtocol
g) HTTP is $\qquad$ protocol.
i) application layer ii) transport layer
iii) network layer
iv) data link layer
h) Which of the following is not a type of cybercrime?
i) Data theft
ii) Forgery
iii) Damage to data and systems
iv) Installing antivirus for protection
i) What is the name of the IT law that India is having in the Indian legislature?
i) India's Technology (IT) Act, 2000
ii) India's Digital Information Technology (DIT) Act, 2000
iii) India's Information Technology (IT) Act, 2000
iv) The Technology Act, 2008
j) Under which section of IT Act, stealing any digital asset or information is written a cyber-crime.
i) 65
ii) $65-\mathrm{D}$
iii) 67
iv) 70
$2 \times 10$

## PART-A

Q. 2 a) Explain the following term:
[CO-1] [L-2] 10
i) Copyright laws.
ii) Links, URLs and hyperspace.
b) Explain the architecture of internet in detail.
[CO-2] [L-2] 10
Q. 3 a) What is DNS? How domain name is mapped to addresses?
[CO-3] [L-2] 10
b) Is DHCP based on client server architecture? Explain.
[CO-3] [L-3] 10
Q. 4 a) Discuss the role of SMTP in the emailing process. Write five golden rules of email etiquettes.
b) Explain copyright laws by taking some real life example.

## PART-B

Q. 5 a) What is ethical hacking? What are the various ethical hacking techniques?
[CO-4] [L-2] 10
b) How can cross site scripting be fixed? State in brief.
[CO-4] [L-3] 10
Q. 6 Justify the statement "cybercrimes are more vulnerable". How can we protect ourselves from cybercrime?
[CO-5] [L-2] 20
Q. 7 What do you understand by the term IoT? Explain the difference between device to device (D2D) and machine to machine (M2M) integration.
[CO-2] [L-2] 20

# End Semester Examination, May 2023 <br> <br> BCA - Second Semester <br> <br> BCA - Second Semester <br> SOFTWARE ENGINEERING <br> (BCA-DS-203/BCA-405A (CB)/BCA-405(CB)) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 a) Software is defined as $\qquad$ .
i) Set of programs, documentation and configuration of data
ii) Set of programs
iii) Documentation and configuration of data
iv) None of the mentioned
b) Why do bugs and failures occur in software?
i) Because of developers
ii) Because of companies
iii) Because of both companies and developers
iv) None of the mentioned
c) Who proposed the spiral model?
i) Barry Boehm
ii) Pressman
iii) Royce
iii) IBM
d) Software patch is defined as $\qquad$ .
i) Daily or routine fix
ii) Required or critical fix
iii) Emergency fix
iv) None of the mentioned
e) Who proposed function points?
i) Albrecht
ii) Jacobson
iii) Boehm
iv) Booch
f) Agile software development is based on which of the following type?
i) Iterative development
ii) Incremental development
iii) Both incremental and iterative development
iv) Linear development
g) What does SDLC stands for?
i) System design life cycle
ii) Software design life cycle
iii) Software development life cycle
iv) System development life cycle
h) $\qquad$ suits the Manifesto for Agile software development.
i) Customer collaboration
ii) Individuals and interactions
iii) Working software
iv) All of the mentioned
i) $\qquad$ is a software development life cycle model that is chosen if the development team has less experience on similar projects.
i) Iterative enhancement model
ii) RAD
iii) Spiral
iv) Waterfall
j) What is the full form of the "COCOMO" model?
i) Cost constructive estimation model
ii) Constructive cost estimation model
iii) Constructive case estimation model
iv) Constructive cost estimating model

## PART-A

Q. 2 a) Explain software life cycle model.
[CO-2] [L-2] 10
b) Compare waterfall, spiral, prototype and incremental model.
[CO-2] [L-2] 10
Q. 3 Write short notes on following terms:
a) SRS.
b) Software project scheduling with techniques.
c) Feasibility study.
Q. 4 a) Explain error, fault and failure.
b) Explain ER model. Explain entity, entity type, entity set, er diagrams symbols and notations with example.
c) Discuss the characteristics of a good SRS document.

## PART-B

Q. 5 a) Explain in detail what are software testing and its types.
b) Difference between black box and white box testing.
Q. 6 Write short notes on:
$\begin{array}{lr}\text { a) Risk management. } & {[\mathrm{CO}-3][\mathrm{L}-5] \mathbf{5}} \\ \text { b) Quality management. } & {[\mathrm{CO}-5][\mathrm{L}-4] \mathbf{5}} \\ \text { c) Cyclomatic complexity. } & {[\mathrm{CO}-3][\mathrm{L}-5] \mathbf{1 0}}\end{array}$
Q. 7 Difference between:
a) Cohesion and coupling.
[CO-3] [L-5] 10
b) User documentation and system documentation.
[CO-3] [L-5] 10

# End Semester Examination, May 2023 <br> BCA - Third Semester <br> INTRODUCTION TO OPERATING SYSTEM ((BCA-DS-302) / (BCA-303A(CB))) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.

## Q. 1 Multiple choice questions:

a) In operating systems, which of the following is/are CPU scheduling algorithms?
i) Priority
ii) Round Robin
iii) Shortest job first
iv) All of the above
b) In real time operating system $\qquad$ -.
i) Process scheduling can be done only once.
ii) All processes have the same priority.
iii) Kernel is not required.
iv) A task must be serviced by its deadline period.
[CO2] [L1]
c) Operating system is a collection of:
i) Software routines
ii) Input-output devices
iii) Hardware components
iv) All of the above
[CO1] [L1]
d) FIFO scheduling is:
i) Fair-share scheduling
ii) Deadline scheduling
iii) Non-preemptive scheduling
iv) Preemptive scheduling
[CO2] [L1]
e) Which of the following decides which task can have the next time slot?
i) Single task operating system
ii) Applications
iii) Kernel
iv) Software
[CO2] [L1]
f) Which of the following options is correct about the windows operating system?
i) Windows is a CUI operating system.
ii) Windows is based on CUI.
iii) Windows is a GUI operating system.
iv) None of the above
[CO1] [L1]
g) Which of the following operating system runs on the server?
i) Batch OS
ii) Distributed OS
iii) Real-time OS
iv) Network OS
[CO2] [L1]
h) In paging the user provides only $\qquad$ which is partitioned by the hardware into $\qquad$ and $\qquad$ .
i) One address, page number, offset.
ii) One offset, page number, address.
iii) Page number, offset, address.
iv) None of the above
i) A FIFO replacement algorithm associates with each page the $\qquad$ .
i) Time it was brought into memory i)
ii) Size of the page in memory
iii) Page after and before it
iv) All of the above
[CO2] [L1]
j) To create a file $\qquad$ -.
i) Allocate the space in file system.
ii) Make an entry for new file in directory.
iii) Allocate the space in file system and make an entry for new file in directory.

## CO-5 L1 $\mathbf{2 \times 1 0}$

## PART-A

Q. 2 a) What is operating system? Discuss the service provided by an operating system.
[CO1] [L1] 10
b) Differentiate between multitasking, multi-programming and multi-threading.
[CO1] [L2] 10
Q. 3 What is process scheduling? Explain different level of schedulers. Also describe the different schedule algorithms.
[CO2] [L1] 20
Q. 4 What do you mean by page replacement? Explain the page replacement algorithms.
[CO4] [L2] 20

## PART-B

Q. 5 a) Discuss logical and physical address space.
[CO4] [L1] 5
b) Consider swapping system in which memory of the following hole sizes in memory order. $10 \mathrm{~K}, 4 \mathrm{~K}, 20 \mathrm{~K}, 18 \mathrm{~K}, 7 \mathrm{~K}, 9 \mathrm{~K}, 12 \mathrm{~K}$ and 15 K . Which hole is taken for successive request of:
i) 12 K
ii) 10 K
iii) 9K for first-fit, best-fit and worst-fit
[CO4] [L3] 15
Q. 6 What do you understand by the file system structure? Describe the various types of allocation methods.
[CO5] [L2] 20
Q. 7 a) What are semaphores? Explain two primitive semaphore operations. What are its advantages?
[CO3] [L2] 15
b) What is deadlock? How it is handled?
[CO3] [L1] 5

# End Semester Examination, May 2023 <br> BCA - Third / Fourth Semester <br> MATHEMATICAL FOUNDATION OF COMPUTER SCIENCE <br> (BCA-DS-303) / (BCA-401A(CB) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. $\mathbf{1}$ is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 a) Which of the following are well-defined sets?
i) All the colors in the rainbow.
ii) All the points that lie on a straight line.
iii) All the honest members in the family.
iv) All the efficient doctors of the hospital.
v) All the hardworking teachers in a school.
vi) All the prime numbers less than 100.
[CO2] [L1]
b) The set $A=\left\{x, x \in N\right.$ and $\left.x^{2}-3 x+2=0\right\}$ is
i) Null set
ii) Finite set
iii) Infinite set
iv) None of the above
[CO2] [L2]
c) Let $X=\{1,2,3\}$ then the relation $R=\{(1,1),(2,2),(3,1)\}$ on $X$ is
i) Reflexive
ii) Symmetric
iii) Transitive
iv) None of the above
[CO2] [L2]
d) A graphs is a collection of
i) Row and column
ii) Vertices and edges
iii) Equations
iv) None of the above
[CO4] [L2]
e) The relation $\leq$ is a partial order if it is $\qquad$ .
i) Reflexive, ant symmetric and transitive.
ii) Reflexive, symmetric.
iii) Asymmetric, transitive.
iv) Irreflexive and transitive.
[CO2] [L2]
f) A Poset in which every pair of elements has both a least upper bound and a greatest lower bound is termed as $\qquad$
i) Sublattice
ii) Lattice
iii) Trail
iv) Walk
[CO2] [L3]
g) The points $(-5,1),(1, p)$ and (4, -2$)$ are collinear if the value of $p$ is:
i) 3
ii) 2
iii) 1
iv) -1
[CO5] [L3]
h) If the points $P(1,2), B(0,0)$ and $C(a, b)$ are collinear, then:
i) $2 a=b$
ii) $a=-b$
iii) $a=2 b$
iv) $a=b$
[CO5] [ L2]
i) A graph is a set of points, called:
i) Nodes
ii) Edge
iii) Fields
iv) lines
[CO4] [L1]
j) $\qquad$ are the two binary operations defined for lattices.
i) Union intersection
ii) Multiplication, modulo division.
iii) Join, meet
iv) Addition, subtraction
[CO3] [L2] $\mathbf{2 \times 1 0}$
Q. 2 a) In a class of 35 students, 15 study Maths, 22 study Biology and 14 study Physics. If 11 study both Maths and Biology, 8 study Biology and Physics, 5 study Maths and Physics and if 3 study all the three subjects, find how many students of the class are not taking any of these subjects.
[CO2] [L4] 10
b) Consider the relation R whose directed graph is given below:


Determine its inverse $R^{-1}$ and $R^{\prime}$.
[CO2] [L4] 10
[CO2][L4] (10 marks)
Q. 3 a) By using PMI show that $n^{3}+2 n$ is divisible by 3 for all $n \geq 1$.
[CO2] [L4] 10
b) Use the Euclidean algorithm to compute $\operatorname{gcd}(168,180)$ and then use back substitution to find integers $x$ and $y$ such that $\operatorname{gcd}(168,180)=168 x+180 y$. [CO3] [L4] 10
Q. 4 a) Draw the hasse diagram of $\mathrm{D}_{30}$ and prove that it also forms a lattice. [CO3] [L5] 10
b) Let $\mathrm{D}_{50}=\{1,2,5,10,25,50\}$ and let the relation $\leq$ be the relation (divides) be a partial ordering on $D_{50}$.
i) Draw the hasse diagram of the lattices $D_{50}$.
ii) Determine all the upper bounds of 5 and 10.
iii) Determine the lower bounds of 5 and 10.
iv) Determine the GLB of 5 and 10.
v) Determine the LUB of 5 and 10.
[CO3] [L5] 10

## PART-B

Q. 5 a) Find the solution to the recurrence relation $2 a_{r}-5 a_{r-1}+2 a_{r-2}=0$ with initial terms $a_{0}$ $=0$ and $\mathrm{a}_{1}=1$.
[CO4] [L4] 10
b) Define the following terms:
i) Order and degree of recurrence relation.
ii) Characteristic roots
[CO4] [L4] 5×2
Q. 6 a) Find the equation of the line which passes through $(1,3)$ and whose $y$ intercept is three times it intercept on x-axis.
[CO5] [L6] 10
b) Prove that the line joining $(6,-4)$ and $(-3,2)$ is parallel to the line joining $(1,3)$ and $(-2,5)$.
[CO5] [L5] 10
Q. 7 What is spanning tree? Explain steps of kruskal's algorithm. Find the minimum spanning tree of the following graph.


# End Semester Examination, May 2023 <br> BCA - Third Semester <br> WEB APPLICATIONS DEVELOPMENT (BCA-DS-304) / (BCA-304A (CB) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 3
Note: Attempt FIVE questions in all; Q. $\mathbf{1}$ is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.

## Q. 1 Multiple choice questions:

a) Find the name of the first web browser?
i) IBM browser
ii) Google Chrome
iii) Mozilla Firefox
iv) MOSAIC
[CO2] [L1]
b) Moving from one website to another is called:
i) Downloading
ii) Browsing
iii) Uploading
iv) Attachment
[CO2] [L1]
c) Which of the following is used to read HTML code and to render webpage?
i) Web Browser
ii) Web Server
iii) Web Matrix
iv) Web search Engine
[CO2] [L1]
d) Which of the following options allow us to access our e-mail from anywhere?
i) Forum
ii) Weblog
iii) Message board
iv) Webmail Interface
[CO2] [L1]
e) Fill in the blank with a suitable option in order to number items of an ordered list with small roman numbers.
<!DOCTYPE html><html><body><ol__ ><li> Physics </li><li> Chemistry
</li><li> Mathematics </li></ol></body></html>
[CO2] [L1]
f) Which of the following sets the color of a link before it has been clicked on?
i) ALINK
ii) LINK
iii) VLINK
iv) ULINK
[CO2] [L1]
g) The $\qquad$ attribute lets you turn off scrolling in a frame.
i) OFFSCROLL
ii) SCROLLING
iii) SCROLLBAR
iv) None of these
[CO2] [L1]
h) In CSS, what does "color:blue" can be called as?
i) Selector
ii) Declaration
iii) Rule
iv) Value
[CO2] [L1]
i) The ___ attribute turns frame borders on or off?
i) BORDERCONTROL
ii) MARGINWIDTH
iii) FRAMEBORDER
iv) BORDERCOLOR
[CO2] [L1]
j) Which is the correct CSS syntax?
i) \{body:color=black(body\}
ii) body \{color:black\}
iii) \{body;color:black\}
iv) body:color=black
[CO2] [L2] $\mathbf{2 \times 1 0}$

## PART-A

Q. 2 a) A web browser is a software application for accessing information on the World Wide Web. Give five examples and functions of web browsers. What are the major characteristics of the web browsers?
[CO2] [L1] 10
b) How does a search engine help us in searching content on Internet? Name the components of a search engine and explain the working of the same. [CO2] [L2] 10
Q. 3 Write code to generate the following web page:

## Indian Food



Note: The following points while generating the web page:
a) Title of the page is "Indian Food".
b) Link color is blue, vlink color is brown and alink color is pink.
c) Font face of heading is "arial".
d) The color of the heading of the page is green.
e) Image used as foodl.jpg.
f) Table border is $4 p x$ and border color is maroon.
g) Use link as:

For Available Food as FI.html
For Dishes Price as F2.html
For Get Recipes as F3.html
h) E-mail id for bottom message "To get order click here" as inquiry@abc.com.
[CO2] [L1] 20
Q. 4 Write code in HTML to create a table with the structure mentioned below:

> COLLEGE TIME TABLE

|  | 8:30-9:30 | 9:30-10:30 | 10:30-11:30 | 11:30-12:30 | 12:30-2:00 | 2:00-3:00 | 3:00-4:00 | 4:00-5:00 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| MONDAY | --- | SUB1 | SUB2 | SUB3 | $\begin{aligned} & \mathrm{L} \\ & \mathrm{U} \\ & \mathrm{~N} \\ & \mathrm{C} \\ & \mathrm{C} \end{aligned}$ | SUB4 | SUB5 | COUNSELLING CLASS |
| TUESDAY | SUB1 | SUB2 | SUB3 | --- |  | SUB2 | SUB2 | LIBRARY |
| WEDNESDAY | SUB1 | SUB2 | SWA | --- |  |  |  | LAB |
| THURSDAY | SUB1 | SUB2 | SUB3 | --- |  | SUB2 | SUB2 | LIBRARY |
| FRIDAY | SUB1 | SUB2 | SUB3 | --- |  | SUB4 | SUB5 | LIBRARY |
| SATURDAY | SUB1 | SEMINAR |  |  |  | SUB4 | SUB5 | LIBRARY |

[CO2] [L2] 20

## PART-B

Q. 5 Write HTML code to create the frame structure given below:

Q. 6 Cascading style-sheet is a style-sheet language used to describe the presentation of a document. Explain the various ways in which CSS is included in the web page. [CO5] [L2] 20
Q. 7 JavaScript is a collection of various scripts. What do you mean by the term scripts? How are they useful in programming with JavaScript? Write down the basic characteristics of JavaScript. Also enumerate various data types available in JavaScript.
[CO4] [L3] 20

# End Semester Examination, May 2023 <br> BCA / B. Sc. (Information Technology) - Third Semester <br> SOFT SKILLS AND APTITUDE DEVELOPMENT-I (BCA-DS-309/BSCIT-DS-304) 

Time: 2 hrs.
Max Marks: 50
No. of pages: 5

## Please read the instructions carefully

Note: All questions are compulsory. Each question has FOUR options with ONE correct answer. Select the correct answer. All questions are of ONE mark each. There is no NEGATIVE marking. Mention the correct option for each question in the blank answer key given herein below. Calculator is not permitted. Use only black or blue pen.

| 1) | 2) | 3) | 4) | 5) | 6) | 7) | 8) | 9) | 10) |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 11) | 12) | 13) | 14) | 15) | 16) | 17) | 18) | 19) | 20) |
| 21) | 22) | 23) | 24) | 25) | 26) | 27) | 28) | 29) | 30) |
| 31) | 32) | 33) | 34) | 35) | 36) | 37) | 38) | 39) | 40) |
| 41) | 42) | 43) | 44) | 45) | 46) | 47) | 48) | 49) | 50) |

Q. 1 A is thrice as efficient as B. A takes 24 days less than $B$ to complete a work. If they work together, in how many days, will the work be completed?
a) 15
b) 9
c) 8
d) 12
Q. 2 Working together $A, B$ and $C$ can complete a piece of work in 3 days. A complete the same work in 24 days and $B$ completes it in 6 days. How many days will $C$ alone take to complete the same work?
a) 12
b) 18
c) 8
d) 6
Q. $3 \quad \mathrm{P}$ and Q together earn Rs. 188 per day. Q and R together earn Rs. 152 per day. $\mathrm{P}, \mathrm{Q}$ and $R$ when working together earn Rs. 300 per day. How much does $Q$ earn daily?
a) 43
b) 56
c) 45
d) 40
Q. 4 Parthiv was appointed for a 100 days job. The condition was that he will be paid Rs. 24 for every working day. But he will also be fined Rs. 12 for every day he is absent. At the end he got Rs.420. For how many days, he was absent?
a) 45 Days
b) 55 Days
c) 75 Days
d) 64 Days
Q. 5 Two pipes $A$ and $B$ can fill a cistern in 60 min and 75 min respectively. There is a third pipe in the bottom of the cistern to empty it. If all three pipes are opened simultaneously then the cistern is full in 50 min . In how much time the third alone can empty the cistern?
a) 110
b) 80
c) 90
d) 100
Q. 6 Three pipes $A, B$ and $C$ can fill a tank in 6 hours. After 2 hours $C$ is closed and $A$ and $B$ can fill in 8 hours. The time taken by C alone?
a) 10
b) 11
c) 13
d) 12
Q. 7 There are four numbers. Average of the first three is 15 and of last three is 16 . If the last number is 19 , find the first number.
a) 16
b) 20
C) 19
d) None of these
Q. 8 Five men agree with a sixth men to subscribe a sum of money for a chit fund. The first five are to subscribe ₹15 each and sixth ₹5 less than the average of all the six. The sixth man subscribe...
a) ₹9
b) ₹10
c) ₹9.50
d) ₹ 10.50
Q. 9 A batsman makes a score of 87 runs in the 17th match and thus increases his average by 3 . Find his average after 17 th match.
a) 36
b) 37
c) 38
d) 39
Q. 10 A boat can travel with a speed of $13 \mathrm{~km} / \mathrm{hr}$ in still water. If the speed of the stream is 4 $\mathrm{km} / \mathrm{hr}$, find the time taken by the boat to go 68 km downstream.
a) 10
b) 12
C) 14
d) 16
Q. 11 A boat covers a certain distance downstream in 1 hour, while it comes back in 1.5 hours. If the speed of the stream be 3 kmph , what is the speed of the boat in still water?
a) 10
b) 15
c) 22
d) 25
Q. 12 At what approximate time between 4 and 5 am will the hands of a clock be at right angle?
a) $4: 35 \mathrm{AM}$
b) $4: 39 \mathrm{AM}$
c) $4: 40 \mathrm{AM}$
d) $4: 38 \mathrm{AM}$
Q. 13 The angle between the minute hand and the hour hand of a clock when the time is 8.30, is:
a) $80^{\circ}$
b) 750
c) $60^{\circ}$
d) $105^{\circ}$

Directions (Q. 14 to $\mathbf{Q . 1 8 ) : ~ S t u d y ~ t h e ~ f o l l o w i n g ~ g r a p h ~ c a r e f u l l y ~ t o ~ a n s w e r ~ t h e ~ q u e s t i o n s ~ t h a t ~}$ follow.

Q. 14 What is the average number of females from all the organizations together?
a) 2700
b) 2500
c) 2800
d) 2900
Q. 15 The total number of males from organization Vaishali and Vashundhra together is approximately what percent of the total number of females from organization Vaishali, Vashundhra and Model Town together?
a) $33 \%$
b) $55 \%$
c) $66 \%$
d) $78 \%$
Q. 16 What is the difference between the total number of females and the total number of males from organization Vaishali, Vashundra, Model Town and Ashok Nagar together?
a) 900
b) 800
c) 700
d) 1000
Q. 17 What is the ratio of the number of females from organization Vashundra to the number of females from organization Pritampura?
a) $6: 5$
b) $5: 6$
c) $6: 7$
d) $7: 6$
Q. 18 The number of males from organization Vashundhra is approximately what percent of the total number of males from all the organizations together?
a) $23.42 \%$
b) $21.42 \%$
c) $25 \%$
d) $26 \%$

Directions (Q. 19 to Q.23): Study the following pie-charts carefully and answer the questions given below. The entire fund that school gets from different sources in equal to ₹500 lakhs.

Q. 19 What is the difference between the funds acquired by the school from NGO's and internal sources?
a) ₹50 lakh
b) ₹ 45 lakh
c) ₹75 lakh
d) ₹25 lakh
Q. 20 If the school managed school maintenance from the government agencies fund only, then how much fund from government agencies would still left for other use?
a) ₹ 120 lakh
b) ₹ 150 lakh
c) ₹ 110 lakh
d) ₹ 125 lakh
Q. 21 If scholarship has to be paid out of the donation fund, then what is the approximate per cent of donation fund used for his purpose?
a) $43 \%$
b) $53 \%$
c) $37 \%$
d) $45 \%$
Q. 22 What is the total amount used by the school for payment?
a) ₹ 100 lakh
b) ₹ 110 lakh
c) ₹150 lakh
d) ₹ 140 lakh
Q. 23 What amount of the fund is acquired by the school from government agencies?
a) ₹220 lakh
b) ₹ 310 lakh
c) ₹ 255 lakh
d) ₹235 lakh
Q. 24 If BOMBAY is written as MYMYMY, how will TAMIL NADU be written in that code?
a) YMNYMNYMN
b) ABHABHABH
c) $A B C D A B C D A$
d) MNUMNUMNU
Q. 25 In a certain code, 2is coded as P, 3 as N, 9 as Q, 5 as R, 4 as A and as B. How is 599423 coded in that code?
a) QRQPAN
b) RQQAPN
c) $A Q P Q R N$
d) QRANPA
Q. 26 What will be the day of the week $15^{\text {th }}$ August, 2010?
a) Sunday
b) Monday
c) Tuesday
d) Friday
Q. 27 How many times the 29th day of the Monday does occur in 400 consecutive years?
a) 4500
b) 4498
c) 4497
d) 4495

Directions (Q. 28 to $\mathbf{Q} .30$ ): A cube is colored red on two opposite faces, blue on two adjacent faces and yellow on the two remaining faces. It is then cut into two halves along the plane parallel to the red faces. One piece is then cut into four equal cubes and the other one into 32 equal cubes.

Now answer the following questions based on the above information.
Q. 28 How many cubes have each a yellow face with other faces blank?
a) 4
b) 14
c) 16
d) 18
Q. 29 How many cubes have at least one blue face?
a) 4
b) 14
c) 16
d) 17
Q. 30 How many cubes do not have any colored face?
a) 0
b) 2
c) 4
d) 8
Q. 31 Which of the following is not the part of a resume?
a) Religious affiliation
b) Employment History
c) Contact Information
d) Education
Q. 32 Which of the following is the safest email address style to use on your resume?
a) lovin_ladies123@emailprovider.com
b) j_smith@emailprovider.com
c) partyallthetime@emailprovider.com
d) None of these
Q. 33 Select the location where the name and address can be mentioned in a skills profile?
a) Bottom left corner
b) Top right corner
c) Top left corner
d) Bottom right corner
Q. 34 Which is not compulsory to mention in a CV?
a) Date
b) Name
c) Nationality
d) Education
Q. 35 The resume and application letter performs which of the following tasks?
a) two different tasks
b) two same tasks
c) overlapping tasks
d) the same task
Q. 36 The ideal way to apply for the vacancy of a job is to submit a resume that is:
a) Full of personal information
b) Suitable for any job
c) Self-recommending
d) Specially written for that specific job
Q. 37 When should you send a cover letter?
a) Only when an ad specifically requests it
b) Every time you send out your resume
c) When you need to list your salary requirement
d) When you need to list references
Q. 38 The synonym for the word "WISE" is:
a) Momentous
b) Pragmatic
c) Judicious
d) Delay

Fill in the blanks with appropriate answers:
Q. 39 The car broke down and we $\qquad$ get a cab.
a) have to
b) had to
c) must
d) had got to
Q. 40 Bread and milk $\qquad$ my favourite breakfast.
a) Is
b) Are
c) Any of these
d) None of these
Q. 41 The correct meaning of the prefix "Neuro-" in "NEUROLOGY"is:
a) Brain
b) Head
c) Nerves
d) None of these
Q. 42 Which is not a pre requisite of a group discussion?
a) Being Shy in GD
b) Analyzing the topic logically
c) Interrupting
d) Changing Opinions
Q. 43 "Accepting Criticism" in GD means:
a) Get upset and react strongly.
b) Be polite and tell the person
c) Just ignore and keep talking
d) Criticize the other person who is criticizing
Q. 44 The answer to the question "Why should we hire you?" should be:
a) I am the best and would do the job at my best.
b) I am the best among the people you have just met.
c) All my teacher and friends like me.
d) It will give me a platform to showcase my skills.
Q. 45 Researching the organization is important:
a) To know whether my skills match with the company's needs
b) To increase your general Knowledge
c) To match your knowledge with the company profile
d) None of these
Q. 46 The question "Tell me something about yourself" is to check:
a) How well you speak about yourself
b) Whatever you have written in your CV is true or not.
c) Your confidence about yourself and your skill set.
d) How well versed you are about talking in English.
Q. 47 The true purpose of an Interview is to:
a) Get a job
b) Take the experience of sitting in an interview.
c) Know the kind of jobs available in the market.
d) See if your skills match with the job requirements.

Directions (Q.48-Q.50): Read the passage below and answer the questions that follow:
The sky was already full of rusting wings. But when Jean stepped into the still lusterless water, he seemed to be swimming in an indeterminate darkness until he saw the streaks of red and gold over the horizon. Then he suddenly swam back to land and climbed up the winding path to his house. After a great deal of panting he reached a little gate, pushed it open and climbed a stairway. The house above the world had its huge bay-windows through
which one could see the horizon from one edge to the other. Here, no one complained of exhaustion. Everyone had his joy to conquer, every day.
Q. 48 Which of the following is indicated by the description in the passage?
a) Time before sunrise
b) Time after sunset
c) Clouds
d) None of these
Q. 49 "The house above the world" in the passage means:
a) Jean's house was very beautiful
b) His house was on top of a hill
c) The house was very shabby
d) All of these
Q. 50 "Horizon" in the passage means:
a) Perception
b) Skyline
c) View
d) None of these

# End Semester Examination, May 2023 

BCA - Fourth Semester

## NUMERICAL ANALYSIS AND STATISTICAL TECHNIQUES

 (BCA-DS-401/BCA-301A (CB))Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Answer the following questions:
a) Numerical techniques more commonly involve $\qquad$ .
i) Elimination method
ii) Reduction method
iii) Iterative method
iv) Direct method
b) We wish to solve $x 2-2=0$ by Newton Raphson technique. If initial guess is $x 0=1.0$, subsequent estimate of $x$ (i.e. $x 1$ ) will be $\qquad$ -.
[CO-2] [L-1]
i) 1.414
ii) 1.5
iii) 2.0
iv) None of these
c) Truncate the given number 8.2467895 up to three decimal places. [CO-2] [L-1]
d) Round off the numbers .004935 and 826.75 to three significant numbers. [CO1][L1]
e) Construct a forward difference table:
[CO-2] [L-2]

| X | 0 | 1 | 2 | 3 |
| :---: | :---: | :---: | :---: | :---: |
| y | 1 | 2 | 11 | 34 |

f) In the regression equation $Y=a+b X$, the $Y$ is called:
[CO-5] [L-1]
i) Independent variable
ii) Dependent variable
iii) Continuous variable
iii) None of the above
g) The deviation from assumed mean is represented as:
[CO-5] [L-1]
i) $s$
ii) $p$
iii) d
iv) $m$
h) Rank method is used to find:
[CO-5] [L-1]
i) Correlation
ii) Deviation
iii) Median
iv) Mode
i) If ' $m$ ' is the mean of a Binomial distribution, then the variance is given by $\qquad$ .
[CO-6] [L-1]
i) $\mathrm{m}^{2}$
ii) $\mathrm{m}^{1 / 2}$
iii) mp
iv) $n p$
j) The summary statistics which measure the middle or center of the data are called:
[CO-6] [L-1]
i) Logarithms
ii) Measures of central tendency
iii) Measures of dispersion
iv) Proportions
$2 \times 10$

## PART-A

Q. 2 a) Find a real root of the equation $f(x)=x^{2}-4 x-9=0$, using Bisection method.
[CO-2] [L-3] 10
b) If 0.8333 is taken to be an approximate value of $5 / 6$. Find the percentage error.
[CO-1] [L-3] 10
Q. 3 a) Given the following table find $y(0.5)$ and $y(2.5)$ by using suitable interpolation formula:

| X | 0 | 1 | 2 | 3 |
| :---: | :---: | :---: | :---: | :---: |
| Y | 1 | 2 | 1 | 10 |

[CO-3] [L-4] 10
b) Find the missing term in the following table:

| X | 0 | 1 | 2 | 3 | 4 | 5 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |


| Y | 0 | - | 8 | 15 | - | 35 |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- |

[CO-3] [L-4] 10
Q. 4 a) Simplify:
$\int_{0}^{6} \frac{1}{1+x^{2}}$
i) Simpson's $\left(\frac{1}{3}\right)^{\text {rd }}$ Rule
ii) Simpson's $\left(\frac{3}{8}\right)^{\text {th }}$ Rule
[CO-3] [L-4] 10
b) Use Euler method to find $\mathrm{y}(1.0)$ if $\mathrm{dy} / \mathrm{dx}=\mathrm{x}+\mathrm{y}, \mathrm{y}(0)=0$. Choosing $\mathrm{h}=0.2$.
[CO-3] [L-4] 10

## PART-B

Q. 5 a) Explain the conceptual similarities and differences between correlation and regression between two variables. Discuss regression lines as well. [CO-5] [L-4] 10
b) Calculate the coefficient of correlation from the following data:

| X | 100 | 200 | 300 | 400 | 500 | 600 | 700 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Y | 30 | 50 | 60 | 80 | 100 | 110 | 130 |

[CO-6] [L-4] 10
Q. 6 a) Find the probability of getting at least 5 times head-on tossing an unbiased coin 6 times by using the Binomial distribution.
[CO-6] [L-4] 10
b) A pharmaceutical company states that the average number of people that have serious medical issues with their medicine is only 3 people per year. The medicine is sold to millions of people. Apply Binomial distribution to find the number of people getting sick due to this medicine.
[CO-6] [L-4] 10
Q. 7 a) From a pack of 52 cards, two cards are drawn together at random. What is the probability of both cards being kings?
[CO-6] [L-5] 10
b) What is normal distribution? What are the properties of Standard Normal Distribution?
[CO-6] [L-3] 10

# End Semester Examination, May 2023 

BCA - Fourth Semester
PROGRAMMING IN JAVA (BCA-DS-402/BCA-403A (CB))
Time: 3 hrs.
Max Marks: 100
No. of pages: 1
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.

## Q. $1 \quad$ Multiple choice questions:

a) Automatic type conversion is possible in which of the possible cases.
i) byte to int
ii) int to long
iii) long to int
iv) short to int
b) What are the variables declared in a class for the use of all methods of the class called?
i) Object
ii) a class object in which it is defined
iii) void
iv) none of the above
c) What does the expression float $\mathrm{a}=35 / 0$ return?
i) 0
ii) not a number
iii) Infinity
iv) none of the above
d) Identify the incorrect Java feature.
i) Object-oriented
ii) Use of pointers
iii) Dynamic
iv) neutral
e) Where is System class defined?
i) GREATEST, LEAST and ABS
ii) SUM, COUNT and AVERAGE
iii) UPPER, LOWER and LENGTH
iv) SQRT, POWER and MOD
f) Identify the modifier which cannot be used for constructor.
i) Public
ii) Protected
iii) Private
iv) Static

## Answer the following:

g) Explain try, Catch and throw keywords.
h) Differentiate between 'final' and 'finally'.
i) Define with suitable example for this keyword.
j) Why we don't have pointers in java? Justify the reasons.
[CO-1-6]

## PART-A

Q. 2 Compare between Java and C++. Describe various types of constants available in Java. Give an example of each. How Symbolic Constants are useful in programs?
[CO-1] [L-5] 20
Q. 3 a) Design a program to print the Factorial of a number. [CO-2] [L-6] $\mathbf{1 0}$
b) Give the syntax, purpose and flow chart of the following:
i) While and Do While.
ii) For Loop.
[CO-3] [L-1] $\mathbf{5 \times 2}$
Q. 4 What is a package? How do we design a package? Discuss various levels of access protection available for packages and their implications in detail.
[CO-3] [L-5] 20

## PART-B

Q. 5 What is a thread? What is the difference between multiprocessing and multithreading? Describe the complete life cycle of a thread.
[CO-4] [L-6] 20
Q. 6 Write short notes on the following:
[CO5][L1] 20
a) Multi-threading.
b) Applet life cycle.
Q. 7
a) Explain concept of interfaces with suitable examples.
[CO-6] [L-1] 10
b) Write a program for database connectivity with JDBC-ODBC connection string.
[CO-6] [L-1] 10

# End Semester Examination, May 2023 <br> BCA - Fourth Semester <br> ELEMENTS OF COMPUTER GRAPHICS (BCA-DS-403/BCA-DS-404A (CB)/BCA-404(CB)) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 1
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Answer the following in brief:
a) What is VGA?
[CO-1] [L-1]
b) What is difference between 2D and 3D?
c) Define 'DDA'.
d) What is the use of computer graphics in the real-world applications?
e) Explain flood fill algorithm.
f) Define 'scaling'.
g) Explain projection.
h) Difference between 'zooming' and 'panning'.
i) Differentiate between 'world coordinate system' and 'device coordinate system'.
j) Define 'composite transformation'.
[CO-2] [L-1] $\mathbf{2 \times 1 0}$

## PART-A

Q. 2 Explain different input and output devices.
[CO-1] [L-1] 20
Q. 3 Differentiate between 'DDA algorithm and Bresenhem line algorithm'. Draw a line from $(2,3)$ to $(5,8)$ using DDA.
[CO-5] [L-3] 20
Q. 4 Draw a line using Bresenhem algorithm in which starting coordinates are $(9,18)$ and ending coordinates are $(14,22)$
[CO-5] [L-3] 20

## PART-B

Q. 5 There is a square $A B C D$ in which different coordinates are $A(0,0), B(4,0)$ and $C(4,4)$ and $D(0,4)$. Scale the image with factor 0.5 . Then, rotate it by 90 degree in clockwise direction and at last apply reflection transformation about origin.
[CO-2] [L-1] 20
Q. 6 Find normalization transformation that maps a window whose lower-left corner is at $(1,1)$ and upper right corner is at $(3,5)$ onto: a) viewport with lower-left corner $(0,0)$ and upper right corner $(1,1)$ b) viewport with lower left corner $(0,0)$ and upper right corner ( $1 / 2,1 / 2$ )
[CO-3] [L-1] 20
Q. 7 Explain different real time animation techniques in detail.
[CO-4] [L-2] 20

# End Semester Examination, May 2023 

# BCA - Fourth Semester <br> SYSTEM PROGRAMMING (BCA-DS-404) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 2


#### Abstract

Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.


Q. 1 Multiple choice questions:
a) Select the system software that always resides in main memory.
[CO-1] [L-1]
i) Text editor
ii) Loader
iii) Linker
iv) Assembler
b) In assembly language each statement has two operands, the first operand is always a $\qquad$ which can be any one of the AREG, BREG, CREG and DREG.
i) Register
ii) Assemble
iii) All of the above
[CO-1] [L-1]
c) MOT (Machine operation table) contains.
[CO-1] [L-1]
i) Name
ii) Length
iii) Binary code and format
iv) All of the above
d) Translator for low level programming language can be termed as:
[CO-1] [L-1]
i) Compiler
ii) Assembler
iii) Linker
iv) Loader
e) An assembler is:
[CO-1] [L-1]
i) Programming language dependent
ii) Syntax dependant
iii) Machine dependant
iv) Data dependent
f) An imperative statement:
[CO-1] [L-1]
i) Reserves areas of memory and associates names with them
ii) Indicates an action to be performed during execution of assembled
iii) Indicates an action to be performed during optimization
iv) None of the above
g) The bottom up parser create $\qquad$ .
i) Right most derivation in reverse
ii) Right most derivation
iii) Left most derivation
iv) Left most derivation in reverse
h) The compiler is used to transfer $\qquad$ that the computer can understand.
i) Source code into data
ii) Algorithm into data
iii) Computer language into data
iv) None of the above
[CO-2] [L-1]
i) A lexical analyzer's output is:
[CO-2] [L-1]
i) Intermediate code
ii) A parse tree
iii) A stream of tokens
iv) Machine code
j) In the compilers, the keywords of any language can be recognized during the:
i) Code generation
ii) Program's parsing
iii) Dataflow analysis
iv) Program's lexical analysis
$2 \times 10$

## PART-A

Q. 2 What is system programming? Discuss the components of system programming. Explain general hardware organization of a computer system.
[CO-1] [L-2] 20
Q. 3 Explain the multi pass organization of language processor in detail. [CO-1,4] [L-2] 20
P. T. O
Q. 4 a) Explain the role of mnemonic opcode table, symbol table, literal table and POOL table in assembling process of assembly language program. [CO-2,3] [L-2] 10
b) Compare single pass assembler and two pass assembler. Explain two pass assembler in detail with suitable example.

## PART-B

Q. 5 a) Compare top-down and bottom-up parser.
b) Explain classification of grammar in programming languages. Show that if G is the grammar $\mathrm{S}-\rightarrow \mathrm{SbS} \mid$ a show that G is ambiguous.
[CO-3,4] [L-4] 10
Q. 6 a) Explain lexical analysis and syntax analysis phase in compilation process.
[CO-2,4] [L-2] 10
b) Explain the machine dependent and independent compiler features. [CO2,4] [L2] 10
Q. 7 a) Comment on the statement "Dynamic debugging is easier to implement in interpreters than in compilers" $\quad[\mathrm{CO}-4,5][\mathrm{L}-3] \mathbf{1 0}$
b) Explain the various types of errors.
[CO-4,5] [L-3] 10

# End Semester Examination, May 2023 <br> BCA - Fourth Semester <br> FUNDAMENTALS OF ARTIFICIAL INTELLIGENCE (BCA-DS-405) 

Time: 3 hrs.
Max Marks: $\mathbf{1 0 0}$
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.

## Q. 1 Multiple choice questions:

a) Machines that try to imitate human intuition while handling vague information lie in the field of AI called?
i) Functional Logic
ii) Fuzzy Logic
iii) Boolean Logic
iv) Human Logic
[CO3][L-3]
b) The component of an expert system is $\qquad$ .
i) Knowledge Base
ii) Inference Engine
iii) User Interface
iv) All of the above
[CO5][L-3]
c) Which of the following are valid Machine Learning algorithms?
i) Linear Regression
ii) K Means Clustering
iii) Naive Bayes
iv) All of the above
[CO4][L-1]
d) Components of an expert system are?
i) Knowledge base
ii) User interface
iii) Inference engine
iv) All of the above
[CO5][L-1]
e) The search algorithm which is similar to the minimax search, but removes the branches that don't affect the final output is known as $\qquad$ .
i) Depth-first search
b) Breadth-first search
iii) Alpha-beta pruning
iv) None of the above
[CO2][L-2]
f) Which of the following option is used to build complex sentences in knowledge representation?
i) Symbols
ii) Connectives
iii) Quantifier
iv) None of the above
[CO3][L-1]
g) The different types of machine learning are?
i) Supervised
ii) Unsupervised
iii) Reinforcement
iv) All of the above
[CO4][L-3]
h) Among the given options, which search algorithm requires less memory?
i) Optimal Search
ii) Depth First Search
iii) Breadth-First Search
iv) Linear Search
[CO2][L-2]
i) The available ways to solve a problem of state-space-search.
i) 1
ii) 2
iii) 3
iv) 4
j) Knowledge in AI can be represented as:
i) Predicate Logic
ii) Propositional Logic
iii) Both i) and ii)
iv) None of the above
[CO3][L-2] $\mathbf{2 \times 1 0}$

## PART-A

Q. 2 What is AI? Explain the nature of AI. Describe the application areas of AI. [CO1][L-2] 20
Q. 3 What are the objectives of knowledge representation in AI? What are the ways to represent knowledge in AI system? How AI is affecting on real life?
[CO3][L-2] 20
Q. 4 a) What is heuristic function? Differentiate between 'blind search' and 'heuristic search' strategies. Justify with the suitable examples.
[CO2][L-2] 10
b) Explain about the Hill Climbing Algorithm with its drawback and how it can be overcome.

## PART-B

Q. 5 What is rule based system? How many types of rules are there in rule-based system? Describe examples of rule-based expert systems.
[CO3][L-2] 20
Q. 6 What is machine learning? What is the difference between AI and machine learning? What is supervised versus unsupervised learning?
Q. 7 a) What is expert system? What are the major challenges of expert system? [CO5][L2] 10
b) What is artificial neural network based on in AI? What are the two types of artificial neural networks?
[CO5][L-2] 10

# End Semester Examination, May 2023 <br> BCA - Fourth Semester <br> COMPUTER SYSTEM ARCHITECTURE (BCA-DS-406) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.

## Q. 1 Fill in the blanks:

a) Subtraction of 48 from 23 using 2's complement method gives $\qquad$ . [CO-1] [L-3]
b) BCD code of 327.89 is $\qquad$ .

## Choose the correct option:

c) The output $y$ of the following logic circuit is equal to

i) 0
ii) 1
iii) $x$
iv) $\bar{x}$
d) Which one of the following logic expression is incorrect?
[CO-2] [L-2]
i) $1 \oplus 0=1$
ii) $1 \oplus 1 \oplus 0=1$
iii) $1 \oplus 1 \oplus 1=1$
iv) $1 \oplus 1=0$
e) Which of the following expressions is NOT equivalent to $\bar{X}$ ?
[CO-3] [L-2]
i) X NAND X
ii) X NOR X
iii) X NAND 1
iv) X NOR 1
f) A full adder has outputs as:
[CO-3] [L-1]
i) Sum, Carry
ii) Difference, Carry
iii) Sum, Borrow
iv) Only Sum
g) The number of flip-flops required to build a 32-bit register are:
[CO-4] [L-2]
i) 8
ii) 16
iii) 32
iv) 64
h) In a Ring counter.
i) Inverted output is connected to input
ii) Non-inverted output is connected to input
iii) None of the output is connected to input
iv) Inverted and non-inverted outputs are inter-connected
i) In a virtual memory system, the address space specified by address lines of CPU must be $\qquad$ than the physical memory size and $\qquad$ than the secondary
storage size.
[CO-5] [L-1]
i) smaller, larger
ii) larger, smaller
iii) smaller, smaller iv) larger, larger
j) A microprocessor contains.
[CO-5] [L1]
i) ALU, CU
iii) ALU \& Registers
ii) ALU, CU \& Registers
iv) CU \& Registers
$2 \times 10$

## PART-A

Q. 2 a) Determine the following:
i) $(?)_{2}=(?)_{16}=(367.52)_{8}=(?)_{10}$
ii) $(?)_{2}=(\text { B9F.AE })_{16}=(?)_{8}=(?)_{10}$
[CO-1] [L-3] 10
b) For an even parity Hamming code word that was received as 1110111, detect and correct the single bit error, if any.
[CO-1] [L-4] 10
Q. 3 a) Explain basic logic gates and implement the expression $A \bar{B}(C+D)+E F$ using gates.
[CO-2] [L-2] 10
b) Implement AND, OR, NOT and EX-OR gates using NOR gates only. [CO-2] [L-1] 10
Q. 4 a) Simplify the following Boolean expressions to a minimum number of literals and design the logic circuit using NAND gates.
i) $\bar{x} y+x y+x \bar{z}+x \bar{y} \bar{z}$
ii) $\bar{x} \bar{y}+z+z+x y+w z$
[CO-2] [L-3] 10
b) Minimize the following four variable logic function using K-Map and implement the minimized expression using logic gates.
(i) $f(a, b, c, d)=\sum m(5,6,7,9,10,11,13,14,15)$
(ii) $f(x, y, w, z)=\Pi M(1,4,6,9,10,11,14,15)$
[CO-3] [L-4] 10

## PART-B

Q. 5 a) Design a decimal to BCD encoder and discuss its operation using circuit and truth table.
[CO-3] [L-3] 10
b) Construct a 16:1 multiplexer using two 8:1 multiplexers and one 2:1 multiplexer and discuss its working operation.
[CO-3] [L-4] 10
Q. 6 a) What is race around condition in JK flip flop? How is it resolved using a Master-Slave flip-flip? Explain the working operation of JK Master-Slave flip-flop with the help of its circuit diagram.
[CO-4] [L-2] 10
b) Distinguish between synchronous and asynchronous counters and design an asynchronous decade counter and discuss its operation with the help of a circuit diagram and truth table.
[CO-4] [L-4] 10
Q. 7 a) Explain the difference between virtual memory, cache memory and associative memory.
[CO-5] [L-1] 10
b) Draw and discuss the function of key components of a microprocessor. What is pipelining?
[CO-5] [L-1] 10

# End Semester Examination, May 2023 <br> BCA - Fifth Semester <br> DATA COMMUNICATION AND NETWORKING (BCA-DS-501) / (BCA-501A (CB) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Multiple choice questions:
a) The information to be communicated in a data communications system is the
$\qquad$ .
i) Medium
ii) Protocol
iii) Transmission
iv) Message
b) A television broadcast is an example of $\qquad$ transmission.
i) Half-duplex
ii) Full-duplex
iii) Simplex
iv) Automatic
c) In modulo-2 arithmetic, we use the $\qquad$ operation for both addition and subtraction.
i) $X O R$
ii) OR
iii) AND
iv) None of the above
d) The $\qquad$ layer lies between the network layer and the application layer.
i) Data link
ii) Physical
iii) Transport
iv) None of the above
e) CRC stands for $\qquad$ .
i) Cyclic redundancy check
ii) Code repeat check
iii) Code redundancy check
iv) Cyclic repeat check
f) A switched WAN is network.
i) virtual-circuit
ii) datagram
iii) circuit-switched
iv) None of the above
g) The $\qquad$ layer can used trailer of the frame for error detection:
i) Physical
ii) Data link
iii) Transport
iv) Presentation
h) Which of the following is an example of a bounded medium?
i) Coaxial cable
ii) Wave guide
iii) Fiber optic cable
iv) All of the above
i) A switch in a datagram network uses a routing table that is based on the $\qquad$ address:
i) Source
ii) Destination
iii) Local
iv) None of the above
j) An IPv6 address is:
i) 8 bits long
ii) 16 bits long
iii) 32 bits long
iv) 128 bits long
[CO1] [L2] $\mathbf{2 \times 1 0}$

## PART-A

Q. 2 a) Describe 'Data Communication Network'. What are basic elements of communication?
[CO2] [L2] 10
b) Write short notes on:
i) Multiplexing techniques.
ii) Cyclic redundancy check in error detection.
Q. 3 a) Explain OSI reference model and its various layers with the help of diagrams.
[CO3][L3] 10
b) What is topology? Explain the advantages and disadvantages of each topology in detail.
Q. 4 Write short notes on the following:
a) DNS.
b) IEEE802.1
c) IPv4 and IPv6 Addresses.
d) $\mathrm{TCP} / \mathrm{IP}$.
[CO5] [L3] 5×4

## PART-B

Q. 5 Explain 'unicast and multicast routing'. What are various types of linking? Explain with the help of examples.
[CO6] [L3] 20
Q. 6 Write short notes on the following:
a) Transport layer.
b) Routing protocols.
[CO6] [L3] $\mathbf{1 0 \times 2}$
Q. 7 Discuss the architecture of Bluetooth technologies with suitable diagrams.
[CO5] [L3] 20

# End Semester Examination, May 2023 <br> BCA - Fifth Semester <br> RDBMS USING ORACLE (BCA-DS-502) / (BCA-503A (CB) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. $\mathbf{1}$ is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Answer the following questions:
a) Which is not an aggregate function?
i) Min.
ii) Max.
iii) Select,
iv) Avg.
b) In hierarchical model, data is organized into:
i) Logical structure,
ii) Physical structure,
iii) Tree like structure,
iv) None of the above.
c) A transaction completes its execution is said to be:
i) Saved
ii) Loaded
ii) Rolled
iv) Committed.
d) The execution sequences in concurrency control are termed as:
i) Serials
ii) Schedules
iii) None of the above
iv) All of the above.
e) What do you mean by concurrent transaction?
f) The VARCHAR2 data type is used to store:
i) Variable length character,
ii) Fixed length character,
iii) None of the above
iv) All of the above.
g) Exception can be declared only in:
i) Begin
ii) Declarative
iii) None of the above
iv) All of the above
h) What are the causes of failures?
i) Describe group by clause.
j) Define all data types of SQL.
[CO2, 3] [L1] $\mathbf{2 \times 1 0}$

## CO-5 L1 $\mathbf{2 \times 1 0}$

## PART-A

Q. 2 Discuss (any five) of the following with syntax, purpose and example:
a) Union operator.
b) Union all.
c) Group by.
d) Distinct.
e) Length.
f) Delete.
[CO2] [L1] $\mathbf{4 \times 5}$
Q. 3 a) Construct an E-R diagram for a hospital with a set of patients and a set of medical doctors. Associate with each patient, a log of various tests and examinations conducted. Also, determine the entities, attributes and primary key in the table 15.
b) Differentiate between "Hierarchical", "Network" and "Relational" database models with their relative merits and demerits.
Q. 4 a) What do you mean by data independence? Differentiate between "Logical" and
"Physical" structure of a database.
b) Explain "Oracle" memory structure in context to ORDBMS.

## PART-B

Q. 5 a) What are packages? Write the advantages of packages. What are components of an oracle packages? Explain the importance of each.
[CO5] [L2] 10
b) What are different modes of arguments in subprograms? Compare each mode.
[CO5] [L2] 10
Q. 6 a) Differentiate between SQL and PL/SQL.
[CO1] [L3] 5
b) Discuss various control structures available in PL/SQL. Give example of each. [CO2] [L3] 15
Q. 7 Define various decision making statements with the help of suitable examples used in PL/SQL.
[CO2] [L2] 20

# End Semester Examination, May 2023 <br> BCA - Fifth Semester <br> PYTHON PROGRAMMING ((BCA-DS-503) / (BCA-506(CB))) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.

## Q. 1 Multiple choice questions:

a) Which keyword is used to generate an exception?
i) Throw
ii) Raise
iii) Generate
iv) Try
[CO4] [L1]
b) Which data structure allows you to return multiple values from a function?
i) List
ii) Tuple
iii) Dictionary
iv) Set
[CO3] [L1]
c) Which method is used to read a single line from the file?
i) $\operatorname{Read}()$
ii) readline()
iii) readlines()
iv) reads()
[CO4] [L1]
d) Which of the following word can be used to add something to the end of the string?
i) Concatenate
ii) Append
iii) Join
iv) Add
[CO3] [L1]
e) Arbitrary arguments have which symbol in the function definition before the parameter name?
i) \&
ii) \#
iii) \%
iv) *
[CO3] [L1]
f) Pass is null statement
i) True
ii) False
[CO2] [L1]
g) Variable names can start with numbers.
i) True
ii) False
[CO2] [L1]
h) Python support OOP.
i) True
ii) False
[CO1] [L1]
i) Which keyword is used to start a function?
i) Def
ii) Function
iii) Try
iv) Import
[CO4] [L1]
j) Which function is used to open the file for reading in python?
i) Fopen(filename.mode)
ii) Openfile(filename,mode)
iii) Open(filename,mode)
iv) Open_file(filename,mode)[CO4] [L1] $\mathbf{2 \times 1 0}$

## PART-A

Q. 2 Differentiate between the following with the help of a suitable example:
a) Counter controlled and conditioned controlled loop.
b) List and dictionary.
c) Break and continue.
d) Keywords and variables.
Q. 3 Describe the different data types available in Python. Explain the use of each data type with the small program.
Q. 4 Write a program that has a dictionary of words in English language and their corresponding words in Hindi. Add another English word in the predefined dictionary; print all the items in the dictionary and try to print Hindi words for a English word that does not exist.
[CO5] [L3] 20

## PART-B

Q. 5 What are different access modes in which you can open a file? Differentiate between text and binary files. Explain the utility of open() function.
[CO4] [L3] 20
Q. 6 What will happen if an exception generated in try block is immediately followed by a finally block? Discuss both the cases (except block present and except block not present)
[CO4] [L3] 20
Q. 7 Explain the following with a suitable code:
a) Keyword arguments.
b) Default arguments.
c) Lambda functions.
d) String functions.

# End Semester Examination, May 2023 <br> BCA - Fifth Semester <br> INTRODUCTION TO CLOUD COMPUTING (BCA-DS-505) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.

## Q. 1 Multiple choice questions:

a) Which of the following is essential concept related to Cloud?
i) Reliability
ii) Productivity
iii) Abstraction
iv) All of these
[CO1] [L1]
b) Which of the following is Cloud Platform by Amazon?
i) Azure
ii) AWS
iii) Cloudera
iv) All of these
[CO2] [L1]
c) Which of the following cloud concept is related to pooling and sharing of resources?
i) Polymorphism
ii) Abstraction
iii) Virtualization
iv) None of these
[CO2] [L1]
d) $\qquad$ serves as a PaaS vendor within Google App Engine system.
i) Google
ii) Amazon
iii) Microsoft
iv) None of these
[CO3] [L1]
e) Which of the following is not an advantage of cloud?
i) No worries about running out of storage.
ii) Easier to maintain a cloud network.
iii) Immediate access to computing resources.
iv) Paying only for what you use.
[CO1] [L1]
f) Which of the following allows you to create instances of the MySQL database to support your Web sites?
i) Amazon Elastic Compute Cloud.
ii) Amazon Simple Queue Service.
iii) Amazon Relational Database Service.
iv) Amazon Simple Storage System.

## Fill in the blanks:

g) Pods are managed by $\qquad$ .
h) Any two examples of PaaS platforms are $\qquad$ and $\qquad$ . [CO2] [L1]
i) Onion encryption layers are $\qquad$ , $\qquad$ , $\qquad$ and $\qquad$ . [CO5] [L1]

## State TRUE or FALSE:

j) A Cloud environment can be accessed from anywhere in the world as long as the user has access to the internet.
[CO1] [L1] $\mathbf{2 \times 1 0}$

## PART-A

Q. 2 a) What are the fundamental components introduced in the cloud reference model?
[CO1] [L1] 10
b) How does cloud development differentiate from traditional Software development?
[CO1] [L2] 10
Q. 3 How can one say that the cloud computing visualizes the different cloud models with respect to services? How does it take into account that different types of services can be offered as cloud services? Explain in detail.
[CO2] [L2] 20
Q. 4 Define 'virtualization'. Why virtualization is important in cloud Computing? Also compare virtual machine with a physical machine. Write the steps to create a virtual machine in using VMware.
[CO3] [L2] 20

## PART-B

Q. 5 What are the different security challenges in cloud computing? Discuss each in brief. Also explain the security reference architecture of cloud with a neat diagram. [CO5] [L2] 20
Q. 6 Compare AWS and Azure on the basis of following parameters:
a) Compute.
b) Storage.
c) Databases.
d) Pricing.
e) Uptime.
f) Troubleshooting and monitoring.
[CO4] [L3] 20
Q. 7 What are the different terms involved in managing and administering the cloud? Also discuss different level of trusts in cloud computing.
[CO6] [L2] 20

# End Semester Examination, May 2023 <br> BCA - Sixth Semester <br> PROGRAMMING IN .NET USING C\# (BCA-DS-601) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Choose the correct option:
a) Why is Global.asax is used?
[CO-2] [L-2]
i) Declare Global variables
ii) Implement application and session level events
iii) No use
iv) None of the above
b) Default session data is stored in ASP.Net.
[CO-3] [L-2]
i) State Server
ii) Session Object
iii) In Process
iv) all of the above
c) Default scripting language in ASP.
i) Ecma Script
ii) VBScript
iii) PERL
iv) Java Script
[CO-4] [L-2]
d) Which object can help you maintain data across users?
i) Application object
ii) Session object
iii) Response object
iv) Server object
e) Which of the following ASP.NET object encapsulates the state of the client?
i) Session object
ii) Application object
iii) Response object
iv) Server object
f) Which of the following control is used to validate that two fields are equal?
i) Regular expression validator
ii) Compare validator
iii) Equals () method
iv) Required field validator
[CO-4] [L-2]
g) Mode of storing ASP.NET session.
i) In Proc
ii) State Server
iii) SQL Server
iv) All of the above
h) Which of the following is not the way to maintain state?
[CO-3] [L-2]
i) View state
ii) Cookies
iii) Hidden fields
iv) Request object
i) What are the types of cookies?
[CO-4] [L-2]
i) Session cookies
ii) Persistent cookies
iii) Dummy cookies
iv) Option i) and ii) are correct
j) What are the advantages of AJAX?
i) AJAX is a platform-independent technology
ii) It provides partial-page updates
iii) Improved performance
iv) All of the above
[CO-3] [L-3] $\mathbf{2 \times 1 0}$

## PART-A

Q. 2 a) How .NET framework provide a complete environment that allows developers to develop, run, and deploy the various applications? Explain its architecture with the help of suitable diagrams.
[CO-2] [L-2] 10
b) List out the three different ways through which the hidden member of the base class can be accessed from the derived class. Implement the concept with the help of suitable example.
[CO-3] [L-3] 10
Q. 3 Write short notes on:
a) Loop statements.
b) Data types.
c) Array.
d) Decision statements.
Q. 4 a) Discuss the requirement of Method Overloading. Write a program to show the concept of method overloading.
[CO-5] [L-3] 10
b) Justify the statement that C\# does not support multiple inheritances with an example. Provide a solution on how we can implement multiple inheritances in C\#.
[CO-3] [L-5] 10

## PART-B

Q. 5 a) Write short notes on:
i) Message Box.
ii) Dialog Box.
[CO-3] [L-3] 5×2
b) Create a students registration form using the various windows form controls according to your requirement and also describe the usage of each controls.
[CO-4] [L-4] 10
Q. 6 a) List out the main classes involved in ADO.NET. Describe the role of each class in making a database transaction.
[CO-4] [L-2] 10
b) Discuss the role of the data reader class in ADO.NET connections. Differentiate between a data reader and a data set.
[CO-4] [L-4] 10
Q. 7 a) "The Microsoft ASP.NET framework includes several options to create web services and applications". Analyze the various features of ASP.Net that are used to create dynamic web pages.
[CO-5] [L-4] 10
b) Create a program to perform the insert operation using ADO.NET in Employee table (Id, Name, age, salary) and display the confirmation message using a message box after performing the operation.
[CO-4] [L-5] 10

# End Semester Examination, May 2023 <br> BCA - Sixth Semester <br> DATA WAREHOUSING (BCA-DS-602/BCA-605A (CB)) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 1
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.

## Q. 1 Answer the following in brief:

a) Give one difference between database and data warehouse.
b) Give one algorithm of classification technique.

## Fill in the blanks:

c) Noise is defined as $\qquad$ .
d) Data cube can be defined as $\qquad$ .
e) MOLAP is $\qquad$ .
f) The first step of the process of extracting knowledge using data mining is $\qquad$ .
g) $\qquad$ tiers are present in data warehouse model.
h) Data warehouse can be $\qquad$ and $\qquad$ .
i) In Snowflake model of data warehouse the number of fact tables is always $\qquad$ .
j) Full form HOLAP is $\qquad$ .

## PART-A

Q. 2 a) Explain all the essential features of data warehouse with suitable examples.
[CO-1] [L-2] 10
b) "Data warehouse is subject oriented". Do you agree with this statement? Give reasons in support of your answer.
[CO-2] [L-4] 10
Q. 3 a) Explain the following terms:
i) Data mart.
ii) Data dictionary.
[CO-3] [L-2] 10
b) Compare and contrast the snowflake and fact constellation model of data warehouse.
[CO-3] [L-4] 10
Q. 4 a) What is Noise in data? Explain the methods through which noise can be removed from data.
[CO-3] [L-2] 10
b) Differentiate the following:
i) ROLAP and MOLAP server.
ii) Distributed and virtual data warehouse.
[CO-3] [L-4] 10

## PART-B

Q. 5 a) Explain the following terms related to data warehouse:
i) Extraction.
ii) Transformation.
iii) Loading.
iv) Pre processing.
[CO-4] [L-2] 10
b) Explain the following OLAP techniques:
i) Slicing.
ii) Roll up.
[CO-5] [L-2] 10
Q. 6 Explain the K-Means algorithm of Clustering technique with the help of an example.
[CO-6] [L-2] 20
Q. 7 Analyze the need of data mining techniques in the following areas:
a) Supermarkets.
b) Healthcare.
[CO-6] [L-4] 20

## End Semester Examination, May 2023 <br> BCA - Sixth Semester <br> SECURITY OF INFORMATION SYSTEM (BCA-DS-603/BCA-606A (CB))

Time: 3 hrs
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART A and TWO questions from PART B. Marks are indicated against each question.
Q. 1 Choose the correct option:

2X10
a) Compromising secret information comes under:
i) Threat
ii) Vulnerability
iii) Bug
iv) Attack
b) SSL is known as $\qquad$ .
i) Serial session layer
ii) Secure socket layer
iii) Session secure layer
iv) Series socket layer
c) When plain text is converted to unreadable format, it is termed as $\qquad$
i) rotten text
ii) raw text
iii) cipher-text
iv) plain-text
d) If the plain text is of 560 bit and the block size is of 32 bit then how many bits are required for padding?
i) 26 bit
ii) 24 bit
iii) 16 bit
iv) 18 bit
e) By using rail fence of depth 2 encryption of the text "stay home stay safe" will be
i) sasfsahmtyaetyoe
ii) shsstotaamafyeye
iii) sthostsaaymeayfe
iv) none of these
f) Data encryption standard is a $\qquad$ .
i) byte cipher
ii) stream cipher.
iii) bit cipher
iv) block cipher
g) Examples of hash functions are $\qquad$ .
i) MD5
ii) SHA-1
iii) Both i) and ii)
iv) None of the above
h) $\qquad$ designed the Advanced Encryption Standard (AES) algorithm.
i) Intel
ii) IBM
iii) National Institute of Standards and Technology
iv) HP
i) A one-time secret session key for two parties can be generated using $\qquad$ .
i) RSA
ii) Diffie-Hellman
iv) AES
j) $\qquad$ enables a hacker to open a piece of program or application and re-build it with further features \& capabilities.
i) Social engineering
ii) Reverse engineering
iii) Planting malware
iv) Injecting code
Q. 2 a) Explain "why the security of information is of great concern to any given organization that decides to computerize its operations". Explain the core component of the Information system. [CO-2][L-2] 10
b) Explain the security software development life cycle with a suitable example.
[C0-1][L-2] 10
Q. 3 "Information security threats can exploit vulnerabilities in information technology system". Explain the various threats to information security.
[CO-1][L-2] 20
Q. 4 a) What is the importance of risk management in information security? Explain the stages of information security risk management.
[CO-4][L-2] 10
b) Every organization holds and processes confidential and personal information of private individuals, employees, partners, suppliers and information relating to its own operations. Illustrate through which framework organizations can protect their information assets.
[CO-4][L-2] 10

## PART-B

Q. 5 Why RSA algorithm is considered as a most secure way of communication? Suppose Ram wants to generate his encryption and decryption key with the help of RSA. Explain the step by step process for generation of keys in RSA Algorithm. Generate the keys by selecting two prime no as $\mathrm{p}=17$ and $\mathrm{q}=11$ and encode and decode the message " HI ".
[CO-3][L-3,6] 20
Q. 6 a) Explain how public key infrastructure ensure the security of public keys. Also, explain the components of public key infrastructure in detail.
[CO-3][L-2] 10
b) Write short notes on the following:
i) IP and Web security protocols.
ii) Digital certificates.
[CO-2][L-2] 5×2
Q. 7 a) List out the firewall design principles which can ensure that you have a most secure defense system for your organisation.
[CO-3][L-2] 8
b) How SET protocols provide security in credit card transactions? Illustrate it with the help of suitable diagrams.
[CO-3][L-2] 12

# End Semester Examination, May 2023 <br> BCA - Sixth Semester <br> MULTIMEDIA AND ANIMATION <br> (BCA-DS-604/BCA-603A (CB)/BCA-603(CB)) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Choose the correct option:
a) $\qquad$ is basically a form of pictorial presentation.
i) Photography
ii) Animations
iii) Drawing
iv) Creativity
b) The faster the frames are displayed, $\qquad$ .
i) The rougher the video appears
ii) The smoother the video appears
iii) It gets blurry
iv) None of the mentioned
c) A smaller version of an image is called a:
i) Clipart
ii) Bitmap
iii) Portable network graphic
iv) Thumbnail
d) The characteristic of the eye to retain the image for a short time after it has been presented is known as $\qquad$ .
i) Persistence of vision
ii) Learning power
iii) Memory mapped input
iv) None of the mentioned
e) $\qquad$ audio/video refers to the use of the internet for interactive audio/video applications.
i) Interactive
ii) Streaming Live
iii) Streaming Stored
iv) none of the above
f) All of the following are technologies used to gather information about you online except $\qquad$ .
i) spy ware
ii) cookies
iii) gmail
iv) anonymizers
g) The "ROM" in "CD-ROM" stands for:
i) Random order memory
ii) Real-object Memory
iii) Read-only memory
iv) raster -output memory
h) A printed page might be presented in which of these orientations?
i) newscape
ii) portrait
iii) flat-file
iv) $x$-height
i) A $\qquad$ is the set of planned activities designed to result in a profit in marketplace.
i) Business model
ii) Profit model
iii) Revenue model
j) Real time streaming is most useful for $\qquad$ .
i) Short video clips
ii) Long video clips
iii) Extremely short and low quality videos
iv) None of the mentioned
[CO-1,5] L-1,3] $\mathbf{2 \times 1 0}$

## PART-A

Q. 2 What do you understand by the term Multimedia? Explain the impact of Multimedia on the social networking sites of society.
[CO-1] [L-2] 20
Q. 3 a) Elaborate on Hypermedia and Hypertext applications. Give their advantages. $\mathbf{1 0}$
b) Discuss various Font Editing and Design tools.
[CO-2] [L-3] 10
Q. 4 a) How can we use images effectively in multimedia? Differentiate vector from raster images.
b) Differentiate between MIDI and Digital Audio.

## PART-B

Q. 5 a) Mention various principles of animation.
[CO-4] [L-1] 10
b) List the various softwares used for 2D animation and 3D animation. How is 2D different from $21 / 2 \mathrm{D}$ animations?
[CO-4] [L-4] 10
Q. 6 Write short notes on (any two):
a) Working of a video and its display.
b) Obtaining video clips.
c) Shooting and editing video.
Q. 7 a) How various stages of multimedia project collaborate to form a final product? Explain the role of each stage.
[CO-6] [L-5] 10
b) What are hardware and software requirements of multimedia projects? [CO6][L1] 10

# End Semester Examination, May 2023 <br> BCA - Sixth Semester <br> BASICS OF MIS AND ERP (BCA-DS-605/BCA604A (CB)) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Answer the following in brief:
a) Why information is a quality product? Discuss its classification.
b) What is an ERP system?
c) Identify the correct statement:
i) The only problem with the package vendors is that they are very expensive.
ii) The only problem with the business consultants is that they are very expensive.
iii) The only problem with the employee training is that it is very expensive.
iv) The only problem with the planning of implementation is that it is very expensive.
d) What is the requirement for a system to qualify as a true ERP solution?
i) Be flexible
ii) Be modular and closed
iii) Extend within the company
iv) All of the above
e) Which of the following occurs when everyone involved in sourcing, producing, and delivering the company's product works with the same information?
i) Eliminates redundancies
ii) Cuts down wasted time
iii) Removes misinformation
iv) All of the above
d) When a customer needs to check the performance of the company before he places an order, which department has to be in a position to provide the necessary information?
i) Production
ii) Quality
iii) Marketing
iv) Finance
e) Data mining is the process of identifying valid, new, potentially useful, and ultimately
clear $\qquad$ from databases.
i) Decision
ii) Strategies
iii) Information
iv) Account
f) $\qquad$ module supports the entire sales and purchase processes from start to finish.
i) Order management
ii) Sales management
iii) Purchase management
iv) Master data management
g) What do you mean by error handling?
h) What are the causes of failures?
i) Describe Group by clause.
j) Define all datatypes of SQL. [CO-2,5]

## PART-A

Q. 2 a) Discuss several organizational sectors using MIS. Also, explain their various functional models in detail.
[CO-1] [L-2] 10
b) "ERP systems have been widely adopted in large organizations to store critical knowledge used to make the decisions that drive the organization's performance." Explain ERP with its benefits and limitations.
[CO-2] [L-2] 10
Q. 3 What are the methods of data and information collection? Discuss general model of information processing. Also explain MIS software and MIS team in detail. [CO2][L1] 20
Q. 4 Explain the following with examples:
a) Staff training and functional manuals of MIS. 10
b) Scheduling of activities in MIS. 10

## PART-B

Q. 5 a) What is decision support system? What are its roles and applications?
b) Discuss various DSS models with their working.
Q. 6 What are the distinctive objectives of MIS in service sector? Why the service of MIS is distinctive? Also discuss various activities of service sector implemented in MIS.
[CO-6] [L-2] 20
Q. 7 Write short notes on:
a) Security of management of information systems.
b) Privacy issues.
[CO-4] [L-2] $\mathbf{1 0 \times 2}$

# End Semester Examination, May 2023 <br> OPEN ELECTIVE - COMMON FOR ALL BRANCHES <br> PC HARDWARE AND TROUBLESHOOTING (BCA-OE-004) 

Time: 3 hrs.
Max Marks: $\mathbf{1 0 0}$
No. of pages: 2

> Note: Attempt FIVE questions in all; Q. $\mathbf{1}$ is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Multiple choice questions:
a) Cold Booting refers to:
[CO-1] [L-1]
i) Turning on a computer from off state
ii) Restarting a computer
iii) Troubleshooting a computer
iv) Upgrading a computer
b) Which of the following is a system software?
[CO-1] [L-1]
i) MS-Word
ii) Windows
iii) Google Chrome
iv) Video player
c) Which of the following is an impact printer?
[CO-2] [L-2]
i) Laser printer
ii) Inkjet Printer
iii) Dot matrix printer
iv) both a \& b
d) Which one is the fastest Intel processor?
[CO-1] [L-2]
i) Celeron
ii) Pentium IV
iii) i3
iv) Atom
e) USB drive is?
i) Primary memory
ii) Secondary memory
iii) Cache memory
iv) Not a memory
f) A computer program that copies itself to other computers across the internet is called:
[CO-5] [L-4]
i) Virus
ii) Trojan Horse
iii) Worm
iv) Antivirus
g) BIOS is:
ii) Hardware
iii) Input device
iv) Output device
i) Software
h) North Bridge is a:
[CO-3] [L-3]
[CO-3] [L-2]
i) Memory
ii) IC
iii) Bus
iv) Software
i) Which of the following expansion bus is fastest? [CO-4] [L-2]
a) AGP
b) PCI-X
c) ISA
d) PCI-E
j) 3 beeps during POST indicates the failure of:
a) Processor
b) RAM
c) Keyboard controller
d) Display memory

## PART-A

Q. 2 a) Explain different blocks of PC and discuss relationship between hardware and software. What are peripheral devices?
[CO-1] [L-1] 10
b) Discuss in brief different types of computers and processor generations. [CO1][L1] 10
Q. 3 a) Write short notes on the following:
i) Interrupt controller.
ii) CRT controller.
[CO-2] [L-2] 10
b) Categorize printer types and discuss key features of each subtype in brief.
[CO-2] [L-2] 10
Q. 4 a) Differentiate between L1 and L2 types of cache memory.
[CO-3] [L-2] 10
b) Explain the concept of logical and physical organization of memory. [CO-3] [L-3] 10

## PART-B

Q. 5 a) Write key difference between North and South Bridge on the motherboard.
[CO-2] [L-3] 10
b) Discuss with the help of suitable diagram or flowchart the process of booting in computer. What are POST and its significance?
[CO-4] [L-4] 10
Q. 6 a) Explain the stepwise process of installing OS and service packs on the PC.
[CO-4] [L-2] 10
b) Discuss the key features of system buses: PCI and AGP.
[CO-4] [L-2] 10
Q. 7 a) Describe various methods of troubleshooting and diagnosing the PC. List different beep codes errors during POST and associated problems.
[CO-5] [L-4] 10
b) Discuss 7 ways how you can protect your PC from various threats?
[CO-5] [L-4] 10

# End Semester Examination, May 2023 

B.Sc. (Information Technology) - Sixth Semester

DATA MINING (BSCA-DS-601)
Time: 3 hrs.

Max Marks: 100
No. of pages: 2

Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 a) Which of the following is applied on warehouse?
i) write only
ii) read only
iii) both i) and ii)
iv) none of these
b) Data can be store, retrieve and updated in ...
i) SMTOP
ii) OLTP
iii) FTP
iv) OLAP
c) Which of the following is a good alternative to the star schema?
i) Snow flake schema
ii) Star schema
iii) Star snow flake schema
iv) Fact constellation
d) Patterns that can be discovered from a given database are which type...
i) More than one type
ii) Multiple type always
iii) One type only
iv) No specific type
e) Which of the following is true for classification?
i) A subdivision of a set
ii) A measure of the accuracy
iii) The task of assigning a classification
iv) All of these
f) Data mining is?
i) Time variant non-volatile collection of data
ii) The actual discovery phase of a knowledge
iii) The stage of selecting the right data
iv) None of these
g) $\qquad$ is not a data mining functionality?
i) Clustering and Analysis
ii) Selection and interpretation
iii) Classification and regression
iv) Characterization and Discrimination
h) Which of the following can also applied to other forms?
i) Data streams and sequence data
ii) Networked data
iii) Text and spatial data
iv) All of these
i) Which of the following is general characteristics or features of a target class of data?
i) Data selection
ii) Data discrimination
iii) Data classification
iv) Data characterization
j) $\qquad$ is the output of KDD
i) Query
ii) Useful information
iii) Data
iv) Information

## PART-A

Q. 2 a) Differentiate between data 'warehousing and data mining'.
[CO-1] [L-1] 10
b) What do you understand about a fact table in the context of a data warehouse? What are the different types of fact tables?
[CO-2] [L-1] 10
Q. 3 a) Explain 'data mart' and how is it different from a data warehouse?
[CO-2] [L-1] 5
b) Draw data warehouse architecture and explain it in detail.
[CO-1] [L1] 10
c) Draw the architecture of data mining and explain it in detail.
[CO-3] [L-1] 5
Q. 4 a) Explain schemas for data model: star, snowflake and fact constellation. [CO2][L1] 5
b) Differentiate between 'OLTP' and 'OLAP'.
[CO-1] [L-1] 5
c) Differentiate between 'ROLAP Vs. MOLAP'.
[CO-3] [L-1] 10

## PART-B

Q. 5 a) Explain multi-level association rules with suitable examples.
b) Explain kNN (k Nearest Neighbors) algorithm with suitable example. [CO-5] [L-1] 5
c) What is cluster analysis? Explain advantages and disadvantages of it. [CO5][L1] 10
Q. 6 a) Explain Partitioning Methods: k-Means and k-Medoids with suitable examples.
b) Differentiate between 'classification and prediction'.
c) Describe Apriori algorithm and its application.
Q. 7 a) What is correlation analysis? Explain with suitable examples.
b) Differentiate between 'fact table' and 'dimension table'.
c) Explain the Bayesian classification with suitable examples.
[CO-5] [L-1] 5

# End Semester Examination, May 2023 

B.Sc. (Information Technology) - Sixth Semester

SOFTWARE TESTING (BSCA-DS-602)
Time: 3 hrs.
Max Marks: $\mathbf{1 0 0}$
No. of pages: 1
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Answer the following in brief:
a) What is validation?
b) How many levels are there in CMM model? Name them.
c) Describe any four attributes of software quality.
d) Give an overview for testing process of a software.
e) Distinguish between 'software quality control' and 'quality assurance'.
f) Discuss the environment where alpha and beta testing are conducted.
g) Software mistakes during coding is known as $\qquad$ .
h) For a function of a variables, robust-testing yields $\qquad$ test cases.
i) Mutation testing is one form of $\qquad$ testing.
j) Test suite is a $\qquad$ .
$[C O-2,5][L-1] \mathbf{2 \times 1 0}$

## PART-A

Q. 2 Explain the following terms:
a) Quality assurance.
b) Test execution.
c) Test environment.
d) Test team organization.
Q. 3 a) There are too many possible paths through the progress to test. How can one calculate and ensure that all possible paths has been executed and tested with sufficient test cases?
b) Why does software testing needs extensive planning?
[CO-3] [L-5] 10
Q. 4 What is white Box Testing? Explain any one method of this testing with suitable testing example.
[CO-3] [L-3] 20

## PART-B

Q. 5 What is testing? Explain software testing life cycle process, with the help of a suitable diagram.
[CO-1] [L-1] 20
Q. 6 What is software quality attributes? Explain McCall model of software quality.
[CO-5] [L-2] 20
Q. 7 Differentiate between the following:
a) Regression testing and Re-test
b) Manual testing and automated testing
c) Software testing and quality assurance
d) Verification and validation
[CO-3] [L-3] 5×4

## End Semester Examination, May 2023

B. Sc. (Information Technology) - Sixth Semester

## MACHINE LEARNING (BSCA-DS-603)

Time: 3 hrs.
Max Marks: 100
No. of pages: 1
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Answer the following in brief:
a) The following numbers represent the ages of people on a bus: $3,6,27,13,6,8,12$, 20,5,10. Calculate the mean of their ages.
b) List the areas where machine learning can be applied.
c) In how many types does machine learning can be broadly classified?
d) What is bias in machine learning?
e) What is over fitting and under fitting in machine learning?
f) What is the difference between a regression problem and classification problem?
g) What are some common machine learning problems that unsupervised learning can help with?
h) How do you choose between supervised and unsupervised learning?
i) What do you understand by reinforcement learning?
j) Which python library is used for handling text mining?
$[C O-1,2,3,4,5][\mathrm{L}-2] \mathbf{2 \times 1 0}$

## PART-A

Q. 2 a) There's a game where you are asked to roll two fair six-sided dice. If the sum of the values on the dice equals seven, then you win $\$ 21$. However, you must pay $\$ 5$ to play each time you roll both dice. Do you play this game? And in the follow-up: If you play it 6 times what is the probability of making money from this game?
[CO1][L3] 6
b) What is 'training Set' and 'test Set' in a Machine Learning Model? How much Data will you allocate for your Training and Test Sets?
[CO-2] [L-3] 8
c) What are the applications of machine learning in modern businesses? [CO-2] [L-3] 6
Q. 3 a) Discuss the KNN algorithm with the help of an example.
[CO-3] [L-3] 10
b) How will you evaluate the classifiers? Discuss at least two methods by taking suitable examples.
[CO-5] [L-3] 10
Q. 4 a) Explain the concepts of clustering approaches. How it differs from classification?
[CO-3] [L-3] 10
b) Discuss the applications of clustering and identify advantages and disadvantages of clustering algorithm.
[CO-4] [L-2] 10

## PART-B

Q. 5 What is the importance of cleaning text in machine learning? How will you prepare text data ready for applying the machine learning algorithm? Discuss.
[CO-4] [L-3] 20
Q. 6 Write short notes on the following:
a) Use of ensemble method.
b) Bagging.
c) Boosting.
d) Stacking.
[CO-5] [L-3] $\mathbf{5 \times 4}$
Q. 7 What do you mean by reinforcement learning? What are the components of reinforcement learning? Also, discuss its applications in detail.

## End Semester Examination, May 2023 <br> B. Sc. (Information Technology) - First Semester <br> PROGRAMMING AND PROBLEM-SOLVING USING C (BSCIT-DS-101)

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.

## Q. $1 \quad$ Choose the correct option:

a) Who is the father of C language?
i) Steve Jobs
ii) James Gosling
iii) Dennis Ritchie
iv) Rasmus Lerdorf
b) Which of the following is not a valid C variable name?
i) int number;
ii) float rate;
iii) intvariable_count;
iv) int \$main;
c) All keywords in C are in $\qquad$ .
i) Lower case letters
ii) Upper case letters
iii) Camel case letters
iv) None of the above
d) Which of the following is true for variable names in C?
i) They can contain alphanumeric characters as well as special characters.
ii) It is not an error to declare a variable to be one of the keywords (like goto, static)
iii) Variable names cannot start with a digit
iv) Variable can be of any length
e) Which is valid C expression?
i) intmy_num $=100,000$;
ii) intmy_num = 100000;
iii) int my num = 1000;
iv) int \$my_num = 10000;
f) Which of the following cannot be a variable name in C?
i) volatile
ii) true
iii) friend
iv) export
g) What is short int in C programming?
i) The basic data type of $C$
ii) Qualifier
iii) Short is the qualifier and int is the basic data type
iv) All of the above
h) Which keyword is used to prevent any changes in the variable within a C program?
i) immutable
ii) mutable
iii) const
iv) volatile
i) What is the result of logical or relational expression in C?
i) True or False
ii) 0 or 1
iii) 0 if an expression is false and any positive number if an expression is true
iv) None of the above
j) Which of the following typecasting is accepted by C language?
i) Widening conversions
ii) Narrowing conversions
iii) Widening and narrowing conversions
iv) None of the above

## PART-A

Q. 2 a) Describe the concept of variable and explain the need/purpose of global variables and their scope and lifetime.
b) Chart the various types of operators in tabular form with example.
Q. 3 Briefly describe the following:
a) Calloc vs Malloc.
b) Explain struct keyword with suitable example.
c) Union vs bitfields.
d) Arrays.
[CO2] [L2] 5×4
Q. 4 a) What are arrays? How many types of array do C support? Give the advantages and disadvantages of arrays.
[CO3] [L2] 10
b) Create a program in C to find number of vowels, constants and digits in a given string.
[CO3] [L2] 10

## PART-B

Q. 5 a) Write a program to demonstrate call-by-value and call-by-reference concept. [CO4] [L2] 10
b) Explain pointer to a function. Write a program to explain the same.
[CO4][L2] 10
Q. 6 a) Discuss about structures and their need. Explain with suitable example. [CO5] [L2] 10
b) Differentiate between:
i) While loop and do while loop.
ii) Variable and identifier.
[CO5] [L2] 5×2
Q. 7 a) Write a program to display the given output.
i)
ii)
1 12345
12 1234
123 123
1234
12
12345
1
[CO6] [L5] 10
b) Differentiate between const and static keywords with suitable example.[CO6][L5]

10

# End Semester Examination, May 2023 

B. Sc. (Information Technology) - First Semester

OPERATING SYSTEM (BSCIT-DS-102)
Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.

## Q. 1 Choose the correct option:

a) Where is the operating system placed in the memory?
i) Either low or high memory (depending on the location of interrupt vector)
ii) In the low memory
iii) In the high memory
iv) None of the above
b) If a process fails, most operating system write the error information to a $\qquad$ .
i) New file
ii) Another running process
iii) Log file
iv) None of the above
c) Using transient code, $\qquad$ the size of the operating system during program execution.
i) Maintains
ii) Changes
iii) Increases
iv) Decreases
d) The operating system maintains a $\qquad$ table that keeps track of how many frames have been allocated, how many are there, and how many are available?
i) Memory
ii) Mapping
iii) Page
iv) Grame
e) The real difficulty with SJF in short term scheduling is $\qquad$ .
i) It is too good an algorithm
ii) Knowing the length of the next CPU request
iii) It is too complex to understand
iv) None of the above
f) When was the first operating system developed?
i) 1948
ii) 1949
iii) 1950
iv) 1951
g) Banker's algorithm is used?
i) To prevent deadlock
ii) To deadlock recovery
iii) To solve the deadlock
iv) None of the above
h) The state of a process is defined by $\qquad$ .
i) The final activity of the process
ii) The activity just executed by the process
ii) The activity to next be executed by the process
iv) The current activity of the process
i) Choose one of the disadvantages of the priority scheduling algorithm.
i) It schedules in a very complex manner
ii) Its scheduling takes up a lot of time
iii) It can lead to some low priority process waiting indefinitely for the CPU
iv) None of the above
j) The larger the block size, the $\qquad$ the internal fragmentation.
i) Greater
ii) Lesser
iii) Same
iv) None of the above.
Q. 2 a) List out different services of operating systems and explain each service.
b) Describe process states with the help of a process transition diagram. [CO1] [L1] 10
Q. 3 a) What are the necessary conditions that the process should satisfy to prevent it from entering the critical section?
[CO1] [L2] 8
b) Describe the bounded - buffer problem and give a solution for the same using semaphores. Write the structure of producer and consumer processes.[CO2] [L3] 12
Q. 4 a) Consider the following set of processes, with the length of CPU-burst time given in milliseconds.

| Process | Burst time | Priority |
| :---: | :---: | :---: |
| p1 | 8 | 2 |
| p2 | 12 | 4 |
| p3 | 4 | 3 |
| p4 | 6 | 2 |
| p5 | 3 | 1 |

The processes are assumed to have arrived in order p1, p2, p3, p4, p5 all at time 0 .
i) Draw Gantt charts illustrating the execution of these processes using FCFS, SJF, a non-preemptive priority (a smaller priority number implies a higher priority), and RR (quantum=3) scheduling
ii) Calculate the waiting time and turn around time of each process for each of the scheduling algorithms
[CO3] [L4] 12
b) What are semaphores? Explain how it can be used to implement mutual exclusion?
[CO3] [L2, 4] 8

## PART-B

Q. 5 a) Explain the use of a resource allocation graph.
[CO3] [L5] 5
b) State and explain the Banker's algorithm for deadlock avoidance. Let us consider the following scenario and solve it by applying banker's algorithm:

| State | Allocation | Maximum Need |
| :---: | :---: | :---: |
| Process p0 | 112 | 433 |
| Process p1 | 212 | 322 |
| Process p2 | 401 | 402 |
| Process p3 | 020 | 753 |
| Process P4 | 112 | 112 |

Available resources of A, B, C are: 210
i) Find the content of matrix need and determine whether the system is in safe state or not.
ii) If a process request for pi arrives ( $0,4,2$ ), can the request be granted immediately.
[CO3] [L5, 6] 15
Q. 6 a) Describe under what circumstances do page faults occur? Describe the action taken by the operating system when a page fault occurs.
[CO4] [L2] 10
b) Consider the reference stream $1,2,3,4,2,1,5,6,2,1,2,3,7,6,3,2,1,2,3,6$. How many page faults while using FCFS and LRU using 2 frames? [CO4] [L5] 10
Q. 7 Suppose that a disk drive has 5000 cylinders, numbered 0 to 4999, the drive currently services a request at cylinder 143, and the previous request was at cylinder 125, the queue of pending request in FIFO order is $86,1470,913,1774,948,1509,1022,1750,130$ starting from the current position, what is the total distance (in cylinders) that the disk arm moves to satisfy all pending requests, for each of the following algorithms i) FCFS ii) SSFT iii) SCAN iv) LOOK v) C-SCAN.
[CO5] [L5] 20

## End Semester Examination, May 2023 <br> B.Sc. (Information Technology) - First Semester <br> LINEAR ALGEBRA AND STATISTICAL TECHNIQUES (BSCIT-DS-103)

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Multiple choice questions:
a) If the order of matrix $A$ is $p \times q$, order of matrix $B$ is $q \times r$, then order matrix $A B$ is:
i) pr
ii) $p^{2} r^{2}$
iii) $p q$
iv) $p / q$
[CO1] [L1]
b) How many solutions does a linear equation have?
i) One
ii) Two
iii) Three
iv) Four
[CO1] [L1]
c) What is the order of the matrix
i) $1 \times 1$
ii) $2 \times 2$
iii) $3 \times 3$
iv) $2 \times 1$
[CO1] [L1]
d) If determinant of a matrix $A$ is zero than $\qquad$ .
i) A is a Singular matrix
ii) A is a non-Singular matrix
iii) Can't say
iv) None of the above
[CO1] [L1]
e) Find sum of mode and median of the data $12,15,11,13,18,11,13,12,13$.
i) 26
ii) 31
iii) 36
iv) 25
[CO3] [L1]
f) The shape of the normal curve is $\qquad$ .
i) Bell shaped
ii) Flat
iii) Circular
iv) Spiked
[CO3] [L1]
$g$ ) In a binomial distribution, if ' $n$ ' is the number of trials and ' $p$ ' is the probability of success, then the mean value is given by $\qquad$ _.
[CO3] [L1]
i) $n p$
ii) $n$
iii) $p$
iv) $n p(1-p)$
h) If the probability of hitting an object is 0.8 , find the variance.
i) 0.18
ii) 0.16
iii) 0.14
iv) 0.12
[CO3] [L1]
i) Find the mode of the call received on 7 consecutive day $11,13,13,17,19,23,25$.
i) 11
ii) 13
iii) 17
iv) 23
[CO3][L1]
j) The summary statistics which measure the middle or center of the data are called:
i) Logarithms
ii) Measures of central tendency
iii) Measures of dispersion
iv Proportions
[CO4] [L1] $\mathbf{2 \times 1 0}$

## PART-A

Q. 2 a) Define 'Abelian group'. Prove that set of real numbers $(Z,+)$ forms a Abelian group.
[CO2] [L4] 10
b) Find the inverse of matrix $\left[\begin{array}{lll}1 & 0 & 5 \\ 2 & 1 & 0 \\ 3 & 4 & 0\end{array}\right]$
[CO2] [L4] 10
Q. 3 a) Using the consistency theorem solve the following equation:
$x+y+z=9$
$2 x+5 y+7 z=52$
$2 x+y-z=0$
[CO4] [L3] 10
b) Find the rank of the matrix

$$
A=\left(\begin{array}{ccc}
4 & -3 & 7 \\
-1 & 6 & 3 \\
2 & 9 & 13
\end{array}\right)
$$

[CO3] [L4] 10


$$
A=\left[\begin{array}{ccc}
2 & -3 & 0 \\
2 & -5 & 0 \\
0 & 0 & 3
\end{array}\right] \quad[\mathrm{CO} 3][\mathrm{L} 5] \mathbf{1 0}
$$ inverse of matrix $A$.

[CO] [L5] 10

## PART-B

Q. 5 a) A coin that is fair in nature is tossed $n$ number of times. The probability of the occurrence of a head six times is the same as the probability that a head comes 8 times, and then find the value of $n$.
[CO4] [L4] 10
b) What is meant by confidence interval of a population parameter?
[CO4] [L5] 10
Q. 6 a) By the method of least squares find the straight line to the data given below:

| X | 8 | 3 | 2 | 10 | 11 | 3 | 6 | 5 | 6 | 8 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| Y | 4 | 12 | 1 | 12 | 9 | 4 | 9 | 6 | 1 | 14 |

[CO5] [L6] 10
b) Find the coefficient of variation of the following sample set of numbers. $\{1,5,6,8$, $10,40,65,88\}$
[CO5] [L5] 10
Q. 7 Find Karl Pearson's coefficient of correlation between the values of $X$ and $Y$ given data:

| x | 128 | 129 | 130 | 140 | 132 | 135 | 125 | 130 | 132 | 135 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| y | 80 | 89 | 90 | 95 | 96 | 94 | 80 | 100 | 96 | 100 |

[CO6] [L5] 20

## End Semester Examination, May 2023

# B. Sc. (Information Technology) - Second Semester <br> DATA STRUCTURE AND ALGORITHM (BSCIT-DS-201) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 1
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.

## Q. 1 Choose the correct option:

a) The data structure required to check whether an expression contains a balanced parenthesis is:
i) Stack
b) Queue
c) Array
d) Tree
b) Which data structure is needed to convert infix notation to postfix notation?
i) Branch
ii) Tree
c) Queue
d) Stack
[CO-4] [L-2]
c) Which of the following is false about a doubly linked list?
[CO-2] [L-2]
i) We can navigate in both the directions
ii) It requires more space than a singly linked list
iii) The insertion and deletion of a node take a bit longer
iv) Implementing a doubly linked list is easier than singly linked list of these.
d) In post order traversal of binary tree, right sub tree is traversed before visiting root.
i) True
ii) False
[CO-4] [L-1]
e) What is a hash table?
[CO-4] [L-1]
i) A structure that maps values to keys
ii) A structure that maps keys to values
iii) A structure used for storage
iv) none of the above
Answer the following in brief:
f) What is primitive data structure?
[CO-1] [L-1]
g) What is sparse array?
h) What is circular queue?
i) What do you understand by directed graph?
j) What is searching?
[CO-5] [L-1] $\mathbf{2 \times 1 0}$

## PART-A

Q. 2 Explain the various types and operations of data structures. Consider the linear array AAA (5:50), BBB ( $-5: 10$ ) and CCC (18)
a) Find the number of elements in each array. [CO-2] [L-4] 10
b) Suppose Base $(A A A)=300$ and $w=4$ words per memory cell for AAA. Find the address of AAA [15], AAA [35] and AAA [55].
[CO-2] [L-4] 10
Q. 3 Design an algorithm for the evaluation of postfix expression. Consider the following postfix expression P :
P: 12, 7, 3, -, /, 2, 1, 5, +, *, +,) evaluate P. Show each step.
[CO-4] [L-6] 20
Q. 4 What do you understand by linked list? Compare single and double linked list. Explain how polynomial are maintained in memory? Give a suitable example. [CO-4] [L-5] 20

## PART-B

Q. 5 Define with suitable example: binary tree, complete tree, binary search tree, B-tree, AVL tree.
[CO-4] [L-1] 20
Q. 6 a) Compare Prim's and Kruskal algorithm.
[CO-4] [L-5] 10
b) What is graph? Describe the various methods of traversing a graph. [CO-4] [L-2] 10
Q. 7 Write an algorithm to sort the list using heap sort method. Implement the following data by using heap sort:
$34,67,11,88,67,42,59,25,79,94$
[CO-5] [L-4] 20

# End Semester Examination, May 2023 

## B. Sc. (Information Technology) - Second Semester PYTHON PROGRAMMING (BSCIT-DS-202)

Time: 3 hrs.
Max Marks: 100
No. of pages: 1
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Answer the following in brief:
a) What are the properties of algorithm?
b) What is meant by selection, iteration and sequence control structures?
c) What are the advantages of using a flowchart?
d) Mention the features of lists in python.
e) What are the rules for naming a variable?
f) What operators does python support? Name them.
g) What is the use of break statement in Python?
h) What is module and package in Python?
i) What is the difference between break and continue statement?
j) Write a small code to illustrate try and except statements in Python.
[CO-1,2,3,4,5] [L-2,3] $\mathbf{2 \times 1 0}$

## PART-A

Q. 2 a) Write Python code to solve the quadratic equation $a x^{2}+b x+c=0$ by getting input for coefficients from the user.
[CO-1] [L-2] 10
b) Explain the concept of scope and lifetime of variables in Python programming language with an example.
[CO-2] [L-2] 10
Q. 3 a) Describe arithmetic operators, assignment operators, comparison operators, logical operators and bitwise operators in detail with examples [CO-3] [L-2] 10
b) What is pseudo code? Explain its guidelines and benefits.
[CO-2] [L-2] 10
Q. 4 a) Write Python code to determine whether the given string is a palindrome or not using slicing.
[CO-4] [L-3] 10
b) Explain the use of join() and split() string methods with examples. Describe why strings are immutable with an example.
[CO-4] [L-2] 10

## PART-B

Q. 5 a) Write Python program to sort numbers in a list in ascending order using bubble sort by passing the list as an argument to the function call.
[CO-5][L-3] 10
b) Explain the purpose of loop structure in a programming language. Describe the syntax and semantics of any two loop structures provided by Python. [CO-5][L-2]
10
Q. 6 a) What are python dictionaries? Explain how to create a dictionary. [CO-6][L-2] 10
b) Write a Python program to check the validity of a password given by the user.

The Password should satisfy the following criteria:
i) Contain at least 1 letter between a and z
ii) Contain at least 1 number between 0 and 9
iii) Contain at least 1 letter between $A$ and $Z$
iv) Contain at least 1 character from \$, \#, @
v) Minimum length of password: 6
vi) Maximum length of password: 12
[CO-6][L-3] 10
Q. 7 Describe about handling exceptions in detail with examples. Explain about the different types of exceptions in Python.

## End Semester Examination, May 2023

## B. Sc. (Information Technology) - Second Semester DATABASE MANAGEMENT SYSTEM (BSCIT-DS-203)

Time: 3 hrs.

Max Marks: 100
No. of pages: 2

Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.

## Q. 1 Choose the correct option:

a) If one attribute is determinant of second, which in turn is determinant of third, then the relation cannot be:
i) Well-structured
ii) 1 NF
iii) $2 N F$
iv) 3 NF
b) Table should contain atomic values.
i) 1 NF
ii) 2 NF
iii) $3 N F$
iv) 4 NF
c) Degree of relationship calculated on no of $\qquad$ participating in a relation.
i) Entities
ii) Attributes
iii) Cardinalities
iv) Values
d) Which function is used to find the count of distinct departments?
i) Dist
ii) Distinct
iii) Count
iv) Count, Dist
e) If a relation is in BCNF, then it is also in:
i) 1 NF
ii) 2 NF
iii) 3 NF
iv) 4 NF
f) The Desc command shows:
i) Syntax
ii) Semantics
iii) Struct
iv) Formatting
g) Which of the following gives a logical structure of the database?
i) $E R D$
ii) DFD
iii) 3-Tier Architecture
iv) None
h) Emp $\rightarrow$ works for-->Dept. shows the relationship.
i) $1: 1,1: \mathrm{N}$
ii) $1: 1, \mathrm{M}: \mathrm{N}$
iii) $N: N, N: N$
iv) $1: 1,1: 1$
i) strong entity set is represented as:
i) Underline
ii) Double line
iii) Double diamond iv) Double rectangle
j) Which of the following can be used as composit key entry of the instructor relation?
i) NAME
ii) DNAME
iii) ID
iv) All of the mentioned

## PART-A

Q. 2 a) Define the 'database architecture'. Why would choose a database system instead of simply storing data in files? When would it make sense not to use a database system? [CO-1] [L-2] 10
b) Discuss the role and functions of administrator. Elaborate the applications of DBMS.
[CO-1] [L-2] 10
Q. 3 a) Draw an ER diagram of library management system.
[CO-6] [L-6] 10
b) State the major advantages and disadvantages of the following data models-
i) Network model
ii) ER model
Q. 4 Consider the following table STUDENT:

| REGD.NO | NAME | BRANCH |
| :--- | :--- | :--- |
| 0001 | Ram | CSE |
| 0002 | Hari | MECH |
| 0003 | Pradeep | EEE |
| 0004 | Deepak | ETC |

a) Write a SQL command which will show the entire STUDENT table.
b) Write a SQL command which will count students in the table.
c) Write down the SQL command which will show the Regd. No of Hari.
d) Write down the SQL command which will show the REGD.NO and branch column.
e) Write a SQL command which will count the number of rows existing in STUDENT table.
f) Write a SQL command to delete a record from the student table where branch is 'ETC'.
g) Update the name of the '0001' REGD. No.
h) Add rollno as a New Column in the existing table.
i) Display the records of CSE branch students details.
j) Fetch the student details whose name start from $R$ letter.
[CO-4] [L-3] 20

## PART-B

Q. 5 a) To compute the closure for relation schema $R=\{A, B, C, G, H, I\}$ and $F=\{A \rightarrow B, A \rightarrow$ C,
$\mathrm{CG} \rightarrow \mathrm{H}, \mathrm{CG} \rightarrow \mathrm{I}, \mathrm{B} \rightarrow \mathrm{H}, \mathrm{C} \rightarrow \mathrm{G})$.
Find the closure of $A$ under $F$. Or $\{A+\}$
[CO-5] [L-2] 10
b) Describe the concept of Normalization and types of normal form with suitable example.
[CO-5] [L-1,2] 10
Q. 6 a) Discuss the transaction with its states. What are the conflicts and transaction precedence graph for the following schedule?
S: r1(A); r2(B); w1(A); w2(A); w3(A); w3(B); r1(B);
[CO-3] [L-6] 10
b) Explain Concurrency control scheme with examples.
[CO-3] [L-2] 10
Q. 7 a) Discuss about the causes of failure and security risks in detail.
[CO-3] $[L-1,3] \mathbf{1 0}$
b) Write a short note on the following topics:
i) Log based recovery.
ii) Shadow paging.
[CO-3] [L-2] 10

# End Semester Examination, May 2023 

B. Sc. (Information Technology) - Third Semester COMPUTER NETWORK (BSCIT-DS-302)

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Answer the following multiple choice questions.
a) Which of the following protocols is used for transferring email messages over the internet?
i) FTP
ii) SMTP
iii) HTTP
iv) DNS
[CO2] [L1]
b) What is the purpose of a MAC address in a network?
i) To identify a network interface
ii) To identify a network location
iii) To identify a network protocol
iv) To identify a network service
[CO1] [L2]
c) Which of the following topologies provides the most redundancy?
i) Bus
ii) Star
iii) Ring
iv) Mesh
[CO1] [L1]
d) Which of the following is a protocol used for email transmission?
i) SMTP
ii) HTTP
iii) TCP
iv) FTP
[CO3] [L3]
e) Which of the following devices is used to connect two networks together?
i) Router
ii) Switch
iii) Hub
iv) Repeater
[CO2] [L4]
f) What is the maximum number of hosts that can be on a network with a subnet mask of 255.255.255.240?
i) 16
ii) 14
iii) 15
iv) 32
[CO2] [L3]
g) What is the main function of a router in a network?
i) To connect multiple LANs
ii) To connect a LAN to a WAN
iii) To connect two different networks
iv) To connect multiple devices on a LAN
[CO4] [L2]
h) Which of the following is an example of a transport layer protocol?
i) HTTP
ii) FTP
iii) TCP
iv) SMTP
[CO3] [L2]
i) Which of the following wireless standards has the highest data transfer rate?
i) 802.11a
ii) 802.11 b
iii) 802.11 g
iv) 802.11
[CO5] [L2]
j) Which of the following is a Layer 4 protocol in the OSI model?
i) IP
ii) TCP
iii) HTTP
iv) Ethernet
[CO4] [L2] $\mathbf{2 \times 1 0}$

## PART-A

Q. 2 a) What is a protocol? Discuss the different types of protocols used in computer networks and their significance.
[CO4] [L2] 10
b) What is the difference between half-duplex and full-duplex communication?
[CO3] [L3] 10
Q. 3 What is network topology? Explain the different types of network topologies and their advantages and disadvantages.
Q. 4 a) Discuss the advantages and disadvantages of wireless networking. [CO5] [L3] 10
b) Explain the concept of subnetting in IP addressing. Describe the process of subnetting a network.
[CO2] [L3] 10

## PART-B

Q. 5 a) Discuss the spiral software development life cycle model with diagrammatic illustration. Also converse its strengths and deficiencies?
[CO4] [L5] 10
b) Explain the concept of file sharing and its importance in file and print services. Describe the different types of file sharing, including local, remote, and cloud-based file sharing.
Q. 6 Explain the process of domain name resolution, and the role of DNS servers in the process.
[CO2] [L4] 20
Q. 7 Explain the concept of cloud computing and its impact on network architecture and management. Describe the different types of cloud services
[CO4] [L2] 20

## End Semester Examination, May 2023

B. Sc. (Information Technology) - Third Semester ARTIFICIAL INTELLIGENCE (BSCIT-DS-305)

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.

## Q. 1 Multiple choice questions:

a) Artificial intelligence is a way of?
i) Making a computer
ii) Making a computer controlled robot
iii) Software thinking intelligently
iv) All of the above
[CO1] [L1]
b) Which of the following areas can contribute to build intelligent system?
i) Philosophy
ii) Biology
iii) Sociology
iv) All of the above
[CO1] [L2]
c) Which of the following is a component of an expert system?
i) Inference engine
ii) Knowledge Base
iii) User interface
iv) All of the above
d) Machine becomes intelligent once they are:
i) Trained
ii) Started
iii) Installed
iv) Turned off
[CO1] [L1]
e) Which of the following is the most advance form of AI?
i) Machine Learning
ii) Neural Network
iii) Deep Learning
iv) Deep Science
[CO????] [L2]
f) The neural network consists of many neurons, each neuron takes an input, processes it and gives an output. Which of the following statement(s) correctly represents a real neuron?
i) A neuron has a single input and a single output only.
ii) A neuron has multiple inputs but a single output only.
iii) A neuron has a single input but multiple outputs.
iv) A neuron has multiple inputs and multiple outputs.
[CO5] [L1]
g) Which of the following AI domain attempts to extract the information from spoken and written words using algorithms?
i) Neural network
ii) Computer vision
iii) Data science
iv) Natural Language Processing
[CO5] [L1]
h) Semantic network is:
i) A way of representing knowledge
ii) Data structure
iii) Data type
iv) None of the above
[CO3] [L1]
i) What was originally called the "imitation game" by its creator?
i) The Turing test
ii) LISP
iii) The Logic Theorist
iv) Cybernetics
[CO4] [L1]
j) A perception is:
i) A single layer feed-forward neural network with pre-processing.
ii) An auto-associative neural network.
iii) A double layer auto-associative neural network.
iv) A neural network that contains feedback.
Q. 2 a) List and discuss the various programming languages of Artificial Intelligence. [CO1] [L5] 10
b) List and discuss the potentially positive and negative effects on society of the development of artificial intelligence.
[CO1] [L2] 10
Q. 3 Write algorithms for the following search techniques:
a) Best first search technique.
b) Means-ends analysis.
c) Breadth first search technique.
d) Depth first search technique.
Q. 4 a) Draw a semantic network representing the following knowledge:

Every vehicle is a physical object. Every car is a vehicle. Every car has four wheels. Electrical system is a part of car. Battery is a part of electrical system. Pollution system is a part of every vehicle. Vehicle is used in transportation. Swift is a car.
[CO3] [L4] 10
b) Convert the following statements into first order predicate logic:
i) Ram teaches Mathematics or Chemistry.
ii) All children like to play Football.
iii) Some real numbers are rational numbers.
iv) Raju likes everyone.
v) Lily likes apples but not bananas.
[CO3] [L5] $\mathbf{2 \times 5}$

## PART-B

Q. 5 Minimax algorithm is a kind of backtracking algorithm that is used in decision making and game theory to find the optimal move for a player. How does this algorithm work? Explain the process of backtracking along with the algorithm.
[CO4] [L2] 20
Q. 6 Define 'expert system' in terms of artificial intelligence. What are the applications of an expert system? Discuss the basic components and architecture of an expert system.
[CO5] [L4] 20
Q. 7 Machine learning is talked about as the sub-field of artificial intelligence. Why is it said so? Explain the concept of machine learning along with its learning techniques and applications.
[CO5] [L4] 20

# End Semester Examination, May 2023 

B.Sc. (Information Technology) - Fourth Semester

SOFTWARE ENGINEERING (BSCIT-DS-401)
Time: 3 hrs.
Max Marks: 100
No. of pages: 2

## Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.

Q. 1 a) Software is defined as $\qquad$ .
i) Set of programs, documentation and configuration of data
ii) Set of programs
iii) Documentation and configuration of data
iii) None of the mentioned
b) $\qquad$
i) RAD Model
ii) Waterfall model
iii) Build and fix model
iv) Prototyping model
c) Who proposed the spiral model?
i) Barry Boehm
ii) Pressman
iii) Royce
iv) IBM
d) Software patch is defined as $\qquad$ .
ii) Daily or routine Fix
ii) Required or Critical Fix
iii) Emergency Fix
iv) None of the mentioned
e) Which one of the following is not a software process quality?
i) Visibility
ii) Timeliness
iii) Productivity
iv) Portability
f) Agile software development is based on which of the following type.
i) Iterative development
ii) Incremental development
iii) Both incremental and iterative development
iv) Linear development
g) What does SDLC stands for?
i) System design life cycle
ii) Software design life cycle
iii) Software development life cycle
iv) System development life cycle
h) Quality Management is known as $\qquad$ .
i) SQI
ii) SQA
iii) SQM
iv) SQA and SQM
i) development team has less experience on similar projects.
i) Iterative Enhancement Model
ii) RAD
iii) Spiral
iv) Waterfall
j) What is the full form of the "COCOMO" model?
i) Cost constructive estimation model
ii) Constructive cost estimation model
iii) Constructive case estimation model
iv) Constructive cost estimating model
[CO-1] [L-1] $\mathbf{2 \times 1 0}$

## PART-A

Q. 2 a) Explain spiral model with labelled diagram.
[CO-2] [L-2] 10
b) Compare waterfall, spiral, prototype and incremental model.
[CO-2] [L-3] 10
Q. 3 a) Explain error, fault and failure.
[CO-3] [L-2] 5
b) Explain ER model. Explain entity, entity type, entity set, ER diagrams symbols and notations with example.
[CO-3] [L-2] 10
c) Discuss the characteristics of a good SRS document.
[CO-3] [L-2] 5
P. T. O
Q. 4 Write short notes on following terms:
a) SDLC.
b) Software project scheduling with techniques.
c) Feasibility study.

## PART-B

Q. 5 a) Compare and contrast testing terms: unit testing, integration testing and system testing.
b) Differentiate between 'black box' and 'white box' testing.
Q. 6 Write short notes on following terms:
a) Reverse engineering.
b) Re-engineering.
c) Cyclomatic complexity.
Q. 7 Write short notes on following terms:
a) Cohesion.
b) Coupling.
c) User documentation.
d) System documentation.
End Semester Examination, May 2023B. Sc. (Information Technology) - Fourth SemesterCLOUD COMPUTING (BSCIT-DS- 402)
Time: 3 hrs.
Max Marks: 100
No. of pages: ..... 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questionsfrom PART-A and TWO questions from PART-B. Marks are indicated againsteach question.
Q. 1 Choose the correct option:
a) Which of the following is a cloud example?
i) Amazon Web Services (AWS)
ii) Dropbox
iii) Cisco WebEx
iv) All of the above
[CO2][L-1]
b) Programs that may operate on a virtual machine image, such as a Web server or database server, are known as $\qquad$ .
i) Virtual server
ii) Virtual appliances
iii) Machine imaging
iv) All of the above
[CO3][L-2]
c) A $\qquad$ system, cloud computing is by definition unidirectional in operation.
i) Stateless
ii) Stateful
iii) Reliable
iv) All of the above
[CO1][L-2]
d) Which of the following is a PaaS cloud service example?
i) Heroku
ii) AWS Elastic Beanstalk
iii) Windows Azure
iv) All of the above
[CO3][L-2]
e) Identify the incorrect statement.
i) Azure enables .NET Framework applications to run over the Internet.
ii) Cloud Computing has two distinct sets of models.
iii) Amazon has built a worldwide network of data centre to service its search engine.
iv) None of the mentioned.
[CO4][L-2]
f) A distributed computing paradigm called $\qquad$ enables ondemand, utility-based computing for clients.
i) Remote Sensing
ii) Remote Invocation
iii) Private Computing
iv) Cloud Computing
[CO3][L-2]
g) These cloud services are of the form of utility computing i.e. the $\qquad$ uses these services pay-as-you-go model.
i) Cloud providers
ii) Clients
iii) End users
iv) None of the above
[CO3][L-2]
h) What is Cloud Computing?
i) Cloud Computing means providing services like storage, servers, database, networking, etc
ii) Cloud Computing means storing data in a database
iii) Cloud Computing is a tool used to create an application
iv) None of the above
i) What characteristics characterise cloud computing?
i) Security
ii) Availability
iii) Large Network Access
iv) All of the above
j) What kind of service is included in the scope of cloud computing?
i) SaaS
ii) IaaS
iii) PaaS
iv) All of the above

## PART-A

Q. 2 What is meant by cloud computing, discuss its advantages and also explain the architecture of cloud computing including various layers with suitable example?
[CO1][L1] 20
Q. 3 Explain the following:
a) System abstraction.
b) Cloud bursting.
c) Service attributes of cloud computing.
d) Cloud administration.
[CO2][L2] 5×4
Q. 4 Compare the three cloud computing delivery models, SaaS, PaaS, and IaaS, from the point of view of the application developers and users considering the following parameters:
a) Types of consumers.
b) Services offered.
c) Service coverage.
d) Customization.
[CO2][L2] 5×4

## PART-B

Q. 5 A public cloud for higher education is made available to all users at no cost by an IT corporation. Should it adopt SaaS, PaaS, or IaaS as its cloud computing delivery strategy, and why? Which software would be most useful to the students? Will remote learning be affected by this solution, if yes, why? [CO4][L3] 20
Q. 6 What are the different security challenges in cloud computing? Discuss each in brief. How Onion encryption layer is useful to maintain trust and reputation in cloud computing?
[CO5][L2] 20
Q. 7 Although virtualization makes it easier to use resources, isolates users from one another, facilitates replication, and supports mobility, as it comes with a performance and financial penalty. Examine each of these factors for:
a) Memory virtualization.
b) Processor virtualization.
c) Virtualization of a communication channel.

## End Semester Examination, May 2023

## B. Sc. (Information Technology) - Fourth Semester

## RELATIONAL DATABASE MANAGEMENT SYSTEM - (BSCIT-DS-403)

Time: 3 hrs.
Max Marks: 100 No. of pages: 1
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.

## Q. 1 Choose the correct option:

a) Rows of a relation are called $\qquad$ .
[CO-1] [L-1]
i) Entities
ii) Tuples
iii) Relationships
iv) Data structures
b) Multivalued dependency among attribute is checked at which level? [CO-4] [L-2]
i) 2 NF
ii) 3 NF
iii) $4 N F$
iv) None of the above
c) Locking can take place at the following levels:
[CO-6] [L-2]
i) Page level
ii) Database level
iii) Row level
iv) All of these.
d) The keys that can have NULL values are:
[CO-3] [L-1]
i) Primary key
ii) Unique key
iii) Foreign key
iv) Both ii) and iii)
e) Aggregate functions in SQL are:
[CO-4] [L-2]
i) GREATEST, LEAST and ABS
ii) SUM, COUNT and AVERAGE
iii) UPPER, LOWER and LENGTH
iv) SQRT, POWER and MOD

## Answer the following in brief:

f) What is data model?
[CO-1] [L-1]
g) What is concurrency?
[CO-6] [L-1]
h) Give the full form of PL/SQL.
[CO-5] [L-1]
i) What do you understand by entity?
[CO-2] [L-2]
j) What is full form of RDBMS?
[CO-1] [L-1] $\mathbf{2 \times 1 0}$

## PART-A

Q. 2 What are the objectives to normalize the database? What are the possible dependencies, which can exist in a database? Explain with suitable examples.
[CO4][L3] 20
Q. 3 What is RDBMS? Discuss the features and architecture of RDBMS. [CO-1] [L-2] 20
Q. 4 Following are the description of tables:

STUDENT (S_ID, S_NAME, CLASSNAME, MARKSOBTAINED, FEE)
CLASS (CLASS_ID, CLASSNAME)
a) Create above mentioned tables.
b) Insert two records for each table.
c) Display the student details with class Id.
d) Add a new column named address in the table student.
e) List name of students in ascending order according to their fee.
f) List the names of students having last alphabet of their names is ' $a$ '. [CO-4] [L-6] 20

## PART-B

Q. 5 What is an Exception? List various PL/SQL pre-defined exceptions along with their meaning. Summarize the steps to be followed for an exception with a suitable example.
[CO-5] [L-2] 20
Q. 6 a) Outline the method for dropping the existing function, procedure and package. Explain with an example.
[CO-5] [L-4] 10
b) What are different modes of arguments in subprogram? Also, compare its each mode in brief.
[CO-5] [L-5] 10
Q. 7 Explain the following with respect to DDBMS:
a) Client server architecture.
b) Data fragmentation.
c) Replication and allocation technique.

## End Semester Examination, May 2023

## B. Sc. (Information Technology) - Fourth Semester <br> INFORMATION SYSTEM SECURITY (BSCIT-DS-405/COMP609)

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.

## Q. 1 Multiple choice questions:

a) A worm $\qquad$ modify a program.
[CO-1] [L-1]
i) Does not
ii) Does
iii) May or may not
iv) None of these
[CO-1] [L-1]
b) Interception is an attack on:
i) Availability
ii) Confidentiality
iii) Integrity
iv) Authenticity
c) Which of the following is a type of independent malicious program that never required any host program?
[CO-1] [L-1]
i) Trojan Horse
ii) Worm
iii) Trap Door
iv) Virus
d) Why are the factors like confidentiality, integrity, availability, and authenticity considered as the fundamentals?
[CO-2] [L-1]
i) They help in understanding the hacking process
ii) These are the main elements for any security breach
iii) They help to understand the security and its components in a better manner
iv) All of the above
e) The modern cipher is usually a complex $\qquad$ cipher made of a combination of different simple ciphers.
[CO-4] [L-1]
i) Square
ii) Secret
iii) Round
iv) Plain
f) One way to preserve the integrity of the document is through the use of: [CO-2] [L1]
i) Eye-Rays
ii) Finger Prints
iii) Biometrics
iv) X-Rays
g) Firewalls are used for $\qquad$ . $[C O-5][L-1]$
i) Routing
ii) Security
iii) Tunnelling
iv) Congestion control
h) Which of the following ciphers is a block cipher?
i) Caesar cipher
ii) Vernam cipher
c) Playfair cipher
iv) None of the above
i) Data Encryption Techniques are particularly used for $\qquad$ . [CO-4] [L1]
i) Protecting data in data communication system
ii) Reduce storage space requirement
iii) Enhances data integrity
iv) Decreases data integrity
j) PKI Stands for $\qquad$ .
[CO-3] [L-1] $\mathbf{2 \times 1 0}$

## PART-A

Q. 2 Write short notes on:
a) Bull's eye model for information security.
b) Information security policy, its standards and practices.
[CO-5] [L-2] 20
Q. 3 a) How issue-specific-policy helps in making the cyber operations secure? Give example of email-issue-specific-policy for an organisation.
[CO-3] [L-2] 10
b) How intrusion detection and prevention system enhance organizational security? Justify your answer with an example.
[CO-3] [L-2] 10
P. T. O
Q. 4 a) What is the importance of public key infrastructure?
b) Why encryption is required for data communication?

## PART-B

Q. 5 a) Explain the components of an information system and their security. How will you balance between security and access?
[CO-4] [L-2] 10
b) Explain the security system development life cycle.
Q. 6 Differentiate between the following:
a) Issue specific security policy and system specific security policy.
b) Authentication and authorization.
c) Malware v/s viruses.
d) Honey pots and honey nets.
Q. 7 a) Explain the role of firewall in information security by taking a suitable example.
[CO-4] [L-2] 10
b) List and describe the four basic conversion strategies that are used when converting
to a new system. Under which circumstances each of these is best approach? Explain.
[CO-4] [L-2] 10

## End Semester Examination, May 2023

B. Sc. (Information Technology) - Fourth Semester

DATA MINING (BSCIT-DS-406)
Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 a) Out of the below mentioned techniques, identify the data mining techniques:
i) clustering
ii) classification
iii) Association
iv) All of the above
b) Handling incorrect or missing data is called as $\qquad$ .
i) Selection
ii) Preprocessing
iii) Transformation
iv) Interpretation
c) Abrupt value in data is known as $\qquad$ .
i) Changing data
ii) Noisy data
iii) Outliers
iv) Missingdata.
d) Strategic information is needed for:
i) Day to day operations
ii) Meet government requirements
iii) Long range planning
iv) Short range planning
e) Full form of KDD is $\qquad$ .
f) Which of the following activities is NOT a data mining task?
i) Predicting the future stock price of a company using historical records
ii) Monitoring and predicting failures in a hydropower plant
iii) Extracting the frequencies of a sound wave
iv) Monitoring the heart rate of a patient for abnormalities
g) One of the attribute of data stored in data warehouse is:
i) operational
ii) historical
iii) transactional
iv) optimized
h) $A$ $\qquad$ acts a bridge between data warehouse and database application.
i) data mart
ii) operational data iii) meta data
iv) data cube
i)
i) Tuple is one of the supervised data mining technique.
j) Which of the following data mining task is known as Market Basket Analysis?
i) Association Analysis
ii) Regression
iii) Classification
iii) Outlier Analysis

## PART-A

Q. 2 a) Explain the data warehouse architecture with the elaborated details of data staging area.
[CO-1] [L-2] 10
b) Differentiate the following:
i) Relational table and data cube.
ii) OLTP and OLAP.
[CO-2] [L-4] 5×2
Q. 3 a) Explain the following in terms of multidimensional model of data warehouse with suitable examples:
i) Measure or metric.
ii) Granularity.
[CO-3] [L-2] 10
b) Compare and contrast the snowflake and star model of data warehouse.
[CO-3] [L-4] 10
Q. 4 a) What is noise in data? Explain the methods through which noise can be removed from data.
b) Differentiate between the following:
i) ROLAP and MOLAP server.
ii) Distributed and virtual data warehouse.

## PART-B

Q. 5 a) "Bayesian classification algorithm is based on conditional probability". Justify this statement with the help of an example.
[CO-4] [L-4] 10
b) Explain the K-Means algorithm of clustering technique with the help of an example.
[CO-4] [L-2] 10
Q. 6 Explain the following terms in relation to association rules:
a) Support.
b) Confidence.
c) Multidimensional association rule.
d) Frequent pattern.
[CO-4] [L-2] 5×4
Q. 7 Analyse the need of data mining techniques in the following areas:
a) Education.
b) Healthcare.
[CO-5] [L-4] $\mathbf{1 0 \times 2}$

# End Semester Examination, May 2023 

## BCA / B. Sc. (Information Technology) - Second Semester <br> PLACEMENT COMPETENCY ENHANCEMENT-II (CDC-112)

Time: 2 hrs.
Max Marks: 50
No. of pages: 7
Note: The paper consists of FIFTY multiple questions; each question has FOUR options with one correct answer. Select the correct answer. Attempt all questions. All questions are of ONE mark each. There is no negative marking. Calculator is not allowed. Mention the correct option for each question in the blank answer key given herein below. (Answer sheets with empty answer keys despite the correct options being ticked, will not be evaluated).

| 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 11. | 12. | 13. | 14. | 15. | 16. | 17. | 18. | 19. | 20. |
| 21. | 22. | 23. | 24. | 25. | 26. | 27. | 28. | 29. | 30. |
| 31. | 32. | 33. | 34. | 35. | 36. | 37. | 38. | 39. | 40. |
| 41. | 42. | 43. | 44. | 45. | 46. | 47. | 48. | 49. | 50. |

Q. 1 Complete the following statement: A well-written paragraph should $\qquad$ .
[CO-1] [L1]
A] Focus on a single, coherent idea.
B] Consist of logically connected sentences.
C] Both a and b
D] None of above
Q. 2 How long should a paragraph be?

A] Every paragraph should be at least five sentences long.
B] Good paragraphs must be at least one page long.
C] It's okay for paragraphs to vary in length.
D] It should have two paragraphs
Q. 3 The smooth, logical flow of sentences within a paragraph is called $\qquad$ [.
[CO-1] [L-
1]
A] Paragraph personality
B] Paragraph coherence
C] Paragraph deduction
D] Paragraph conclusion
Q. 4 The castle sits $\qquad$ two snowy mountains, and it has a beautiful stone wall around it.
[CO-1] [L-
1]
A] on
B] between
C] above
D] around
Q. 5 Which sentence is best?

A] Can I know the problem?
B] Can you tell to me what is the problem?
C] Can you tell me what the problem is?
D] Can you know me the problem?
Q. 6 Which sentence is best?
[CO-3] [L-
A] I did not got that.
B] I did not get that.
C] I did not getting that.
D] I did not got this.
Q. 7 Which sentence is best?
[CO-1] [L-
1]
A] She said that she will come on time.
B] She was saying she will come on time.
C] She was saying she comes on time.
D] She said she will coming on time.
Q. 8 We have high-speed Internet access $\qquad$ work, but I have a bad connection $\qquad$ home.
A] at, in
B] in, at
C] at, at
D] in, in
Q. 9 The kids are learning about the Civil War $\qquad$ their history class $\qquad$ school.

1]
A] at, in
B] in, at
C] at, at
D] in, in
Q. 10 I've been sitting here...... more than an hour. If they don't arrive.....the next ten minutes, I'm going to leave.
12]
A] during, after
B] since, within
C] for, in
D] after, before
Q. 11 Every Friday, I meet up with friends after work for drinks and dinner. We usually hang out together from 6 PM to midnight. I'm usually back home by 1 AM . [CO-2] [L2]
A] After, from, to, by
B] By, to, from, after
C] By, from, to, after
D] Before, by, in, before
Q. 12 Complete the Conditional Sentences.

If you (go) $\qquad$ out with your friends tonight, I (watch) the football match on TV.
A] Will go, would watch

B] Went, watched
C] Go, will watch
D] Will go, will watch
Q. 13 Which type of the Conditional sentences is used?

If it rains, I'll wear a raincoat.
A] Zero
B] First
C] Second
D] Third
Q. 14 Which type of the Conditional sentences is used?
[CO-1] [L-
Daniel would have been home on time if the bus had come.
A] Zero
B] First
C] Second
D] Third
Q. 15 What is three-time system?
[CO-2] [L-
1]
A] Technical time, formal time, informal time
B] Technical time, informal time, informal time
C] Technical time, formal time, formality time
D] Technical time, formal time, official time
Q. 16 What is Proxemics?

A] Study of the hands
B] The study of chaos or chaos theory
C] Is the study of physical space in interpersonal relationship
D] The art of teaching by question and answer
Q. 17 What is ABCD in presentation?
[CO-1] [L-
A] Asset Based Community Development
B] Any Body Can Dance
C] Attention, benefit, Credibility, Direction
D] Albinism, Black Lock, Cell Migration
Q. 18 When giving a presentation in front of an audience you should do all of the following except for: answer choices.
[CO-3] [L-
1]
A] Speak loud and clear
B] Provide handouts if needed
C] Dress professionally
D] Look at your screen and not the audience
Q. 19 To whom should a presentation be aimed? Answer choices.

A] The highest authority in the room, regardless of where they are
B] The entire audience
C] The people in the closest rows
D] Your best friend in the room
Q. 20 Where should you look while presenting? Answer choices.

A] At the board -- that's where the audience is looking
B] At your notes so you get the info correct
C] In the eyes of random people in your audience
D] At the chins of individuals in your audience
Q. 21 Which sentence that introduces or defines the topic of a paragraph $\qquad$ .
It rained in April; it rained in May. It rained in the mornings; it rained in the afternoons. It poured, it drizzled, it showered, it misted-but always it rained. But the good news is we won't have a drought this summer.
[CO-3] [L-
1]
A] The rain makes me gloomy.
B] This spring was the rainiest on record.
C] Rain is nice, but I prefer sunshine.
D] Scientists know very little about the global climate.
Q. 22 and $\mathbf{Q} .23$ are based on the following paragraph:

In prolonged space flight, besides the obvious hazards of meteors, rocky debris, and radiation, astronauts will have to deal with muscle atrophy brought on by weightlessness; therefore, when they return to Earth, they face a protracted period of weight training to rebuild their strength.
Q. 22 What is the most likely meaning of the underlined word debris as it is used in this passage?
[CO-3] [L-
1]
A] fragments
B] decay
C] bacteria
D] alien life
Q. 23 The underlined word atrophy, as used in the paragraph, most nearly means.
[CO-2] [L-
1]
A] Pain.
B] Wasting.
C] Weakening.
D] Cramping.
Q. 24 and $\mathbf{Q} .25$ are based on the following paragraph:

Donna's memo caused much contention around the office last week. She may have meant well, but her usually caustic tone offended almost everybody. She has become a consistent nuisance at work, and probably should be fired.
Q. 24 Based on the tone of the passage, which of the following words best describes the author's attitude toward Donna?
[CO-2] [L-
1]
A] exasperated
B] admiring
C] patronizing
D] isolated
Q. 25 The underlined word caustic, as used in this passage, most nearly means. [CO-2] [L1]
A] cause and effect
B] reoccurring
C] biting
D] unclear
Q. 26 In the question below are given three statements, followed by conclusions: I, II, III, IV. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. Read the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.
1]

## Statements:

All sulfur are oxygen.
No oxygen is chlorine.
Some carbon are chlorine.

## Conclusion:

I. Some carbon are sulfur
II. Some carbon are oxygen
III. Some sulfur are chlorine
IV. No chlorine is sulfur
A] Only I
B] Only II
C] Only III
D] Only IV
Q. 27 In the question below are given three statements, followed by conclusions: I, II, III, IV. You have to take the given statements to be true even if they seem to be at variance from commonly known facts. Read the conclusions and then decide which of the given conclusions logically follows from the given statements disregarding commonly known facts.
1]

## Statements:

All hexagons are octagons.
Some octagons are sphere.
All sphere are cones

## Conclusion:

I. Some cones are octagons
II. Some cones are hexagons
III. Some sphere are hexagons
IV. Some octagons are cones
A] Only I
B] Only II
C] Only III
D] Only I \& IV
Q. 28 If P denotes 'multiplied' by', $T$ denotes 'subtracted' from', $M$ denotes 'add to' and $B$ denotes 'divided by', then 28 B 7 P 8 T 6 M $4=$ ?
[CO4] [L-2]
A]-3/2
B] 30
C] 32
D] 34
Q. 29 If Q means 'add' to; J means 'Multiply by', T means 'subtract from' and K means 'divide by' then 30 K 2 Q 3 J 6 T $5=$ ?
A] 18
B] 28
C] 31
D] 103
[CO-6] [L-

(A)
(B)
(C) (D) (E)
(1) (2)
(3) (4) (5)
A] 1
B] 2
C] 4
D] 5
Q. 31 Select a figure from amongst the Answer Figures which will continue the same series as established by the five Problem Figures.
[CO-4][L-1] Problem Figures:

(1) (2) 3 )
(4) (5)
(A)
(B)
(C)
(D) (E)
B] 2
C] 3
D] 4
Q. 32 Find out which of the figures (1), (2), (3) and (4) can be formed from the pieces given in figure ( X ).
[CO-4][L-1]

(x)

(1)

(2)
(3)
(4)
A] 1
B] 2
C] 3
D] 4
Q. 33 Find out which of the figures (1), (2), (3) and (4) can be formed from the pieces given in figure ( X ).

(X)

(1)
(3)
(4)
A] 1
B] 2
C] 3
D] 4
Q. 34 Insert the missing number in each of the following:

A] 175
B] 185
C] 165
D] 145
Q. 35 Insert the missing number in each of the following:

| $25200$ | 5 $5$ |
| :---: | :---: |
| $120$ |  |

A] 600
B] 500
C] 400
D] 700
Q. $36 A$ is 30 \% less than $B . B$ is how much \% more than $A$ ?
A] $30 \%$
B] $42.85 \%$
C] 30.15\%
D] 35\%
Q. 37 When $50 \%$ of number is added to 27 the result is the number itself. The number is:
[CO-5] [L-
2]
A] 50
B] 54
C] 90
D] 75
Q. 38 The expenditure of a person is Rs.400. By how much \% the person will have to decrease his expenditure to reduce the expenditure to Rs.200?
[CO-5] [L1]
A] $50 \%$
B] $20 \%$
C] 25\%
D] 30\%
Q. 39 A person spend $20 \%$ of his monthly salary on rent, $15 \%$ on food, $15 \%$ on education and $50 \%$ of the remaining on health and saves 4000rs. Find his monthly salary?
[CO-5] [L-
2]
A] 16000
B] 10000
C] 25000
D] 30000
Q. 40 On selling 20 balls at Rs. 700 , there is a loss equal to the cost price of 10 balls. The cost price of a ball is?
[CO-5] [L-
1]
A] Rs. 50
B] Rs. 60
C] Rs. 70
D] Rs. 80
Q. 41 If the cost price of 15 pens is equal to the selling price of 9 pens, the gain percent is?
[CO-5] [L-
1]
A] $20 \%$
B] $66.67 \%$
C] $40 \%$
D] 50\%
Q. 42 A person incurs a loss of $10 \%$ by selling a watch for Rs.1170. At what price should the watch be sold to earn $10 \%$ profit.
A] 1280
B] 1430
C] 1365
D] 1400
Q. 43 If $A: B: C=1 / 3: 1 / 4: 1 / 5$, then simplify the ratio.
A] $2: 3: 5$
B] 20:15:12
C] 6:4:3
D] 4:6:9
Q. 44 Two numbers are respectively $30 \%$ and $40 \%$ more than than the third number. The ratio of the two number is:
[CO-5] [L2]
A] 6:7
B] $13: 14$
C] 8:7
D] 7:5
Q. 45 If $A: B=7: 4, B: C=8: 9$ and $C: D=3: 2$, then $A: D$ is equal to
[CO-5] [L-
1]
A] $8: 7$
B] $7: 3$
C] $21: 10$
D] $5: 6$
Q. 46 The difference between simple and compound interests compounded annually on a certain sum of money for 2 years at $50 \%$ per annum is Re. 2. The sum (in Rs.) is:
[CO-5] [L-
1]
A] 08
B] 25
C] 36
D] 12
Q. 47 What will be the compound interest on a sum of Rs. 25,000 after 2 years at the rate of $12 \%$ p.a.?
[CO-5] [L1]
A] 10483.2
B] 6360
C] 3360
D]
10123.20
Q. 48 The effective annual rate of interest corresponding to a nominal rate of $10 \%$ per annum compounded half-yearly is:
A] 5
B] 10.25
C] 21
D] 15
[CO-5] [L- 1]
Q. 49 If two types of rice of rate Rs. $22 / \mathrm{kg}$ and Rs. $42 / \mathrm{kg}$, Find the ratio of two types of rice to obtain a mixture of rate Rs. $34 / \mathrm{kg}$.
[CO-5] [L-
1]
A] $2: 3$
B] $3: 2$
C] $1: 2$
D] 2:1
Q. 50 In what ratio must a grocer mix two varieties of pulses costing Rs. 18 and Rs. 23 per kg respectively so as to get a mixture worth Rs .20 kg ?
A] $3: 2$
B] $2: 3$
C] 3:4
D] $4: 3$

# End Semester Examination, May 2023 <br> BCA - Fourth Semester <br> PLACEMENT COMPETENCY ENHANCEMENT-IV (CDC-212) 

Time: 2 hrs.
Max Marks: 50
No. of pages: 5
Note: All questions are compulsory. Each question has FOUR options with ONE correct answer. Select the correct answer. All questions are of ONE mark each. There is no
NEGATIVE marking. Mention the correct option for each question in the blank answer key given herein below. Calculator is not permitted.

| 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 11. | 12. | 13. | 14. | 15. | 16. | 17. | 18. | 19. | 20. |
| 21. | 22. | 23. | 24. | 25. | 26. | 27. | 28. | 29. | 30. |
| 31. | 32. | 33. | 34. | 35. | 36. | 37. | 38. | 39. | 40. |
| 41. | 42. | 43. | 44. | 45. | 46. | 47. | 48. | 49. | 50. |

Q. 1 Find the area and perimeter of the square whose side length is 4 meter. [CO-2][L-1]
a) $16 \mathrm{~m}^{2}$
b) $12 \mathrm{~m}^{2}$
c) $8 \mathrm{~m}^{2}$
d) $4 \mathrm{~m}^{2}$
Q. 2 The area of triangle having base 6 cm and height 9 cm is
[CO-1][L-2]
a) $27 \mathrm{~cm}^{2}$
b) $54 \mathrm{~cm}^{2}$
c) $22.5 \mathrm{~cm}^{2}$
d) $45 \mathrm{~cm}^{2}$
Q. 3 The area of parallelogram is
[CO-1][L-3]
a) base + height
b) base $\times$ height
c) base $\times$ base
d) height $\times$ height
Q. 4 In how many different ways can the letters of the word MAGIC can be formed?
[CO-1][L-3]
a) 24 ways
b) 120 ways
c) 240 ways
d) 720 ways
Q. 5 For the above word how many different types of arrangement are possible so that the vowels are always together?
[CO-2][L-1]
a) 44 words
b) 24 words
c) 48 words
d) 60 words
Q. 6 In how many ways can the letters of the word BEAUTY be arranged?
[CO-1][L-2]
a) 360
b) 5 !
c) 6 !
d) 7 !
Q. 7 For the above word, if the vowels are always together than how many types of arrangement can be possible
[CO-2] [L-2]
a) $4!* 3$ !
B) $6!$
c) 4 !
d) $4!* 3$
Q. 8 A person has 4 coins if different denominations. What is the number of different sums of money the person can form?
[CO-1][L-3]
a) 12
b) 15
c) 11
d) 16
Q. 9 If repetition is not allowed then how many distinct three-digit numbers can be formed using the digits ( $1,2,3,4,5$ )?
[CO-2][L-1]
a) 60 ways
b) 50 ways
c) 40 ways
d) 30 ways
Q. 10 Find out the distinct four-letter words that can be formed using the word SINGAPORE.
[CO-1][L-2]
a) 256
b) 1024
c) 3024
d) 2048
Q. 11

a) 185
b) 126
c) 239
d) 145
Q. 12

a) 70
b) 80
c) 90
d) 100
Q. 13

| 20 | 48 | 36 |
| :---: | :---: | :---: |
| 10 | 16 | 8 |
| 5 | $?$ | 4 |
| 40 | 64 | 72 |

a) 10
b) 12
c) 13
d) 11
Q. 14

c) 178
b) 368
a) 613
d) 454
Q. 15


| 77 |  |
| :--- | :--- |
| 14 | 11 |

a) 7
b) 18
c) 21
d) 16


Direction (Q.16-Q.18) Study the following information carefully and answer the questions.

There are 10 persons $D, E, F, G, H, I, J, K, L$ and $M$ sitting in two rows ( 5 persons in each row). Half of them are Indians and Half of them are Americans. The two rows are facing each other (North and South). No Indian sits next to or opposite to another Indian. K sits at
the left corner of the north facing row. $K$ is a American. 2 people sit between $L$ and $F$. G sits at the centre in the south facing row. M sits opposite to the neighbour of I. M is facing south. M and I do not sit at the end. H sits opposite to the person who is next to D . H is facing north. H is a Indian. No one is sitting to the right of $\mathrm{D} . \mathrm{L}$ is American. E is a Indian. M is an American.
Q. 16 Who among the following in pairs sit opposite each other?
a) $\mathrm{E}-\mathrm{L}$
b) $\mathrm{H}-\mathrm{M}$
c) $\mathrm{D}-\mathrm{J}$
d) G-I
Q. 17 Who among the following sit at the corner?
a) $D$
b) F
c) L
d) Both A \& B
Q. 18 Who is sitting between I and J?
a) $D$
b) K
c) $M$
d) E

## Direction (Q.19-Q.21): Study the following information carefully and answer the below questions. <br> [CO-1] [L-1]

Eight persons- A, B, C, D, E, F, G, and H are sitting at the circular table at an equidistant distance from each other facing the center but not necessarily in the same order.
Only two persons are sitting between C and H. F sits immediate left of G. B and C are not immediate neighbors. E sits second to the right of C . The number of persons sitting between $D$ and $A$ when counting from the left of $D$ is the same as between $B$ and $F$ when counting from the right of $B$. $D$ sits neither adjacent to C nor H .
Q. 19 If all the persons are sitting in alphabetical order starting from $A$ in clockwise order how many persons remain unchanged in their position (excluding A]?
a) 2
b) 3
c) 1
d) No one
Q. 20 If $E$ is related to $C$ and $G$ is related to $H$ in a certain way. Then who among the following is related to B ?
a) F
b) The one who sits opposite to A
c) $D$
d) The one who sits second to the left of G
Q. 21 How many persons are sitting between A and H ?
a) One
b) Two
c) Three
d) Four
Q. 22 How many four-digit numbers can be formed from the digits 1, 2, 3, 4, 5, 6 (Repetition of digits not allowed)?
a) 360 Ways
b) 520 Ways
c) 420 Ways
d) 620 Ways
Q. 23 The radius of a cylinder is 10 cm and the height is 4 cm . The number of centimeters that may be added either to the radius or to the height to get the same increase in the volume of the cylinder is:
[CO-1] [L-1]
a) 5
b) 4
C) 25
d) 16
Q. 24 A solid sphere of radius 6 cm is melted to form a hollow right circular cylindrical tube of length 8 cm and external radius 10 cm . The thickness of the tube in m is [CO-2] [L1]
a) 1
b) 0.01
c) 2
d) 02
Q. 25 A person has 6 friends to be invited for dinner through invitation cards, and he has 3 servants. In how many ways can he extend the invitation card?
[CO-1] [L-1]
a) 729 Ways
b) 520 Ways
c) 650 Ways
d) 840 Ways

## Direction (Q.26-Q.29): Fill in the blank with the correct answer from the options given below

Q. 26 I $\qquad$ pomegranates since I left home.
[CO-5][L-2]
a) have not been eating
b) am not eating
c) do not eat
d) have not eaten
Q. 27 Aftab $\qquad$ a new bicycle last week.
[CO-5][L-2]
a) had bought
b) have bought
c) bought
d) has bought
Q. 28 By this time next semester, my friend $\qquad$ his collegiate degree. [CO-5][L-1]
a) took
b) will take
c) will have taken
d) takes
Q. 29 Ashwin hurt his knee while he $\qquad$ cricket.
[CO-5][L-1]
a) none of these
b) was playing
c) had played
d) is playing

## Directions (Q.30-Q.39): Find out the option which correctly completes the sentence:

Q. 30 A number of employees.....absent last week because of the snowstorm [CO-6][L-2]
a) Would
b) was
c) were
d) will
Q. 31 All the cabinet members......very difficult lives in private.
[CO-6][L-2]
a) lead
b) Took
c) Taken
d) leads
Q. 32 Apple Iphone, as well as Samsung
,.....recently risen in price.
[CO-5][L-1]
a) Had
b) Has
c) Would
d) Have
Q. 33 Both of the students.......decided to live in the hostel.
[CO-5][L-1]
a) can
b) will
c) has
d) have
Q. 34 Each of the student .....responsible for doing his or her work.
[CO-5][L-1]
a) is
b) Were
c) are
d) Would
Q. 35 Neither of the pictures in the exhibition .....for me, so I left the gallery.
[CO-5][L-1]
a) was appealing
b) appeal
c) appealed
d) were appealing
Q. 36 Siya and Riya ......want to see that movie in the movie theater.
[CO-5][L-2]
a) doesn't
b) not
c) did not
d) don't
Q. 37 The police.......at the scene of the crime.
[CO-5][L-1]
a) arriving
b) have arrived
c) has arrived
d) will arrive
Q. 38 The Sharmas, along with Tiwaris, $\qquad$ to avoid acidity after eating these oily samosas.
[CO-5][L-1]
a) Hope
b) Had hope
c) Hopes
d) Hoped
Q. 39 This letter $\qquad$ has no name on it begins by saying "To $\qquad$ it may concern".
[CO-4][L-1]
a) Which/ him
b) What/ that
c) Which/ whom
d) That/ those

## Direction (Q.40-Q.50): Choose the correct answer from the options given below:

Q. 40 In which of these, more than one candidate is interviewed? Select one: [CO-4][L-1]
a) The group interview
b) The stress interview
c) The audition
d) Thebehavioral interview
Q. 41 An Interview gives you an opportunity to $\qquad$ whether your qualifications and career ambitions align with the job you are applying for.
[CO-4][L-1]
a) assess
b) assist
c) neglect
d) guess
Q. 42 The Interview checklist includes copy of your resume, pen, passport size photograph and $\qquad$ proof.
[CO-2][L-1]
a) document
b) Identity
c) important
d) secure
Q. 43 The three P's while preparing for an Interview stand for $\qquad$ prepare and perform.
a) proposition
b) program
c) plan
d) ploy
Q. 446 types of Employee grooming implementation includes $\qquad$ care, dental care, body scent, clothing hygiene, hair hygiene, body hygiene.
[CO-4][L-1]
a) derma
b) complexion
c) peel
d) skin
Q. 45 Employment Interview types include $\qquad$ interview, group interview, board
[CO-4][L-1]
a) direct
b) straight
c) immediate
d) nonstop
Q. 46 A proverb says," it is not what you say, it is $\qquad$ you say it."
[CO-4][L-1]
a) when
b) how
c) where
d) which
Q. 47 You should always dress to impress for an interview.
[CO-4][L-1]
a) True
b) False
c) None of the above
d) Can't say
Q. 48 What should be the ideal length for business executive skirt and dress? [CO-4][L-1]
a) Above knees
b) Below knees
c) Both are ok
d) Knee length
Q. 49 Which of the following colors is NOT considered as appropriate for a business dress suit?
[CO-4][L-1]
a) Black
b) Navy
c) Gray
d) Pink
Q. 50 In which stage of the selection process is researching the employer important?
[CO-4][L-1]
a) Post interview
b) during interview
c) before interview
d) none of these

# End Semester Examination, May 2023 

BCA / B. Sc. (Information Technology) - Fourth Semester PLACEMENT COMPETENCY ENHANCEMENT-IV (CDC-212)

Time: 2 hrs.
Max Marks: 50
No. of pages: 6
Note: The paper consists of FIFTY multiple questions; each question has FOUR options with one correct answer. Select the correct answer. Attempt all questions. All questions are of ONE mark each. There is no negative marking. Calculator is not allowed.
Mention the correct option for each question in the blank answer key given herein below. (Answer sheets with empty answer keys despite the correct options being ticked, will not be evaluated)

| 1. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 11. | 12. | 13. | 14. | 15. | 16. | 17. | 18. | 19. | 20. |
| 21. | 22. | 23. | 24. | 25. | 26. | 27. | 28. | 29. | 30. |
| 31. | 32. | 33. | 34. | 35. | 36. | 37. | 38. | 39. | 40. |
| 41. | 42. | 43. | 44. | 45. | 46. | 47. | 48. | 49. | 50. |

## Direction (Q.1-Q.25): Choose the correct option from the options given below:

Q. 1 In how many different ways can the letters of the word MAGIC can be formed? [CO2][L-1]
A] 24 ways
B] 120 ways
C] 240 ways
D] 720 ways
Q. 2 In how many different ways can five friends sit for a photograph of five chairs in a row?
[CO1][L-2]
A] 120
B] 24
C] 240
D] 720
Q. 3 For the above word how many different types of arrangement are possible so that the vowels are always together?
[CO1][L-3]
A] 44
B] 24
C] 48
D] 60
Q. 4 Find out how many distinct three-digit numbers can be formed using all the digits of 1,2 , and 3.
A] 4
[CO1][L-1]
B] 5
C] 6
D] 7
Q. 5 If repetition is not allowed then how many distinct three-digit numbers can be formed using the digits $(1,2,3,4,5)$ ?
[CO1][L-2]
A] 60
B] 50
C] 40
D] 30
Q. 6 Find out how many distinct three-digit numbers can be formed using the digits 1, $2,3,4,5,6,7,8,9$ such that the digits are in ascending order.
[CO1][L-1]
A] 80
B] 81
C] 83
D] 84
Q. 7 What will be the probability of getting odd numbers if a dice is thrown? [CO1][L-3]
A] $1 / 2$
B] 2
C] $4 / 2$
D] $5 / 2$
Q. 8 What is the probability of getting a sum as 3 if a dice is thrown? [CO1][L-1]
A] $2 / 18$
B] $1 / 18$
C] 4
D] $1 / 36$
Q. 9 The probability of getting two tails when two coins are tossed is: [CO1][L-3]
A] $1 / 6$
B] ${ }^{1 / 2}$
C] $1 / 3$
D] $1 / 4$
Q. 10 What is the probability of getting the sum as a prime number if two dice are thrown?
[CO1][L-1]
A] $5 / 24$
B] $5 / 12$
C] $5 / 30$
D] $1 / 4$
Q. 11 What is the probability of getting atleast one head if three unbiased coins are tossed?
[CO1][L-2]
A] $7 / 8$
B] $]^{1 / 2}$
C] 5/8
D] $8 / 9$
Q. 12 What is the probability of getting 1 and 5 if a dice is thrown once? [CO1][L-3]
A] $1 / 6$
B] $1 / 3$
C] $2 / 3$
D] $8 / 9$
Q. 13 In a certain code, 'FIVE' is written as ' 3587 ', 'MORE' is written as ' 9467 '. How is 'MOVIE' written in that code?
[CO1][L-1]
A] 74857
B] 94587
C] 95487
D] 97584

Following instructions are to be used for solving below questions (Q.14Q.18):
[CO1][L-2]
Each of the questions given below consists of a statement and/or a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statement(s) is/are sufficient to answer the given question. Read both the statements and Give answer.
A] if the data in Statement I alone is sufficient to answer the question, while the data in Statement II alone is not sufficient to answer the question.
B] if the data in Statement II alone is sufficient to answer the question, while the data in Statement I alone is not sufficient to answer the question.

C] if the data in each Statement I and Statement II alone is sufficient to answer the question.
D] if the data even in both Statements I and II together are not sufficient to answer the question.
Q. 14 If $x, y$ are integers, then $(x 2+y 2) 1 / 2$ is an integer?
I) $x 2+y 2$ is an integer
II) $\mathrm{x} 2-3 \mathrm{y} 2=0$
A] A
B] $B$
C] C
D] D
Q. 15 Is $x-y$ is greater than $u-v$ ?
I) $x>u$ and $y<v$
II) $y=8, v=9, x=15$ and $u=13$.
A] A
B] B
C] C
D] D
Q. 16 What is the value of $(x 2 / y 2)+(y 2 / x 2)$ ?
I. $x / y+y / x=8$
II. $x / y-y / x=4$
A] A
B] B
C] C
D] D
Q. 17 Who is father of meena?
I. $X$ and $Y$ are brothers
II. Y's wife is sister of Meena's wife
A] A
B] B
C] C
D] D
Q. 18 What day is 14 th of a month?
I. 2nd last day of the month is Tuesday
II. 3rd Saturday of the month is seventeenth
A] A
B] B
C] C
D] D

## Study the following information to answer the given question: (Q.19-Q.25)

$$
[\mathrm{CO1}][\mathrm{L}-1]
$$

Twelve people are sitting in two parallel rows containing six people each such that they are Equidistant from each other. In row $1 \mathrm{P}, \mathrm{Q}, \mathrm{R}, \mathrm{S}, \mathrm{T} \& \mathrm{~V}$ are seated, and all of them are facing south. In row $2 A, B, C, D, E \& F$. And all of them are facing north. Therefore, in the given setting arrangement, each member is seated in a row faces another member of the other room.
$S$ sits third to the right of Q .
Either S or Q sits at an extreme end of the line.
The one who faces Q sits second to the right of E .
Two people sit between $B$ and $F$.
Neither B nor F sits at an extreme end of the line.
The immediate neighbour of $B$ faces the person who sits third to the left of $P$.
R and T are immediate neighbours.
C sits second to the left of A]
$T$ does not face the immediate neighbour of $D$ ]
Q. 19 Who amongst the following sit at the extreme ends of the rows?
A] S, D
B] $\mathrm{Q}, \mathrm{A}$
C] V, C
D] P, D
Q. 20 Who amongst the following faced S ?
A] A
B] B
C] C
D] D
Q. 21 How many persons are seated between V and R ?
A] 1
B] 2
C] 3
D] 4
Q. $22 \quad P$ is related to $A$ in the same way as $S$ is related to $B$ based on the given arrangement. Which of the following is T related to, following the same pattern?
A] C
B] D
C] E
D] F
Q. 23 Which of the following is true regarding $T$ ?

A] F faces T
B] V is an immediate neighbour of T
C] F faces the one who is second to the right of $T$
D] R sits second to the right of T .
Q. 24 Four of the following five are alike in a certain way based on give arrangements and so form a group. Which is the one that does not belong to background?
A] A-T
B] E-Q
C] F-P
D] C-V
Q. 25 If the area of rectangle increases from $2 \mathrm{~cm}^{2}$ to $4 \mathrm{~cm}^{2}$ the perimeter will
A] increase
B] decrease
C] remains same
D] none of these

## Direction (Q.26-Q.30): Read the following passage carefully and answer the questions based on the passage. [CO5][L2]

One of the most interesting features about the British Constitution, historically, is that the Constitution was not evolved by logicians. It has grown to what it is through the work of men like you and me- just ordinary people who have adapted the government of the country in order to meet the environment of the age in which they lived and they have always preserved sufficient flexibility to enable that adaption to be accomplished. Now that it is extremely important, because it seems to me that one of the reasons why our people are alive and flourishing and have avoided many of the troubles that have fallen to less happy nations, is because we have never been guided by logic in anything we have done.
If you will only do what I have done- study the history of the growth of the constitution from the time of the Civil war until the Hanoverians came to the throne-you will see what a country can do without the aid of logic, but with the aid of commonsense.
Q. 26 The passage implies that:

A] British Constitution was made by you and me.
B] There was no wise man among the British people.
C] Ordinary people made British Constitution logically
D] British Constitution is flexible.
Q. 27 British Constitution was made:
A] For ordinary people only
B] To disapprove logic
C] Because it was interesting.
D] To meet the environment of the age.
Q. 28 The author says that:

A] Because of logic people are flourishing
B] Because of logic people have avoided troubles.
C] His nation was never guided by logic.
D] Logic makes less happy nations happier.
Q. 29 The author has learnt from history that a country can do a lot:

A] With logic and commonsense
B] With the help of commonsense
C] With logic alone
D] None of the above
Q. 30 It is correct to say:

A] That logic is useless
B] Being guided by logic the writers have become less happy.
C] That historically British Constitution was made by God
D] That people can flourish without logic

## Direction (Q.31-Q.37): Choose the correct option which can be substituted for the given sentence:

[CO5][L2]
Q. 31 One who makes or compiles a dictionary.
A] Arteriographer
B] Prosopographer C] Lexicographer
D] Oscillographer
Q. 32 Belief that God is in everything and that everything is God
A] Pantheism
B] Atheism
C] Scepticism
D] Animism
Q. 33 Living together of a man and woman without being married to each other.
A] Equipage
B] Marriage
C] Lineage
D]

Concubinage
Q. 34 One who totally abstains from alcoholic drinks?
A] Teetotaler
B] Tranquil
C] Spite fuller
D] Logroller
Q. 35 The study of origin and history of words.
A] Linguistics
B] Verbose
C] Anthology
D] Etymology
Q. 36 Will you allow us to stay up late tonight?
A] permit
B] join
C] tell
D] forbid
Q. 37 A memory that lingers, is a memory forever.
A] dwells
B] registers
C] distress
D] drenches

## Direction (Q.38-Q.50): Choose the correct option from the options given below:

[CO4,5][L2]
Q. 38 Because Cindy and Ciara are twins, they resemble each other.
A] same
B] familiar
C] take after
D] like
Q. 39 Twenty years $\qquad$ the minimum age to fill this form.
A] are
$B]$ is
C] has
D] have
Q. 40 A pair of socks $\qquad$ been missing from my wardrobe.
A] have
B] has
C] were
D] is
Q. 41 The package $\qquad$ to be carried carefully.
A] is
B] are
C] have
D] were
Q. 42 He $\qquad$ in the States but he still does not have a command over the English language.
A] have been living
B] has been living
C] have lived
D] living
Q. 43 You and I $\qquad$ the obligations.
A] am fulfilled
B] has been fulfilling $C$ ] have fulfilled
D] has fulfilled
Q. 44 During the interview, the interviewer is assessing:

A] Resume quality
B] Your ability to fit in to their organization
C] Your problem solving skills
D] None of the above
Q. 45 The best way to apply for a job is to submit a résumé that is:

A] Specifically written for that particular job
B] Full of personal information
C] Self-recommending
D] Suitable for any job
Q. 46 Which of these is not a type of interview?

A] Screening interview
B] Stress interview
C] Gossip interview
D] Lunch interview
Q. 47 Which form of interviewing is used quite often today as a first interview?
A] Directed
B] Unstructured
C] Telephone
D] Stress
Q. 48 My friends and I $\qquad$ stuck there.
A] had been
B] was
C] has been
D]
have had been
Q. 49 Jack and John $\qquad$ helpful.
A] be
B] have been
C] was
D] had been
Q. 50 The whole family $\qquad$ for the ceremony.
A] has been invited
B] have been invited
C] invites
D] invited

# End Semester Examination, May 2023 

MCA - Second Semester
PLACEMENT COMPETENCY ENHANCEMENT MCA-II (CDC-512)
Time: 2 hrs.
Max Marks: 50
No. of pages: 5

## Please read the instructions carefully

Note: All questions are compulsory. Each question has FOUR options with ONE correct answer. Select the correct answer. All questions are of ONE mark each. There is no NEGATIVE marking. Mention the correct option for each question in the blank answer key given herein below. Calculator is not permitted. Use only black or blue pen.

| 1) | 2) | 3) | 4) | 5) | 6) | 7) | 8) | 9) | 10) |
| :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- | :--- |
| 11) | 12) | 13) | 14) | 15) | 16) | 17) | 18) | 19) | 20) |
| 21) | 22) | 23) | 24) | 25) | 26) | 27) | 28) | 29) | 30) |
| 31) | 32) | 33) | 34) | 35) | 36) | $37)$ | 38) | 39) | 40) |
| 41) | 42) | 43) | 44) | 45) | 46) | 47) | 48) | 49) | 50) |

Q. 1 In a class with a certain number of students if one new student weighing 50 kg is added, then average weight of class is increased by 1 kg . If one more student weighing 50 kg is added, then the average weight of the class increases by 1.5 kg over the original average. What is the original average weight (in kg ) of the class?
a) 46
b) 42
c) 27
d) 47
Q. 2 The average height of the first six students is 170 cm , the average height of the last eight students is 175 cm . The average height of the total 16 students is 180 cm . Find the average height of the rest two students.
a) 210 cm
b) 250 cm
c) 240 cm
d) 230 cm
Q. 3 The average of runs of a cricket player of 10 innings was 32 . How many runs must he make in his next innings so as to increase his average of runs by 4 ?
a) 76
b) 79
c) 85
d) 87
Q. 4 A batsman makes a score of 87 runs in the 17 th inning and thus increases his average by 3 . Find his average after 17th inning?
a) 27
b) 39
c) 61
d) 38
Q. 5 The average weight of 8 persons increases by 2.5 kg when a new person comes in place of one of them weighing 65 kg . What might be the weight of the new person?
a) 70 kg
b) 75 kg
C) 80 kg
d) 85 kg
Q. 6 Kritika is on a 4 days trip with school mates. She had decided to keep her average expense for 4 days at $₹ 80$. However, at the end of third day she realized that her expenses on first three days were ₹80, ₹90, ₹110 and respectively. How much should she spend on $4^{\text {th }}$ day to ensure that she meets her targeted average expense?
a) ₹ 40
b) ₹60
c) ₹ 90
d) ₹ 220
[CO5] [L1]
Q. 7 Rakshit sold 21 tables in a day. He told his father, "My earnings at end of the day are ₹ 400000 . The average earning from the first 11 tables I sold was ₹20000". What were his average earnings from the remaining tables?
a) ₹9125
b) ₹9750
c) ₹ 16,363
d) $₹ 18,000$
[CO5] [L2]
Q. 8 The cargo ship was carrying gas cylinders from Australia to New Zealand. 3 cylinders with average weight $X \mathrm{~kg}$ belonged to a single owner. Last minute one of the cylinders weighing 85 kg was replaced by another cylinder leading to a rise in average weight of the 3 cylinders by 7 kg . Find the weight of the new cylinder.
a) 79 kg
b) 92 kg
c) 106 kg
d) 109 kg
[CO5] [L1]
Q. 9 By mixing two qualities of pulses in the ratio 2: 3 and selling the mixture at the rate of ₹22 per kilogram, a shopkeeper makes a profit of $10 \%$. If the cost of the smaller quantity be ₹14 per kg, the cost per kg of the larger quantity is?
a) ₹23
b) ₹25
c) None of these
d) ₹24
[CO5] [L2]
Q. 10 Ajay bought 15 kg of dal at the rate of $₹ 14.50$ per kg and 10 kg at the rate of $₹ 13 \mathrm{per}$ kg . He mixed the two and sold the mixture at the rate of ₹ 15 per kg . What was his total gain in this transaction?
a) ₹ 1.10
b) ₹11
c) ₹ 16.50
d) ₹27.50
[CO5] [L2]
Q. 11 Three pipes A, B and C can fill a tank from empty to full in 30 minutes, 20 minutes, and 10 minutes respectively. When the tank is empty, all the three pipes are opened. A, B and $C$ discharge chemical solutions $P, Q$ and $R$ respectively. What is the proportion of the solution R in the liquid in the tank after 3 minutes?
a) $5 / 11$
b) $6 / 11$
c) $8 / 11$
d) $7 / 11$
[CO5] [L2]
Q. 1213 buckets of water fill a tank when the capacity of each bucket is 51 litres. How many buckets will be needed fill the same tank, if the capacity of each bucket is 17 litres?
a) 33
b) 29
c) 39
d) 42
[CO5] [L1]
Q. 13 Two pipes $A$ and $B$ can separately fill a cistern in 40 minutes and 30 minutes respectively. There is a third pipe bottom of the cistern to empty it. If all the three pipes are simultaneously opened, then the cistern is full in 20 minutes. In how much time, the third pipe alone can empty the cistern?
a) 120 min
b) 100 min
c) 140 min
d) 80 min
[CO5] [L1]
Q. 14 A leak in the bottom of a tank can empty the full tank in 6 hours. An inlet pipe fills water at the rate of 4 liters a minute. When the tank is full, the inlet is opened and due to the leak, the tank is empty in 24 hours. How many liters does the tank hold?
a) 4010 litre
b) 2220 litre
c) 1920 litre
d) 2020 litre [CO5] [L2]

Directions (Q. 15 to Q.19): Study the table carefully answer the questions given below.
In six years, the number of students taking admissions and leaving from the five different colleges which founded in 2010 is given below.
[CO5] [L2]
A- Admitted
L-Left

|  | A |  | B |  | C |  | D |  | E |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| College Years | A | $\underline{L}$ | A | $\underline{L}$ | A | $\underline{L}$ | A | $\underline{L}$ | A | $\underline{L}$ |
| 2010 | 1125 | --- | 1050 | --- | 1200 | --- | 1600 | --- | 1550 | --- |
| 2011 | 330 | 220 | 450 | 250 | 420 | 230 | 440 | 250 | 350 | 225 |
| 2012 | 290 | 210 | 325 | 215 | 400 | 250 | 400 | 260 | 380 | 230 |
| 2013 | 345 | 200 | 285 | 210 | 360 | 225 | 395 | 220 | 410 | 220 |
| 2014 | 380 | 250 | 300 | 190 | 340 | 240 | 420 | 225 | 440 | 210 |
| 2015 | 350 | 230 | 340 | 220 | 410 | 280 | 460 | 240 | 425 | 215 |

Q. 15 What is the average number of students studying in all the five colleges in 2012?
a) 1584
b) 1594
c) 1694
d) 1574
[CO5] [L1]
Q. 16 What was the number of students studying in college $B$ in 2014?
a) 1555
b) None of these
c) 1445
d) 1545
[CO5] [L1]
Q. 17 The number of students leaving college from the year 2010 to 2015 is approximately what per cent of the number of students taking admission in the same college and during the same year?
a) $37 \%$
b) $43 \%$
c) $39 \%$
d) $41 \%$
[CO5] [L1]
Q. 18 What is the difference behaviour the number of students taking admission between 2011 and 2015 in college D and B?
a) 415
b) 395
C) 435
d) None of these
[CO5]
[L1]
Q. 19 In which of the following colleges, is the percentage increase in the number of students from the year 2010 to 2015 the maximum?
a) D
b) $A$
c) $B$
d) C
[CO5] [L2]
Q. 20 Statements:

All the locks are keys.
All the keys are bats.
Some watches are bats.
Conclusions:
I. Some bats are locks.
II. Some watches are keys.
III. All the keys are locks.
a) Only I and II
b) Only I
c) Only II
d) Only I and III [CO6]
[L2]
Q. 21 Statements:

Some envelops are gums.
Some gums are seals.
Some seals are adhesives.
Conclusions:
I. Some envelopes are seals.
II. Some gums are adhesives.
III. Some adhesives are seals.
IV. Some adhesive es are gums.
a) Only III
b) Only I
c) Only II
d) Only IV
[CO6] [L1]
Q. 22 Statements:

All the bottles are boxes.
All the boxes are bags.
Some bags are trays.
Conclusions:
I. Some bottles are trays.
II. Some trays are boxes.
III. All the bottles are bags.
IV. Some trays are bags.
a) Only III and IV
b) Only I and II
c) Only II and III
d) Only I and IV
[CO6] [L1]
Q. 23 Statements:
[CO6][L2]
Some cars are jeeps.
All the boxes are jeeps.
All the pens are cars.
Conclusions:
I. Some cars are boxes.
II. No pen is jeep.
III. Some boxes are cars.
a) None of three
b) Only I and II
c) Only I and III
d) Only II and III [CO6] [L1]
Q. 24 A coin is tossed twice if the coin shows head it is tossed again but if it shows a tail then a die is tossed. If 8 possible outcomes are equally likely. Find the probability that the die shows a number greater than 4 , if it is known that the first throw of the coin results in a tail.
a) $1 / 4$
b) $1 / 5$
C) $1 / 2$
d) $1 / 3$
[CO6] [L2]
Q. 25 A college is organizing an event for Carom competition involving some boys and girls. 66 games were played between 2 girl students and 210 games were played between 2 boys students. Every player needs to play exactly one game with every other player. How many games were played between a boy and a girl student?
a) 190
b) 210
c) 230
d) 252
[CO5] [L2]
Q. 26 Peter is going to rob a jewelry shop, whose locker code is an even number between $100 \& 500$. Peter also know that the numbers used in the code is from the set: 0 to 5. Find the number of maximum trials Peter has to take to unlock the locker?
a) 80
b) 75
c) 72
d) 60
[CO5] [L2]
Q. 27 Amar had 9 cars where he drives two in a day to office. If the combinations of the two cars on any given day are not the same as that on any other day, find the number of days that are required to exhaust all such combinations. On how many days will he be taking one particular car to the office during this period?
a) 22
b) 24
c) 36
d) 20
[CO5] [L2]
Q. 28 A basket contains 3 brown and 4 green balls. If three balls are drawn at random. What is the probability that all the three are same colour?
a) $7 / 5$
b) $3 / 7$
c) $1 / 7$
d) $4 / 7$
[CO5] [L1]
Q. 29 The probability of two persons of passing the interview are $1 / 3$ and $3 / 5$. Then calculate the probability that only one of them pass the interview?
a) $7 / 15$
b) $8 / 15$
c) $11 / 15$
d) $13 / 15$
[CO5] [L1]
Q. 30 The probability that the problem will be solved by three persons are $1 / 2,1 / 3$ and $1 / 6$. Find the probability that the problem is solved?
a) $11 / 18$
b) $13 / 18$
c) $15 / 18$
d) $17 / 18$
[CO5] [L2]
Directions (Q. 31 to $\mathbf{Q} .35$ ): Read the following passage and answer the question.
[CO1]
[L2]
Bacteria are extremely small living things. While we measure our own sizes in inches or centimeters, bacterial size is measured in microns. One micron is a thousandth of a millimeter a pinhead is about a millimeter across. Rod shaped bacteria are usually from two to tour microns long, while rounded ones are generally one micron in diameter Thus if you enlarged a founded bacterium a thousand times, it would be just about the size of a pinhead. An adult human magnified by the same amount would be over a mile ( 1.6 kilometers) tall.
Even with an ordinary microscope, you must look closely to see bacteria. Using a magnification of 100 times, one finds that bacteria are barely visible as tiny rods or dots. One cannot make out anything of their structure. Using special stains, one can see that some bacteria have attached to them wavy - looking "hairs" called flagella. Others have only one flagellum. The flagella rotate, pushing the bacteria though the water. Many bacteria lack flagella and cannot move about by their own power while others can glide along over surfaces by some little understood mechanism. From the bacterial point of view, the world is a very different place from what it is to humans to bacterium water is as thick as molasses is to us. Bacteria are so small that they are influenced by the movements of the chemical molecules around them. Bacteria under the microscope, even those with no flagella, often bounce about in the water. This is because they collide with the water molecules and are pushed this way and that. Molecules move so rapidly that within a tenth of a second the molecules around a bacterium have all been replaced by new ones even bacteria without flagella are thus constantly exposed to a changing environment.
Q. 31 Which of the following is the main topic of the passage?
a) The characteristics of bacteria
b) How bacteria reproduce
c) The various functions of bacteria
d) How bacteria contribute to disease
Q. 32 Bacteria are measured in
a) Inches
b) Centimeters
c) Microns
d) Millimeters
Q. 33 Which of the following is the smallest?
a) A pinhead
b) A rounded bacterium
c) A microscope
d) A rod-shaped bacterium
Q. 34 According to the passage, someone who examines bacteria using only a microscope that magnifies 100 times would see
a) Tiny dots
b) Small "hairs"
c) Large rods
d) Detailed structures
Q. 35 The relationship between a bacterium and its flagella is most nearly analogous to which of the following?
a) A rider jumping on a horse's back
b) A ball being hit by a bat
c) A boat powered by a motor
d) A door closed by a gust of wind

Directions (Q. 36 to $\mathbf{Q . 4 0}$ ): Fill in the blanks below to form a meaningful sentence:
Q. 36 Although it is necessary to carry a relatively large number of provisions when traversing the Australian Outback, it is $\qquad$ that you keep your pack from becoming too
$\qquad$ -.
a) Crucial - Ponderous
b) Helpful - Elongated
c) Mandatory - Insulated
d) Important-Convoluted
Q. 37 After living a life of depravity and transgression, the offender felt so $\qquad$ that he declared he would become a priest, and devote the remainder of his life to $\qquad$ .
a) Terrible - sin
b) Tentative - Shame
c) Remorseful - Atonement
d) Melancholy- Sadness
Q. 38 He vowed to embrace a newfound $\qquad$ once the trial began; nonetheless the accused resorted to his typical manner of $\qquad$ as soon as he took the stand.
a) Passion - Exuberance
b) Candor - Duplicity
c) Residence - Decrepitude
d) Hobby- Deceitfulness
Q. 39 Despite some members of the Board of Education admitting to the $\qquad$ of his argument, Proposition G6 was still denied by a vote of 4 to 3 .
a) Force
b) Negligence
c) Cogency
d) Brusqueness
Q. 40 Mr. Plainview is a man of secrecy. He deals with the mob and other $\qquad$ organizations, and regularly participates in their $\qquad$ activities.
a) Amiable- Illegitimate
b) Anarchistic - Fraudulent
c) Disdainful - Scrupulous
d) Clandestine - Unlawful
Q. 41 Quadrant 4 of Covey's Time Management Matrix categorizes things/tasks which are:
a) Urgent \& Important
b) Not Urgent \& Important
c) Not Urgent \& Not Important
d) Urgent \& Not Important
[CO4] [L2]
Q. 42 What is NOT the best attire to wear for an interview?
a) Tattered Jeans and Vest
b) 3 Piece Business Suit
c) Semi Casuals
d) Black Trouser \& White Shirt
[CO3] [L2]
Q. 43 One of the main part of the resume that includes the address and the contact details is
a) Salutation
b) Greeting
c) Heading
d) Body
[CO4] [L1]
Q. 44 The cumulative action of a team in which an individual member keeps aside his/her interests and opinions to fulfill the objectives or goal of the group is known as
a) Team
b) Teamwork
c) Group
d) Club
$\overline{[\mathrm{CO3]}[\mathrm{~L} 1]}$
Q. 45 Which of the following should not be included in the resume?
a) Why you are applying for the positionb) Your Skills, Qualification \& Experience
c) Details of problems faced in past
d) Your Knowledge about the Co. [CO4] [L2]
Q. 46 Select the location where the name and address can be mention in a skills profile?
a) Bottom left corner
b) Top right corner
c) Top left corner
d) None of these
[CO4] [L2]
Q. 47 The roles played in a Group Discussion are.
[CO2][L2]
a) Leader
b) Initiator
c) All of the above
d) Controller
[CO4] [L2]
Q. 48 Which of the following is a benefit of preparation about Employer?
a) Improved answers to tricky questions
b) Improved ownership facts about company
c) Improved Outcome
d) All of the above
Q. 49 The group discussion assesses the candidate's ability to:
a) Control others
b) Confer with others on a specified subject
c) Argue with others
d) Lead others
[CO3] [L1]
Q. 50 "Tease" or "stress" questions are asked to judge the candidate's.
a) Intelligence quotient
b) Technical skill
c) How the candidate handles them
d) Stress level
[CO4] [L1]

# End Semester Examination, May 2023 

B. Sc. (Information Technology) - Fourth Semester

## OPERATING SYSTEMS (COMP-621)

Time: 3 hrs.

Max Marks: 100
No. of pages: 2

Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.

## Q. 1 Multiple choice questions:

a) Operating system:
[CO-1] [L-1]
i) Enables the programmer to draw a flow-chart
ii) Provides a layer, user friendly interface
iii) Links a program with subroutine it references
iv) All of the above.
b) FIFO scheduling is $\qquad$ .
[CO-3] [L-1]
i) Fair-share scheduling
ii) Deadline scheduling
iii) Non-preemptive scheduling
iv) Pre-emptive scheduling
c) What is the name of the operating system that reads and reacts in terms of actual time?
[CO+2] [L-1]
i) Real time system
ii) Time sharing system
iii) Quick response time
iv) Batch system
d) Because of virtual memory, the memory can be shared among:
[CO-4] [L-1]
i) Processes
ii) Threads
iii) Instructions
iv) None of the above
e) $\qquad$ is the concept in which a process is copied into main memory from the secondary memory according to the requirement.
[CO-3] [L-1]
i) Paging
ii) Demand paging
iii) Segmentation
iv) Swapping
[CO-4] [L-1]
f) To create a file:
ii) make an entry for new file in directory
i) Allocate the space in file system
iv) none of the above
g) File type can be represented by:
[CO-4] [L-1]
i) File name
ii) File extension
iii) File identifier
iv) None of the above
h) What are the requirements for the solution to critical section problem? [CO-3] [L-1]
i) Mutual exclusion
ii) Progress
iii) Bounded waiting
iv) All of the mentioned
i) In which type of the following OS, the response time is very crucial?
[CO-3] [L-1]
i) Network operating system
ii) Real time operating system
iii) Batch operating system
iv) Unix operating system
j) A program in execution is called:
[CO-2] [L-1]
iii) A virtual memory
i) A page
ii) A process
iv) A Demand page
$2 \times 10$

## PART-A

Q. 2 a) What is an operating system and what are the goals and functions of an operating system?
[CO-1] [L-1] 10
b) What is a process and what are the different states of a process? [CO-1] [L-1] $\mathbf{1 0}$
Q. 3 Multiprogramming environment in an Operating system supports process synchronization. Give reasons for requirement of process synchronization in multiprogramming environment. Explain in detail with adequate examples.
[CO-2] [L-2] 20
P. T. O 123
Q. 4 State the purpose of CPU scheduling. Several algorithms have been developed for CPU scheduling. Explain the well-known CPU scheduling algorithms.

## PART-B

Q. 5 Deadlock occurs in many situations in our daily lives. Define deadlocks in operating system. Illustrate the situations where deadlock occurs.
[CO-3] [L-3] 20
Q. 6 Memory Management is a technique to efficiently utilize the fixed amount of memory to allocate it to various processes for their execution. Classify the various methods involved in memory management.
[CO-3] [L-4] 20
Q. 7 List four operations performed on files. Describe these operations and give examples. [CO-4] [L-2]20

# End Semester Examination, May 2023 

B. Sc. (Information Technology) - Fifth Semester

INFORMATION TECHNOLOGY PROJECT MANAGEMENT (COMP701A)
Time: 3 hrs.
Max Marks: 100
No. of pages: 1
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Answer the following in brief:
a) Write the advantage of Perl chart.
b) Define 'project control'.
c) List the activities of project management.
d) List down any four govt. IT projects initiated in last 5 years.
e) What is risk management?
f) Write any two challenges faced by the project manager.
g) Give names of three tools for project quality management.
h) What is project closure analysis?
i) Define 'project management'.
j) Name 4 qualities of a 'project manager'. $\quad[C O 1,2,3,4,5,6][L 1,2,3] \mathbf{2 \times 1 0}$

## PART-A

Q. 2 a) "Project manager plays a key role". How does a project manager play the key role?
[CO1] [L2] 10
b) Explain the structured approach of project planning with example.
[CO1] [L2] 10
Q. 3 a) Describe the life cycle stages in project management including selection, goal setting.
[CO2] [L2] 10
b) Explain the importance of planning. How planning can help us to overcome failure?
[CO2] [L2] 10
Q. 4 a) What is the role of a critical path in project planning? What are the steps that you will take to do risk planning?
[CO3] [L2] 10
b) How resource loading and leveling are done in project resource allocation?

## PART-B

Q. 5 a) We use QA and QC for ensuring the quality of the final deliverables. What's the difference between them?
[CO4] [L2] 10
b) What is Gantt chart? How Gantt chart helps in project scheduling? Give a suitable example to support your answer.
[CO4] [L4] 10
Q. 6 a) Write short notes on:
i) Project evaluation.
ii) Auditing.
[CO5] [L2] 5×2
b) In which situation the project is terminated? .lustily your answer with a suitable example.
[CO5] [L2] 10
Q. 7 a) We all are aware of conflict management techniques that can be applied for managing conflicts between stakeholders and team members. Elaborate. [CO6] [L2] 10
b) Describe the various types of organizations and identify their suitability for the different projects.
[CO6] [L2] 10

## End Semester Examination, May 2023

B. Sc. (Information Technology) - Fourth Semester

## SERVER ADMINISTRATION (CONE618)

Time: 3 hrs.
Max Marks: 100
No. of pages: 1
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Answer the following in brief:
a) What are users, groups and OUs and their relationships?
[CO-2] [L-1]
b) What are windows server 2012 Roles?
[CO-2] [L-1]
c) What are user properties and computer properties?
[CO-3] [L-1]
d) What are group policy sections?
[CO-2] [L-1]
e) What are dialup PPP and VPN networks?
[CO-3] [L-1]
f) How do we configure network access policies?
g) What is BitLocker drive encryption?
h) What is distributed file system?
i) What are failover cluster hardware, network and requirements?
[CO-3] [L-1]
j) Explain RAID, MPIO, ISCi and ISNS.

## PART-A

Q. 2 Explain the concept of windows remote management and file system introduction and setup.
[CO-1] [L-1] 20
Q. 3 Write short notes on:
a) Active directory groups.
b) Introduction to DNS.
c) Filtering and advanced active directory features.
d) DNS queries and DNS database zones.
[CO-2] [L-1] $\mathbf{5 \times 4}$
Q. 4 What is the difference between group policy, script policy and loopback policy? How can we manage group policy inheritance, security filtering and assigning permissions of a group policy?
[CO-3] [L-2] 20

## PART-B

Q. 5 Explain the concept of routing, routing tables, and routing types. Pen down your views on IP routing and VPN protocols.
[CO-3] [L-3] 20
Q. 6 What do you mean by BitLocker drive encryption? What is branch cache? Write its main features.
[CO-3] [L-1] 20
Q. 7 Write short notes on:
a) Implementing disaster recovery.
b) Backup and recovery of active directory.
c) Configuring windows firewall.
d) WBB admin and VSS admin.
[CO-4] [L-2] $5 \times 4$

# End Semester Examination, May 2023 <br> B.Sc. (Information Technology) - Fifth Semester <br> ADVANCE COMPUTER NETWORKING (CONE710) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Answer the following multiple choice questions:
a) What is congestion control in the transport layer?
i) A technique to prevent data packets from being lost during transmission.
ii) A mechanism to manage the flow of data packets in a network.
iii) A method to prevent unauthorized access to a network.
iv) A protocol used to establish a connection between two devices.
b) Which of the following is NOT a congestion control technique used in TCP?
i) Window scaling
ii) Congestion avoidance
iii) Random early detection (RED)
iv) Stop-and-wait
c) Which of the following is not a wireless networking technology?
i) Bluetooth
ii) $\mathrm{Wi}-\mathrm{Fi}$
iii) Ethernet
iv) NFC
d) Which of the following is NOT a reason for network congestion?
i) High network traffic
ii) Slow network links
iii) Large number of devices in the network
iv) Strong network security measures
e) Which layer of the OS1 model is responsible for error detection and correction?
i) Network layer
ii) Transport layer
iii) Data link layer
f) What is a WAN?
i) A type of local area network (LAN)
ii) A virtual network that spans across multiple geographic locations
iii) A type of wireless network
iv) A network protocol used for routing between VLANs
g) What is the main function of a router in a network?
i) To connect multiple LANs
ii) To connect a LAN to a WAN
iii) To connect two different networks
iv) To connect multiple devices on a LAN
h) Which of the following is an example of a transport layer protocol?
i) HTTP
ii) FTP
iii) TCP
iv) SMTP
i) Which layer of the OSI model is responsible for routing and switching?
i) Network layer
ii) Transport layer
iii) Data link layer
iv) Physical layer
j) Which transport layer protocol does NOT provide congestion control?
i) $T C P$
ii) UDP
iii) SCTP (Stream control transmission protocol)
iv) RDP (Reliable data protocol)

## PART-A

Q. 2 a) Describe the different types of network devices, including hubs, switches, routers, and gateways. Explain their functions
b) Explain the different layers of OSI with the help of suitable diagram. [CO3] [L3] 10
Q. 3 Explain the difference between TCP and UDP protocols.
[CO4] [L2] 20
Q. 4 a) Explain the protocols commonly used for transferring multimedia data over the network.
[CO5] [L3] 10
b) Explain the different types of transmission media used in networking. Discuss the advantages and disadvantages of each.
[CO2] [L3] 10

## PART-B

Q. 5 a) Compare and contrast the operation and benefits of two popular VLAN protocols: IEEE 802.1Q and virtual trunk protocol (VTP).
[CO4] [L5] 10
b) Explain various congestion control mechanisms and algorithms used in transport layer protocols.
[CO4] [L4] 10
Q. 6 Explain the following high-level Wide Area Network (WAN) protocols:
a) Frame relax.
b) Asynchronous transfer mode (ATM).
c) Multiprotocol label switching (MPLS).
d) Frame-relay protocol.
[CO2] [L4] 5×4
Q. 7 Explain the concept of quality of service (QoS) in computer networks. How does QoS ensure reliable and efficient network performance?
[CO4] [L2] 20

# End Semester Examination, May 2023 <br> MCA - First Semester <br> FUNDAMENTALS OF COMPUTER PROGRAMMING (MCA-DS-001) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.

## Q. 1 Multiple choice type of questions:

a) Size of float data type.
i) 16 bits
ii) 8 bits
iii) 32 bits
iv) Null
b) Which of the following will not return a value?
i) Null
ii) Void
iii) Int
iv) Free
c) The data elements in structure are also known as what?
i) Objects
ii) Members
iii) Data
iv) None of the above
d) How many type of comments are there in Java?
i) 1
ii) 2
iii) 3
iv) 4
e) Where does the execution of the program starts in Java?
i) User-defined function
ii) Main function
iii) Void function
iv) None of the above
f) Which symbol is used to take output in $\mathrm{C}++$ programming?
i) $\&$
ii) >>
iii) $\ll$
iv) \#
g) Which header file is used for sqrt() operations?
i) stdlib.h
ii) string.h
iii) stdarg.h
iv) math.h
h) Which header file is used for string operations?
i) stdlib.h
ii) string.h
iii) stdarg.h
iv) math.h
i) What will be the output of the following code snippet?

1) \#include <stdio.h>
2) int main() \{int $\mathrm{a}=3, \mathrm{~b}=5$; intt = $\mathrm{a} ; \mathrm{a}=\mathrm{b} ; \mathrm{b}=\mathrm{t} ;$ printf("\%d \%d", $\mathrm{a}, \mathrm{b})$;return 0;\}
i) 33
ii) 35
iii) 55
iv) 53
j) Who is the father of Java language?
i) Steve Jobs
ii) James Gosling
iii) Dennis Ritchie
iv) Rasmus Lerdorf[CO2, 3, 4,] [L1, 2, 3]
$2 \times 10$

## PART-A

Q. 2 a) Differentiate between 'open source' and 'license software' with suitable examples.
[CO2] [L3] 10
b) Differentiate between 'high level' and 'low level' language.
[CO4] [L3] 10
Q. 3 Describe the difference between 'server side vs. client side' programming. [CO3][L4] 20
Q. 4 Explain the open source software. How do you contribute to an open source project?

## PART-B

Q. 5 What is ooPS? Explain the concepts of ooPS with real life example along with syntax in any syntax.
[CO5] [L2] 20
Q. 6 Differentiate between 'pseudo code and algorithm' with suitable example. [CO2] [L2] 20
Q. 7 a) Write a program for printing the table and explain using flow chart. [CO3] [L1] 10
b) Write a program for calculation qf simple interest and explain it with flow chart.

## End Semester Examination, May 2023 <br> MCA - Third Semester <br> LINEAR ALGEBRA AND STATISTICAL TECHNIQUES (MCA-DS-301)

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.

## Q. 1 Choose the correct option:

a) How many solutions does a quadratic equation have?
i) One
ii) Two
iii) Three
iv) Four
b) The determinant of Null matrix is:
i) 1
ii) 0
iii) Depends on the matrix
iv) None of the these
c) What are eigen values of idemponent matrix?
i) 0 or 1
ii) 0
iii) Depends on the matrix
iv) 1 and 2
d) The matrix $A=\left[\begin{array}{ccc}2 & 1 & 1 \\ 3 & 2 & 1 \\ 1 & -1 & 3\end{array}\right]$ is skew symmetric.
i) True
ii) False
e) Let $A$ be a nil potent matrix of order $n$ then.
i) $A^{n}=0$
ii) $\mathrm{nA}=0$
iii) $A=n I, I$ is Identity matrix
iv) None of the above
f) The mean often numbers is 58 . If one of the numbers is 40 then what is the mean of the other nine?
i) 18
ii) 60
iii) 162
iv) 540
g) The mean of 11 numbers is 7 . One of the numbers 13 is deleted. What is the mean of the remaining 10 numbers?
i) 7.7
ii) 6.4
iii) 6.0
iv) 5.8
h) In a binomial distribution, if ' $n$ ' is the number of trials and ' $p$ ' is the probability of success, then the mean value is given by $\qquad$ .
i) $n p$
ii) $n$
iii) $p$
iv) $n p(1-p)$
i) Feasible region is the region in the set of points which satisfy.
i) The objective functions
ii) Some the given constraints
iii) All of the given constraints
iv) None of the above
j) In normal distribution:
i) Mean = Median = Mode
ii) Mean < Median < Mode
iii) Mean > Median > Mode
iv) Mean $=$ Median $\neq$ Mode [CO1, 3] [L1] $\mathbf{2 \times 1 0}$

## PART-A

Q. 2 a) Consider the abelian group $G=\{1,2,3,4,5,6,7\}$ under multiplication modulo 7 . i) Find the multiplication table.
ii) Find $5-^{1}, 6-^{1}, 7^{-1}$
[CO2] [L4] 10
$A=\left[\begin{array}{lll}4-x & 4+x & 4+x \\ 4+x & 4-x & 4+x \\ 4+x & 4+x & 4-x\end{array}\right]=0$
, find $x .[C O 2][L 4] 10$
Q. 3 a) Solve the following system using the augmented matrix $M$ :
$3 x-9 z=33$
$7 x-4 y-z=-15$
$4 x+6 y+5 z=-6$
[CO3] [L4] 10
b) The set of all values of/, for which the system of linear equations:
$2 x_{1}-2 x_{2}+x_{3}=\lambda x_{1}, 2 x_{1}-3 x_{2}+2 x_{3}=\lambda x_{2}, \quad-x_{1}+2 x_{2}=\lambda x_{3}$ has a non-trivial solution.
[CO3] [L4] 10
Q. 4 a) Discuss the consistency of the system of equations:
$x-y+z=0$
$x+2 y-z=0$
$2 x+y+3 z=0$
[CO3] [L5] 10
b) Verify the Cayley-Hamilton theorem for the matrix
[CO3] [L5] 10

## PART-B

Q. 5 a) A problem is given to three students whose chances of solving it are $1 / 2,1 / 3$ and $1 / 4$ respectively. What is the probability that the problem will be solved?
[CO4] [L4] 10
b) A factory produces blades in packets of 10 . The probability of blades to be defective is $0.2 \%$. Find the number of packets having two defective blades in a consignment of 10000 packets.
[CO4] [L5] 10
Q. 6 a) What is meant by goodness of fit test? Explain with suitable example. [CO5] [L6] 10
b) The median of the following data set is 525 . Find the values of $x$ and $y$. if the total frequency is 100.
[CO5] [L5] 10

| Marks | $0-100$ | $100-200$ | $200-100$ | $300-400$ | $400-500$ | $500-600$ | $600-700$ | $700-800$ | $800-900$ | $900-1000$ |
| :--- | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| No. of <br> Students | 2 | 5 | X | 12 | 17 | 20 | Y | 9 | 7 | 4 |

Q. 7 a) Solve the following linear programming problem simplex method.

Maximize $Z=50 x+60 y$ subject to the constraints:
$2 x+y \leq 300$
$3 x+4 y \leq 509$
$4 x+7 y \leq 812$
$x \geq 0, y \geq 0$
[CO6] [L5] 10
b) Niki holds two part-time jobs, job I and job II. She never wants to work more than a total of 12 hours a week. She has determined that for every hour she works at job I. she needs 2 hours of preparation time, and for every hour she works at job II, she needs one hour of preparation time, and she cannot spend more than 16 hours for preparation. If she makes $\$ 40$ an hour at job I, and $\$ 30$ an hour at job II, how many hours should she work per week at each job to maximize her income?
[CO6] [L5] 10

# End Semester Examination, May 2023 <br> MCA - First Semester <br> DATA STRUCTURES (MCA-DS-302) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Choose the correct option:
a) What is the postfix form of the following prefix $*+a b-c d$ ?
i) $a b+c d-*$
ii) abc+*-
iii) $a b+* c d-$
iv) $a b+{ }^{*} c d-$
b) A queue is a,
i) FIFO (first In First Out) list.
ii) FIFO (Last In First Out) list.
iii) Ordered array.
iv) Linear tree.
c) Which data structure is needed to convert infix notation to postfix notation?
i) Branch
ii) Queue
iii) Tree
iv) Stack
d) In Breadth First Search of Graph, which of the following data structure is used?
i) Stack.
ii) Queue.
iii) Linked List.
iv) None of the above.
e) The largest element of an array index is called its:
i) lower bound.
ii) range.
iii) upper bound.
iv) All of these.
f) How many nodes in a tree have no ancestors?
i) 0
ii) 1
iii) 2
iv) $n$
g) Which data structure is used for implementing recursion?
i) Queue.
ii) Stack.
iii) Arrays.
iv) List.
h) A technique for direct search is:
i) Binary Search
ii) Linear Search
iii) Tree Search
iv) Hashing
i) The complexity of multiplying two matrices of order $m * n$ and $n * p$ is:
i) mnp
ii) $m p$
iii) mn
iv) $n p$
j) $A(n)$ $\qquad$ is a graph in which each connection has two directions.
i) undirected graph
ii) Weighted graph
iii) bidirectional graph
iv) None of the above

## PART-A

Q. 2 a) What is stack? What are the basic operations associated with stack?
b) Convert the expression into its postfix form and also evaluate it. Write the algorithm for conversion of infix into postfix:
5*(6+2)-12/4
[CO2, 4] [L1, 2] 10
Q. 3 a) Write the routine to insert and delete an element in a queue.
b) Convert the following infix expression into postfix expression.
$A *(b+c)+(b / d) * a+z * u$ $\mathrm{P}+\left(\mathrm{Q} * \mathrm{R}-\left(\mathrm{S} / \mathrm{T}^{\wedge} \mathrm{U}\right) * \mathrm{~V}\right)$
Q. 4 a) How polynomial manipulations are performed with lists? Explain the operations.
b) Explain the steps involved in insertion and deletion into a singly linked list at beg. mid., end. Also explain it diagrammatically.
[CO7] [L3, 6] 12

## PART-B

Q. 5 a) What are various ways to represent a tree in memory?
b) Differentiate between 'trees and graphs'.
c) What are various tree traversal methods?
d) How can we construct a B Tree?
[CO8] [L2] 5×4
Q. 6 a) Construct a tree by using following data:

Preorder $\quad$ G B Q A C K F P D ER H
Inorder $\quad \mathrm{Q}$ B K C P A G P E D H R
[CO8] [L6, 2] 12
b) Explain insertion sort in details write an algorithm for it. Discuss the complexity of insertion sort.
[CO8] [L6, 2] 8
Q. 7 a) Write a brief note on the following:
i) AVL Tree.
ii) Representation of graph in memory.
b) Write a brief note on hashing. Explain hash functions in details. [CO 10] [L2, 4] 10

# End Semester Examination, May 2023 <br> MCA - First Semester <br> OBJECT ORIENTED PROGRAMMING IN JAVA (MCA-DS-303) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 1
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Answer the following in brief:
a) What is the need of JDK and JVM for Java?
[CO1] [L1]
b) Write down the commands needed to compile and interpret a Java file.
[CO1] [L1]
c) Explain type casting.
[CO1] [L1]
d) Differentiate between empty and parameterized constructors. Which one is default constructor?
[CO2] [L1]
e) Can constructor and interface be extendable?
[CO3] [L2]
f) Multiple inheritance in C++ leads to data duplication in child classes. How does Java overcome this inconsistency?
[CO5] [L2]
g) Write a note on: 'garbage collector'.
[CO5] [L1]
h) Differentiate between 'handling the exception by throw and throws keyword'.
i) Draw the life cycle of an applet.
[CO6] [L1]
j) Define 'Abstract Class'.
[CO3] [L1] $\mathbf{2 \times 1 0}$

## PART-A

Q. 2 a) Differentiate between Java and Internet.
[CO1] [L1] 10
b) Explain main features of Java.
[CO1] [L1] 10
Q. 3 a) Differentiate between multiple and multi-level inheritance. Give suitable example of each type.
[CO2] [L1] 10
b) What is constructor overloading? Justify it with an example.
[CO2] [L2] 10
Q. 4 Define 'interface' with an example. Can interface be extended? If yes, justify the
answer. answer.
[CO3] [L2] 20

## PART-B

Q. 5 Explain the thread along with its life cycle. Also, explain multithreading with an example.
[CO5] [L3] 20
Q. 6 a) What is an event handling? Explain event delegation model in detail.
[CO3] [L3] 10
b) Describe 'applet'. How an applet can be run?
[CO3] [L3] 10
Q. 7 a) Define AWT. How a button can be added on the frame via frame class? [CO6] [L2] $\mathbf{1 0}$
b) Define 'JDBC'. Explain different types of JDBC drivers.
[CO3] [L3] 10

## End Semester Examination, May 2023 <br> MCA - Third Semester <br> WEB APPLICATIONS DEVELOPMENT USING PHP (MCA-DS-305)

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. $\mathbf{1}$ is compulsory. Attempt any TWO questions from PART-A and any TWO questions from PART-B. Marks are indicated against each question.

## Q. 1 Multiple choice questions:

a) Which of the following is correct to add a comment in PHP?
i) \& \&
ii) // ......
iii) /* ...... */
iv) ii) and iii)
b) Which of the following is used to display the output in PHP?
i) echo
ii) write
iii) print
iv) i) and iii)
c) What does PEAR stands for?
i) PHP extension and application repository.
ii) PHP enhancement and application reduce.
iii) PHP event and application repository.
iv) None of the above
d) Which of the following is used for concatenation in PHP?
i) + (plus)
ii) * (Asterisk)
iii) . (dot)
iv) append()
e) Which of the following starts with (double underscore) in PHP?
i) Inbuilt constants
ii) User-defined constants
iii) Magic constants
iv) Default constants
f) PHP stands for:
i) Hypertext preprocessor
ii) Pretext hypertext preprocessor
iii) Personal home processor
iv) None of the above
g) Who is known as the father of PHP?
i) DrekKolkevi
ii) List barely
iii) RasmusLerdrof
iv) None of the above
h) Variable name in PHP starts with:
i) ! (Exclamation)
ii) $\$$ (Dollar)
iii) \& (Ampersand)
iv) \# (Hash)
i) Which of the following is the default file extension of PHP?
i). php
ii) .hphp
iii) .xml
iv). html
j) Which of the following is not a variable scope in PHP?
i) Extern
ii) Local
iii) Static
iv) Global

## PART-A

Q. 2 a) What is for each loop? Write a program using for each loop.
b) Design a registration page for the e-mail account using HTML.
Q. 3 a) Define introspection and explain it with suitable example.
b) Differentiate between session and cookies.
Q. 4 a) Differentiate between implode and explode functions.
b) Define session and explain how it works.

## PART-B

Q. 5 a) Write update and delete operations on table data.
b) State the variable function. Explain it with example.
Q. 6 a) Explain the concept of serialization with example.
b) Explain the terms given below:
i) Get session variables.
ii) Destroy session.
iii) Explain inserting.
iv) Retrieving the query result operations.
[CO5] [L2] $\mathbf{2 1 / 2 \times 4}$
Q. 7 a) Create a web page using GUI components.
b) Write a program to connect PHP with My SQL.

# End Semester Examination, May 2023 

## MCA - Second Semester <br> DATA COMMUNICATIONS (MCA-DS-402)

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Choose the correct option:
a) The $\qquad$ is the physical path over which a message travels.
i) Protocol
ii) Medium
iii) Signal
iv) All of the above
[CO3][L1]
b)
i) Full-Duplex
ii) Half-Duplex
iii) Simplex
iv) None of the above
[CO1][L1]
c) $\qquad$ is the protocol suite for the current Internet.
i) UNIX
ii) NCP
iii) TCP/IP
iv) ACM
[CO2][L1]
d) Which topology needs a hub or central controller?
i) Bus
ii) Star
iii) Ring
iv) Mesh

> [CO2][L1]
e) The information to be sent in a data communications system is the $\qquad$ .
i) Medium
ii) Protocol
iii) Transmission
iv) Message
[CO1][L1]
f) Measures of a network's $\qquad$ include failure frequency and network recovery time after a failure.
i) Performance
ii) Security
iii) Reliability
iv) Feasibility
[CO1][L1]
g) Bits are converted into electromagnetic impulses via the $\qquad$ layer.
i) Physical
ii) Transport
iii) Data Link
iv) None of these
[CO4][L1]
h) $\qquad$ can impair a signal.
i) Noise
ii) Attenuation
iii) Distortion
iv) All of the above
[CO3][L1]
i) Protocol for transmission control (TCP) $\qquad$ .
i) Is a connection-oriented protocol
ii) Uses a three-way handshake to establish a connection
iii) Receives data from application as a single stream
iv) All of the above
[CO5][L1]
j) The $\qquad$ layer is between the session layer and the application layer.
i) Physical
ii) Presentation
iii) Transport
iv) None of these
[CO4][L1] $\mathbf{2 \times 1 0}$
PART-A
Q. 2 a) Explain data communication and its basic components. Also explain its characteristics.
[LO1][CO1] 10
b) What is network topology? Explain the different network topologies.
[LO1][CO1]
Q. 3 a) Describe the OSI model and its layers.
b) Explain the difference between TCP and OSI model.
Q. 4 What do you mean by switching? What are the three basic switching techniques and which is preferable?
[LO2][CO2] 20

## PART-B

Q. 5 Discuss the various data encoding methods and their use in data transfer. For the provided data, illustrate various digital-to-digital data encoding methods:
a) 11101101
b) 01111101
c) 11110010
d) 10000111
Q. 6 a) What is the Data link layer's primary purpose?
[L2][CO5] 10
b) Given the data word 101011110 and the divisor 1011, show the generation of CRC codeword at the sender site.
[CO5] [L4] 10
Q. 7 Provide a detailed explanation of the architecture and operation of the IEEE 802.11 standard. Explain how logic link control works.
[CO6] [L4] 20

# End Semester Examination, May 2023 

MCA - First Semester
ANALYSIS AND DESIGN OF ALGORITHM (MCA-DS-403)
Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.

## Q. 1 Multiple choice questions:

a) Strassen's algorithm is a/an $\qquad$ algorithm.
[CO-3] [L-1]
i) Non-recursive
ii) Recursive
iii) Approximation
iv) Accurate
b) Kruskal's algorithm is used to $\qquad$ .
i) find minimum spanning tree
ii) find single source shortest path
iii) find all pair shortest path algorithm
iv) traverse the graph
c) What is the objective of the knapsack problem?
[CO-3] [L-2]
i) To get maximum total value in the knapsack
ii) To get minimum total value in the knapsack
iii) To get maximum weight in the knapsack
iv) To get minimum weight in the knapsack
d) The main time taking step in fractional knapsack problem is $\qquad$ . [CO-4] [L-1]
i) Breaking items into fraction
ii) Adding items into knapsack
iii) Sorting
iv) Looping through sorted items
e) If a problem can be solved by combining optimal solutions to non-overlapping problems, the strategy is called $\qquad$ .
[CO-4] [L-1]
i) Dynamic programming
ii) Greedy
iii) Divide and conquer
iv) Recursion
f) A greedy algorithm can be used to solve all the dynamic programming problems.
i) True
ii) False
[CO-3] [L-2]
g) Steps of divide and conquer approach select one:
[CO-3] [L-1]
i) Divide, conquer and combine
ii) Combine, conquer and divide
iii) Combine, divide and conquer
iv) Divide, combine and conquer
h) The problem of finding a path in a graph that visits every vertex exactly once is called:
[CO-5] [L-1]
i) Hamiltonian path problem
ii) Hamiltonian cycle problem
iii) Subset sum problem
iv) Turnpike reconstruction problem
i) Which of the following methods can be used to solve the knapsack problem? [CO3][L2]
i) Brute force algorithm
ii) Recursion
iii) Dynamic programming
iv) Brute force, recursion and dynamic programming

## Answer the following in brief:

j) Compare algorithm and program.

## PART-A

Q. 2 a) What do you mean by asymptotic notations? List each notation and explain what it signifies?
b) What are various ways to check the performance of an algorithm? Write an algorithm to delete an element from the array.
[CO-2] [L-1] 10
Q. 3 What do you understand by sorting? Compare internal and external sorting. Write an algorithm to sort the list using quick sort method. Also, sort the following list using quick sort method and show each step:
[CO-3] [L-2] 20
Q. 4 a) What do you understand by knapsack problem? Consider that the capacity of the knapsack $W=60$ and the list of provided items are shown in the following table. Use greedy algorithm.

| Item | A | B | C | D |
| :---: | :---: | :---: | :---: | :---: |
| Profit | 280 | 100 | 120 | 120 |
| Weight | 40 | 10 | 20 | 24 |

Find the profit.
[CO-3] [L-3] 10
b) Given the jobs, their deadlines and associated profits as shown:

| Jobs | J1 | J2 | J3 | J4 | J5 |
| :--- | :--- | :--- | :--- | :--- | :--- |
| Profit | 20 | 15 | 10 | 5 | 1 |
| DeadLine | 2 | 2 | 1 | 3 | 3 |

i) Write the optimal schedule that gives maximum profit.
ii) Are all the jobs completed in the optimal schedule?
iii) What is the maximum earned profit?
[CO-3] [L-3] 10

## PART-B

Q. 5 a) What is travelling sales man problem? Discuss with the help of an example.
[CO-4] [L-2] 10
b) Define the following with an example:
i) Dynamic programming.
ii) Optimal binary search tree.
[CO-4] [L-1] 10
Q. 6 Compare backtracking and branch and bound approach. Define hamiltonian circuit and path. Identify possible hamiltonian circuits using backtracking for the following:

[CO-5] [L-5] 20
Q. 7 Differentiate between the following:
a) P and NP problem.
b) Deterministic and Non-deterministic algorithm.
c) NP hard and NP complete.
[CO-6] [L-2] 20

# End Semester Examination, May 2023 

## MCA - Second Semester <br> ARTIFICIAL INTELLIGENCE (MCA-DS-404)

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Answer the following in brief:
a) List out the limitations of expert system.
b) Define 'conditional probability'.
c) What are the ways to formulate the problem?
d) What is the difference between declarative and procedural knowledge?
e) List some of the uniformed search techniques.
f) Which searching algorithms is the best among the following and why. (BFS, DFS, Best first search, hill climbing).
g) How to measure the performance of an agent?
h) What are the four properties for knowledge representation?
i) What are the elements of propositional logic?
j) Why does uncertainty arise?
[CO-1,2,3,4,5] [L-2,3] $\mathbf{2 \times 1 0}$

## PART-A

Q. 2 a) What is AI? Define artificial intelligence on the basis of "system that think rationally" and "system that act like humans".
[CO-1] [L-2] 10
b) What is natural language processing? Mention its application domain in AI. What are
some of the problems which arise in natural language understanding for autonomous machines like robots, intelligent computers?
[CO-1] [L-2] 10
Q. 3 a) What are the problems encountered during hill climbing and what are the ways available to deal with these problems?
[CO-2] [L-3] 10
b) Solve the following:

TWO
$+\mathrm{TWO}$
FOUR
[CO-2] [L-4] 10
Q. 4 a) Convert the following well formed formula into clause from with sequence of steps: $\forall x:\left[\operatorname{Roman}(x)^{\wedge} \operatorname{Know}(x, M a r c u s)\right] \rightarrow[$ hate( $x$, Caesar) $v(\forall y: \exists z:$ hate $(y, z) \rightarrow$ thinkcrazy $(x, y))]$
[CO-3] [L-4] 10
b) State representation of facts in predicate logic with an example. [CO-3] [L-3] 10

## PART-B

Q. 5 a) Consider a two player game in which the minimax search procedure is used to compute the best moves for the first player. Assume a static evaluation function that
returns values ranging from -10 to 10 , with 10 indicating a win for the first player and -10 a win for the second player. Assume the following game tree in which the static scores are from the first player's point of view. Suppose the first player is the
maximizing player and needs to take the next move. What move should be chosen at this point? Can the search be optimized?
[CO-4] [L-3] 10
b) Discuss two primarily modes for an inference engine: forward chaining and backward chaining.
Q. 6 a) What are the characteristics of expert systems?
b) Explain the role of domain expert.
c) List out the limitations of expert system.
d) What are applications of expert systems?
Q. 7 a) What do you understand by a neuron? How it is related to artificial intelligence? Discuss various applications of neural network.
[CO-6] [L-3] 10
b) Define 'machine learning'. What are the steps to build a machine learning system?
[CO-7] [L-3] 10

# End Semester Examination, May 2023 

## MCA - Second Semester

CYBER SECURITY (MCA-DS-405)
Time: 3 hrs.
Max Marks: 100
No. of pages: 2


#### Abstract

Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.


## Q. 1 Multiple choice questions:

a) In which of the following, a person is constantly followed/chased by another person?
[CO-3] [L-1]
i) Phishing
ii) Bulling
iii) Stalking
iv) Identity theft
b) Which one of the following can be considered as the class of computer threats?
[CO-6] [L-1]
i) Dos Attack
ii) Phishing
iii) Soliciting
iv) Both $A$ and $C$
c) Which of the following is considered as the unsolicited commercial email? [L3][CO2]
i) Virus
ii) Malware
iii) Spam
iv) All of the above
d) $\qquad$ is a type of software designed to computer detects viruses and avoid them.
[CO-2] [L-2]
i) Malware
ii) Adware
iii) Antivirus
iv) Both $B$ and $C$
e) Which one of the following is a type of antivirus program?
[CO-1] [L-2]
i) Quick heal
ii) Mcafee
iii) Kaspersky
iv) All of the above
f) It can be a software program or a hardware device that filters all data packets coming through the internet, a network, etc. it is known as the $\qquad$ : [CO-6] [L2]
i) Antivirus
ii) Firewall
iii) Cookies
iv) Malware
g) Which of the following refers to stealing one's idea or invention of others and use it for their own benefits?
[CO-4] [L-4]
i) Piracy
ii) Plagiarism
iii) Intellectual property rights
iv) All of the above
h) Which of the following refers to exploring the appropriate, ethical behaviours related to the online environment and digital media platform?
[CO-4] [L-4]
i) Cyber low
ii) Cyberethics
iii) Cybersecurity
iv) Cybersafety
i) Which of the following refers to the violation of the principle if a computer is no accessible?
[CO-5] [L-4]
i) Access control
ii) Confidentiality
iii) Availability
iv) All of the above
j) Which one of the techniques used for verifying the integrity of the message?
[CO-5] [L-4]
i) Digital signature
ii) Decryption algorithm
iii) Protocol
iv) Message Digest
$2 \times 10$

## PART-A

Q. 2 a) What is cybercrime? List the five IT-act of activities which under comes of cybercrime.
[CO-1] [L-1] 10
b) What is vulnerability? Explain different types of vulnerabilities with suitable example.
[CO-2] [L-1] 5
c) What is firewall? Explain the uses of firewall and how we can activate default.
[CO-3] [L-4] 5
Q. 3 a) What is the difference between threat, vulnerability, and risk?
[CO-1] [L-1] $5_{144}$
P. T. O
b) Explain advantages of firewalls in our daily uses of operating system. [CO-3] [L-2]

10
c) Differentiate between 'HTTP and HTTPS'.
Q. 4 a) Explain contemporary crimes with suitable examples.
[CO-1] [L2] 5
b) What is Brute force attack? Explain with suitable example.
c) Describe the VPN advantages and disadvantages.

## PART-B

Q. 5 a) Explain the cryptography model. Describe RSA algorithm with suitable example.
[CO-4] [L-4] $\mathbf{1 0}$
b) What is digital signature? Explain the advantages and disadvantages of it.
[CO-5] [L1] 5
c) Differentiate between 'phishing and shoulder sniffing'. Explain with suitable example.
[CO-6] [L-4] 5
Q. 6 a) Differentiate between 'public and private Keys'.
[CO-5] [L-4] 10
b) Differentiate between 'RSA and Diffie Hellman Cryptography algorithms'. [CO-4] [L4] 5
c) Differentiate between 'trap door and back door'. Explain with suitable example.
[CO-6] [L-4] 5
Q. 7 a) Differentiate between 'TCP and UDP packets'. [CO-4] [L-4] 5
b) Differentiate between 'internet protocol and web security protocols'. [CO-5] [L-4] 5
c) Differentiate between 'web attacks and network attacks'. Explain with suitable example.
[CO-6] [L4] 10

# End Semester Examination, May 2023 <br> MCA - Second Semester <br> MOBILE COMPUTING (MCA-DS-406) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 1
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART A and TWO questions from PART B. Marks are indicated against each question.
Q. 1 Define the following:

2X10
a) IMEI [CO1][L1]
b) OMC
[CO2][L1]
c) SIM
[CO1][L1]
d) $H L R$
[CO1][L1]
e) VLR
[CO1][L1]
f) $B T S$
g) BSS
h) OSS
i) GGSN
j) NSS

## PART-A

Q. 2 a) Explain the GSM architecture, GSM entities and call routing in GSM. [CO-1][L-2] $\mathbf{1 5}$
c) What do you mean by GPRS?
[CO-2][L-1] 5
Q. 3 Why there was a need for IEEE 802.11 standard? How IEEE 802.11 has made our life easy? Explain Wireless LAN architecture and it's working.
[CO-4][L-4] 20
Q. 4 a) Justify the role of each layer in the WAP protocol stack in detail. [CO-4][L-5] 15
b) Give Applications of wireless application protocol.
[CO-4][L-2] 5

## PART-B

Q. 5 a) Why the adhoc networks become so prominent in the past few years? What are the characteristics and applications of adhoc netwroks?
[CO-4][L-4] 15
b) What are the minimum requirements for an adhoc network?
[CO-4][L-1] 5
Q. 6 a) Differentiate between the dynamic state routing protocols and adhoc on-demand distance vector rotung.
[CO-5][L-4] 15
b) What is reactive protocol and what is pro-active protocol?
[CO-5][L-1] 5
Q. 7 Write short notes on the following:
a) RFID.
b) WIMAX.
c) HiperLAN.
d) Reverse tunneling.

# End Semester Examination, May 2023 <br> MCA - Third Semester <br> PROGRAMMING IN .NET (MCA-DS-503) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 1
Note: Attempt FIVE questions in all; Q. $\mathbf{1}$ is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Answer the following in brief:
a) Define 'visual studio IDE'.
b) What is execution model?
c) What is index overloading?
d) Differentiate between 'Msg box' and 'dialog box'.
e) Explain 'session tracking'.
f) What do you mean by interface? Can it be extended or implemented?
g) What is the use of data reader?
h) Differentiate between 'text box' and 'rich text box'.
i) What do you mean by session during the development of web using ASP.NET?
j) Write full forms of XML and ADO. [CO6] [L1] $\mathbf{2 \times 1 0}$

## PART-A

Q. 2 a) "Microsoft has united various modern as well as existing technologies of software development in .NET Framework to develop highly efficient applications for modern as well as future business needs". Explain the main components of .NET framework. [CO2] [L2] 10
b) Explain the execution process of .NET program.
Q. 3 a) Explain 2-dimensional array. Write a code to add two matrices.
[CO2] [L1] 10
b) What is an exception? Try, catch, finally are some handlers to handle the exception. Differentiate among them.
[CO1] [L2] 10
Q. 4 a) Illustrate the concept of inheritance in C\#. Give different types of inheritance. Illustrate a type with the help of a suitable program.
[CO3] [L2] 10
b) Differentiate between operator overloading and method overloading. [CO2] [L2] 10

## PART-B

Q. 5 a) Let us assume that you have asked to automate the process of admission letter generation for a certain university the current process is completely manual and requires editing existing admission letters, which is prone to error. There are certain things that would be common for all admission letters, such as university location, university timings, university title, university branding, etc. Other things such as student name, course, fees, joining date, etc. are specific to each admission letter. Provide a better solution to resolve this problem.
[CO3] [L3] 10
b) Explain different controls used to create a windows form.
[CO5] [L2] 10
Q. 6 a) "The Microsoft ASP.NET framework includes several options to create web services and applications". Analyse the various features of ASP.Net that are used to create dynamic web pages.
[CO3] [L2] 10
b) Explain the architecture of ADO .NET and its components in detail. [CO4] [L3] 10
Q. 7 a) Create a simple login Windows form application in C\#. It will show a simple login screen, which will be accessible by the user. The user will enter the required credentials and then will click on the login button to proceed. Only three attempts are allowed at a time. Write a code to show the required functionality in C\#. [CO3] [L3] 10
b) What is state management? How can state be managed at server side as well as at 147 client side?
[CO5] [L2] 10

# End Semester Examination, May 2023 <br> MCA - Third Semester <br> DATABASE ADMINISTRATION (MCA-DS-508) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 2

## Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.

Q. 1 Answer the following.
a) Poor data administration can lead to which of the following?
i) A single definition of the same data entity
ii) Familiarity with existing data
iii) Missing data elements
iv) All of the above.
b) A traditional data administrator performs which of the following roles?
i) Tune database performance
ii) Establish backup and recovery procedures
iii) Resolve data ownership issues
iv) Protect the security of the database.
c) If both data and database administration exist in an organization, the database administrator is responsible for which of the following?
i) Data modeling
ii) Database design
iii) Metadata
iv) All of the above.
d) Which of the following is part of an administrative policy to secure a database?
i) Authentication policies
ii) Limiting particular areas within a building to only authorized people
iii) Ensure appropriate responses rates are in external maintenance agreements
iv) All of the above.
e) Backward recovery is which of the following?
i) Where the before-images are applied to the database
ii) Where the after-images are applied to the database
iii) Where the after-images and before-images are applied to the database
iv) Switching to an existing copy of the database
f) What do you mean by one to many relationships?
i) One class may have many teachers
ii) One teacher can have many classes
iii) Many classes may have many teachers
iv) Many teachers may have many classes
g) A Database management system is a type of $\qquad$ software.
i) It is a type of system software
ii) It is a kind of application software
iii) It is a kind of general software
iv) Both i) and iii)
h) The term "FAT" is stands for $\qquad$ .
i) File allocation Tree
ii) File allocation Table
iii) File allocation Graph
iv) All of the above
i) Which of the following can be considered as the maximum size that is supported by FAT?
i) 8 GB
ii) 4GB
iii) 4 TB
iv) None of the above
j) The term "NTFS" refers to which one of the following?
i) New technology file system
ii) New tree file system
iii) New table type file system
$2 \times 10$
iv) Both i) and iii)
[CO-1-6]
[L-2]

## PART-A

Q. 2 a) Define the database architecture. Why would choose a database system instead of simply storing data in operating system files? When would it make sense not to use a database system?
[CO-1] [L-2] 10
b) Discuss the role and functions of administrator.
[CO-1][L-2] 10
Q. 3 a) Draw and describe the general oracle database architecture.
[CO-6] [L-1] 10
b) State the major advantages and disadvantages of the following data models:
i) Network model.
ii) ER model.
[CO-6] [L-1] 5×2
Q. 4 a) Consider the following table STUDENT:

| REGD.NO | NAME | BRANCH |
| :--- | :--- | :--- |
| 0001 | Ram | CSE |
| 0002 | Hari | MECH |
| 0003 | Pradeep | EEE |
| 0004 | Deepak | ETC |

i) Write a SQL command which will show the entire STUDENT table.
ii) Write down the SQL command which will show the Regd. No of Hari.
iii) Write down the SQL command which will show the REGD.NO and Branch column.
iv) Write a SQL command alter and update existing data in STUDENT table.
v) Update the name of the '0001' REGD. No.
[CO4] [L5] 10
b) Define table spaces and explain table spaces management in database.
[CO-3][L-2] 10

## PART-B

Q. 5 a) Define the online and offline database management techniques.
[CO-5] [L-2] 10
b) Differentiate between logical and physical database layout on cloud.
[CO-5] [L-1,2] 10
Q. 6 a) Discuss the ACID properties with suitable example.
[CO-6] [L-6] 10
b) Briefly explain concurrency control scheme with examples.
[CO-5] [L-2] 10
Q. 7 a) Discuss about the causes of failure and security risks in detail. [CO-4][L-1,3] $\mathbf{1 0}$
b) Write short notes on each terms:
i) SaaS, IaaS, PaaS.
ii) Public, private and hybrid cloud.
[CO-4][L-2] $5 \times 2$

# End Semester Examination, May 2023 

# MCA - Fourth Semester <br> ADVANCE JAVA (MCA-DS-601) 

Time: 3 hrs.

Max Marks: 100
No. of pages: 1

Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 a) Which of the following action variable is used to include a file in JSP?
[CO-2] [L-1]
i) jsp:setProperty
ii) jsp:getProperty
iii) jsp:include
iii) jsp:plugin
b) Which one of the following is correct for directive in JSP?
[CO-2] [L-1]
i) <\%@directive\%>
ii) <\%!directive\%>
iii) <\%directive\%>
iv) <\%=directive\%>
c) How constructor can be used for a servlet?
[CO-3] [L-1]
i) Initialization
ii) Constructor function
iii) Initialization and Constructor function iv) Setup() method
d) Which of the following is not an Enterprise Beans type?
[CO-5] [L-1]
i) Doubleton
ii) Singleton
iii) Stateful
iv) Stateless
e) Java Beans are extremely secured.
[CO-2] [L-1]
i) True
ii) False
f) Which attribute is used to specify initialization method?
[CO-2] [L-1]
i) init
ii) init-method
iii) initialization
d) initialization-method
g) Which attribute is used to specify destroy method?
[CO-2] [L-1]
i) destroy
ii) destroy-method
iii) destruction
iv) destruction-method
h) Which of the following is advantage of using JDBC connection pool? [CO-2] [L-1]
i) Slow performance
ii) Using more memory
iii) Using less memory
iv) Better performance
i) Which of the following is used to rollback a JDBC transaction?
[CO-4] [L-1]
i) rollback()
ii) rollforward()
iii) deleteTransaction()
iv) RemoveTransaction()
j) Which of the following is used to call stored procedure?
[CO-4] [L-1]
i) Statement
b) PreparedStatement
iii) CallableStatment
iv) CalledStatement

## PART-A

Q. 2 Define 'JDBC drivers'. Mention all types of JDBC drivers and contrast them with their advantages and disadvantages. Also specify your answer with a note on when to use of which type.
[CO-4] [L-2] 20
Q. 3 a) Differentiate between 'window and document'.
[CO-2] [L-2] 10
b) What are the different ways to get an element from DOM?
[CO-2] [L-2] 10
Q. 4 Describe the servlets architecture using suitable block diagram and explain major task performed by servlets.
[CO-2] [L-2] 20

## PART-B

Q. 5 a) What is JSP tags? Explain the different types of JSP tags.
[CO-2] [L-1] 10
b) What are the types of elements with Java Server Pages (JSP)?
[CO-2] [L-1]

$$
10
$$

Q. 6 a) What is EJB? Explain main components of EJB?
[CO-5] [L-1] 10
b) What are the benefits of EJB? Explain in detail.
[CO-5] [L-1] 10
Q. 7 Write a program to establish connection with database, create table name student, insert two entries of name, age and gender into the table and delete one row from that table.

# End Semester Examination, May 2023 

## MCA - Fourth Semester SOFTWARE PROJECT MANAGEMENT (MCA-DS-602)

Time: 3 hrs.
Max Marks: 100
No. of pages: 1
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.
Q. 1 Write short notes on:
a) Software project issues.
b) Risk in software development.
c) Cost-benefit analysis.
d) Software quality.
e) Software prototype.
[CO-1,2,3] [L-1] $\mathbf{4 \times 5}$

## PART-A

Q. 2 a) Why Capability Maturity Model (CMM) is considered a method to measure software quality? Explain the various stages of CMM with a diagram.
[CO-2] [L-4] 15
b) What are the various issues of software project management?
[CO-1] [L-1] 5
Q. 3 a) Explain the $V \& V$ model of software development. What is the relevance of this model to improve the quality of software?
[CO-3] [L-2] 10
b) What are the advantages of review and inspection in software development?
[CO-1] [L-1] 5
c) Differentiate between 'review' and 'inspection'.
[CO-2] [L-4] 5
Q. 4 a) How PERT chart is helpful in keeping a track of software? Explain the PERT chart by giving example of project activities.
[CO-5] [L-3] 10
b) Why timely consideration of risk can be helpful in avoiding the unnecessary delays in software project?
[CO-2] [L-4] 10

## PART-B

Q. 5 a) Differentiate between generic software and customized software. What are the limitations of generic software?
[CO-4] [L-4] 10
b) "COCOMO model can help us to calculate the cost of a project in advance." Explain with the help of an example.
[CO-6] [L-2] 10
Q. 6 a) Differentiate between 'software testing' and 'software quality'.
[CO-2] [L-4] 10
b) How to carry out the cost benefit analysis for software?
[CO-6] [L-2] 10
Q. 7 a) Why agile software development methodology is better than SDLC? Cite relevant examples to prove your opinion.
[CO-4] [L-2] 10
b) Write the 10 issues of android software development.
[CO-1] [L-3] 10

# End Semester Examination, May 2023 

MCA - Fourth Semester
DATA MINING AND WAREHOUSING (MCA-DS-603)
Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.

## Q. 1 Choose the correct option:

a) Out of the below mentioned techniques, identify the data mining techniques:
i) clustering
ii) classification
iii) Association
iv) All of the above
b) Handling incorrect or missing data is called as $\qquad$ .
i) Selection
ii) Preprocessing
iii) Transformation iv) Interpretation
c) Abrupt value in data is known as $\qquad$ .
i) Changing data
ii) Noisy data
iii) Outliers
iv) Missingdata.
d) Strategic information is needed for:
i) Day to day operations
ii) Meet government requirements
iii) Long range planning
iv) Short range planning
e) Full form of KDD is $\qquad$ .
f) Which of the following activities is NOT a data mining task?
i) Predicting the future stock price of a company using historical records
ii) Monitoring and predicting failures in a hydropower plant
iii) Extracting the frequencies of a sound wave
iv) Monitoring the heart rate of a patient for abnormalities
g) One of the attribute of data stored in data warehouse is:
i) operational
ii) historical
iii) transactional
iv) optimized
h) A $\qquad$ acts a bridge between data warehouse and database application.
i) data mart
ii) operational data
iv) meta data
iv) data cube
i)
i) Tuple
is one of the supervised data mining technique.
j) Which of the following data mining task is known as Market Basket Analysis?
i) Association Analysis
ii) Regression
iii) Classification
iv) Outlier Analysis
$2 \times 10$

## PART-A

Q. 2 a) Explain the data warehouse architecture with the elaborated details of data staging area.
[CO-1] [L-2] 10
b) Differentiate the following:
i) Relational table and data cube.
ii) ER Modelling and multidimensional modelling.
[CO2][L4] 5×2
Q. 3 a) Explain with examples the need of multiple fact tables in a data warehouse.
[CO-3] [L-2] 10
b) Compare and contrast the Snowflake and Star model of data warehouse.
[CO-3] [L-4] 10
Q. 4 a) What is Noise in data? Explain how the presence of noise in data can lead to incorrect results.
[CO-3] [L-2] 10
P. T. O 153
b) Differentiate the following:
i) ROLAP and MOLAP server.
ii) Distributed and Virtual data warehouse.
[CO-3] [L-4] 5×2

## PART-B

Q. 5 a) Compare and contrast the Decision Tree and Bayesian method of classification.
[CO-4] [L-4] 10
b) Explain the K-Means algorithm of Clustering technique with the help of an example.
[CO-4] [L-2] 10
Q. 6 Explain the following terms in relation to association rules:
a) Support.
b) Confidence.
c) Multidimensional association rule.
d) Frequent pattern.
[CO-4] [L-2] $21 / 2 \times 4$
Q. 7 Analyse the need of data mining techniques in the following areas:
a) Agriculture.
b) Supermarkets.
[CO-5] [L-4] $5 \times 2$

# End Semester Examination, May 2023 <br> B.Sc. (Information Technology) - Third Semester <br> OBJECT ORIENTED PROGRAMMING (SOFT 605) 

Time: 3 hrs.
Max Marks: 100
No. of pages: 2
Note: Attempt FIVE questions in all; Q. 1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each question.

## Q. 1 Choose the correct option:

a) $\qquad$ invented Java Programming.
i) Guido van Rossum
ii) James Gosling
iii) Dennis Ritchie
iv) Bjarne Stroustrup
b) $\qquad$ is the extension of Java code files.
i) .js
ii) txt
iii) .class
iv) .Java
c) Evaluate the following Java expression, if $x=3, y=5$, and $z=10$.

$$
++z+y-y+z+x++
$$

i) 24
ii) 23
iii) 20
iv) 25
d) Which of the following is true about the anonymous inner class?
i) It has only methods
ii) Objects can't be created
iii) It has a fixed class name
iv) It has no class name
e) Which exception is thrown when Java is out of memory?
i) Memory Error
ii) Out of Memory Error
iii) Memory out of Bounds Exception
iv) Memory Full Exception
f) What is not the use of "this" keyword in Java?
i) Referring to the instance variable when a local variable has the same name
ii) Passing itself to the method of the same class
iii) Passing itself to another method
iv) Calling another constructor in constructor chaining
g) Which exception is thrown by read() method?
i) IOException
ii) Interrupted Exception
iii) System Exception
iv) System Input Exception
h) What is the listener used to handle the events of a text field?
i) java.awt.ActionListener interface
ii) Java.awt.event.ActionListener
iii) awt.event.ActionListener interface
iv) Java.awt.event.ActionListener interface
i) In following $g$ lines of Java code what will be stored in the object emp.

Employee emp;
i) Memory address of allocated memory of object
ii) NULL
iii) Any arbitrary pointer
iv) Garbage
j) Use the following declaration and initialization to evaluate the Java expressions. int $a=2, b=3, c=4, d=5$;
float $k=4.3$;
System.out.println( --b * a + c *d--);
i) 21
ii) 24
iii) 28
iv) 26
v) 22
[CO1, 2, 3, 5] [L1, 2, 4] $\mathbf{2 \times 1 0}$

## PART-A

Q. 2 a) Differentiate between the procedural paradigm and object-oriented paradigm.
b) Explain the Java program structure with the help of a suitable example. [CO1][L2] 10
Q. 3 a) Write a program to find the greatest of three numbers.
[CO2] [L3] $\mathbf{1 0}$
b) Differentiate between entry-controlled and exit-controlled loop. Write a program to show the usage of both loops.
[CO1] [L2] 10
Q. 4 a) Discuss the role of interface in Java. Differentiate between an interface and a class. Give example where interface can be used to support multiple inheritance?
[CO4][L3] 10
b) List out the role of constructors. Write down its various features and different types. Write a program to demonstrate the use of the parameterized constructor.
[CO3] [L6] 10

## PART-B

Q. 5 a) Define "Exception in Java". How it is different from an error? What are the various techniques to handle exceptions in Java? Explain with example.
[CO4][L2] 12
b) List out the benefits of using package in Java. Demonstrate with a suitable example how packages are created and accessed in Java?
[CO5] [L4] 8
Q. 6 a) Design a GUI interface by using the required AWT components to perform insert operation on a student database.
[CO5] [L6] 10
b) Write short notes on:
i) Input stream reader.
ii) Output stream writer.
[CO4] [L2] $\mathbf{5 \times 2}$
Q. 7 a) Write a Java program using AWT to print "Welcome to Manav Rachna" in red colour. When we click on a button the text should be displayed in text box? [CO5] [L6] 10
b) Explain the applet life cycle with the suitable diagram.
[CO5] [L2] 10

