End Semester Examination, May 2022

BCA -Sixth Semester

Multimedia and Animation BCA-DS-604

Time : 3 hrs Max Marks : 100

No. of pages : ***2***

Note: First question is compulsory to attempt. Attempt **TWO** questions out of three from each unit.

Q.1 Choose the correct option:

a) How many types of video compressions?
i) 2 ii) 3 iii) 4 iv) 6

b) If frames are displayed on screen fast enough, we get an impression of
ii) Signals ii) Motions iii) Packets iv) Bits

c) Which file creates a perfect reproduction of the original images?
iii) i) Shockwave ii) Nx View iii) GIF iv) JPG

d) The text color in a presentation should contrast with the _____ color.
iv) i) CPU ii) frame iii) stack iv) background

e) In video compression, an independent frame that is not related to any other frame is called
i) B Frame ii) C-Frame iii) I-Frame iv) P-Frame

f) Progressive download is most useful for:
i) Short video clips ii) long video clips
iii) Extremely long and high quality videos iv) None of these.

g) In Joint Photographic Experts Group(JPEG), a gray scale picture is divided into blocks of:
i) 5 X5 ii) 6 x 6 iii) 7 x 7 iv) 8 x 8

h) Sometimes real time traffic needs
i) Organization. ii)traffic. iii) Channeling. iv) Translation.

i) Before audio or video signals can be sent on Internet, they need to be
i) Channelized. ii) Managed. iii) Digitized. iv) Organized.

j) The characteristic of the eye to retain the image for a short time after it has been presented is known as:
i) persistence of vision. ii) learning power. iii) memory mapped input.
iv) None of these. CO [1]L[1,2] **2 x 10**

PART-A

Q.2 a) How is Multimedia Database different from other databases? CO [1]L[3] **10**

b) Multimedia is multifaceted and is used in various segments of real life. Elaborate. CO [1]L[2] **10**

Q.3 a) Elaborate on various font editing softwares. CO [2]L[3] **10**

b) Why do we need various text effects in real life? What do they signify?

End Semester Examination, May 2022

BCA – Second Semester

DATA STRUCTURES USING C

(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 Answer the following questions:

a) Discuss the need of Data Structure.
b) Discuss how data structures are classified.
c) Explain the merits and demerits of array implementation of lists.
d) Describe Stack. List all the operations of the stack.
e) Describe the methods to implement Queue in C.
f) Differentiate between circular linked list and doubly linked list.
g) Describe any two applications of linked list data structure.
h) Explain the weighted tree with the help of an example.
i) Define Adjacency in graph.
j) Define Hashing. [CO1 2,] [L1,2] **2x10**

PART-A

Q.2 a) Define data structure and abstract data type. Differentiate between linear and nonlinear data structure, primitive Vs non primitive data structure, static Vs dynamic allocation [CO1] [L2] **10**

b) Suppose a two-dimensional array A is declared as A (1: 5, 1: 4). Assume the base address to be 500 and that each element requires 2 words of storage. Calculate the address of A[4,3] if the array is stored in:
i) Row Major Order ii) Column major order [CO1] [L3] **10**

Q.3 a) Explain 'stack data structure'. Write an algorithm for static implementation (PUSH and POP) for stack. [CO2] [L2] **10**

b) Convert the following infix expression to postfix expression:
i) (A$B*C-D+E/F(G+H) ii) A+B*C/D +E-F [CO2] [L2] **10**

Q.4 a) Define 'linked list'. Write the algorithms for inserting a new element at the beginning of a singly linked list and deleting the last element of a singly linked list. [CO3] [L3] **10**

b) List the advantages and disadvantages of linked lists over arrays. Explain in brief different types of linked list and their representation in memory. [CO3] [L2] **10**

PART-B

Q.5 a) For a binary tree T, the inorder and preorder traversal sequences are as follows:
I) Pre order : F A E K C D H G B
II) Inorder : E A C K F H D G B
i) Construct the binary tree T, explaining its each step.
ii) Draw the post-order traversal sequence.
iii) Define the height of a tree. [CO4] [L4] **12**

b) Explain 'Binary Tree'. Differentiate between 'Tree' and 'Binary Tree'. Describe the

End Semester Examination, May 2022

BCA – Second Semester

INTERNET TECHNOLOGIES (BCA-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 Fill in the blanks:

a) Verification of login name and password is called _____.
b) The address of location of the document on the world wide web is called its _____.
c) ISP stands for _____.
d) Unsolicited email is called _____.
e) The protocol used for internet is _____.
f) _____ compromise the DNS to redirect traffic to malicious sites.
g) A security event in which an intruder gains access to a system without having authorization to do so.
h) _____ law is used to protect digital information in India.
i) _____ installs illicit cryptocurrency mining software.
j) The _____ is used to transfer files between two computers over a network. **2x10**

PART-A

Q.2 a) Explain the architecture of internet with the help of a diagram. [CO-1] [L-2] **10**

b) Differentiate between:
   i) White hat and Black hat hacker.
   ii) Copyright laws and Patents. [CO-3] [L-4] **10**

Q.3 a) What is cross site scripting attack? Explain different types of cross site scripting attacks. [CO-3] [L-1] **10**

b) Explain Active and Passive scanning techniques. [CO-3] [L-2] **10**

Q.4 Explain the need and envisioning of IOT. Also mention several applications of Internet of Things. [CO-4] [L-2] **20**

PART-B

Q.5 Describe the ethical rules for internet. What is the need for electronic mail ethics? [CO- 3] [L-2] **20**

Q.6 a) Name any four DNS servers involved in loading a webpage and explain their working in detail. [CO- 3] [L-2] **10**

b) Explain several modes of connecting to internet. [CO- 3] [L-2] **10**

Q.7 Write short notes on the following:

a) SQL script injection.
b) Ethical hacking.
c) Trade secrets.

End Semester Examination, May 2022

BCA – Second Semester

SOFTWARE ENGINEERING
(BCA-DS-203/BCA-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 Answer the following:

a) Software is defined as _____.
   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) Who is the father of Software Engineering?
   i) Margaret Hamilton ii) Watts S. Humphrey
   iii) Alan Turing iv) Boris Beizer

c) CASE stands for:
   i) Computer-Aided Software Engineering
   ii) Control Aided Science and Engineering
   iii) Cost Aided System Experiments
   iv) None of the mentioned

d) The activity that distributes estimated effort across the planned project duration by allocating the effort to specific software developing tasks is _____.

e) 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

f) Why do bugs and failures occur in software?
   i) Because of Developers
   ii) Because of companies
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   iv) None of the mentioned

g) _____ is not a fundamental activity for software processes in software development.
   i) Evolution ii) Design and implementation
   iii) Validation iv) Verification

h) Who proposed Function Points?
   i) Albrecht ii) Jacobson
   iii) Boehm iv) Booch

i) 4GT Model is a set of _____.
   i) Programs ii) CASE Tools
   iii) Software tools iv) None of the mentioned

j) The model which has a major disadvantage in terms of the coding phase of a software life cycle model is _____

End Semester Examination, May 2022

BCA – Fourth Semester

NUMERICAL ANALYSIS AND STATISTICAL TECHNIQUES (BCA-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 Answer the following multiple-choice questions:

a) Which one of convergence is sensitive to starting value? [CO-2] [L-1]
   i) Newton-Raphson method ii) False position
   iii) Gauss seidel method iv) All of these

b) Newton-Raphson method is usable to: [CO-2] [L-1]
   i) Algebraic equations only
   ii) Transcendental equations only
   iii) Both algebraic and transcendental equations
   iv) Both algebraic and transcendental and also used when the roots are complex

c) Find the missing term of the following table : [CO-2] [L-1]

X	1	2	3	4
F(X)	4	9	-	25

   i) 16 ii) 20
   iii) 25 iv) 15

d) Find the absolute error if 2/3 approximated to 0.667. [CO-1] [L-1]

e) Construct backward difference table: [CO-2] [L-2]

X	0	1	2	3	4
y	-5	-10	-9	4	35

f) In the regression equation Y = a+bX, the Y is called: [CO-3] [L-1]
   i) Independent variable ii) Dependent variable
   iii) Continuous variable iv) None of the above

g) Find the mean of 13, 18, 13, 14, 13, 16, 14, 21, 13. [CO-5] [L-1]
   i) 123.444 ii) 125.666
   iii) 154 iv) 132

h) Find the median of the set of numbers: 100, 200, 450, 29, 1029,300 and 2001. [CO-5] [L-1]
   i) 300 ii) 29
   iii) 7 iv) 4080

i) What will be the probability of getting odd numbers if a dice is thrown? [CO-6] [L-1]
   i) ½ ii) 2
   iii) 4/2 iv) 5/2

j) What is the probability of getting a sum as 3 if a dice is thrown? [CO-4] [L-1]
   i) 2/18 ii) 1/18
   iii) 4 iv) 1/36 **2x10**

End Semester Examination, May 2022

BCA – Fourth Semester

PROGRAMMING IN JAVA

(BCA-DS-402/ BCA-403A (CB)/ BCA-403(CB))

Time: 3 hrs. Max Marks: **100**

No. of pages: 2

Note: *Attempt **FIVE** questions in all; Question 1 is mandatory; 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) 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 [CO1][L2]

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 [CO2][L1]

c) What does the expression float a = 35 / 0 return? [CO1][L1][2]
   i) 0 ii) not a number
   iii) Infinity iv) none of the above

d) Identify the incorrect Java feature. [CO1][L1]
   i) Object-oriented ii) Use of pointers
   iii) Dynamic iv) neutral

e) Where is System class defined? [CO3][L1]
   i) GREATEST, LEAST and ABS ii) SUM, COUNT and AVERAGE
   iii) U PPER, LOWER and LENGTH iv) SQRT, POWER and MOD

f) Identify the modifier which cannot be used for constructor. [CO2][L1]
   i) Public ii) Protected
   iii) Private iv) Static

Answer in brief:

g) What is import statement? [CO3][L1]

h) What is try block? [CO3][L1]

State True or False:

i) Full form of JVM is Java Virtual Machine. [[CO1][L1]

j) Java language was initially called as Oak. [CO1][L2] **2x10**

PART-A

Q.2 Compare Java and C++. Describe various types of constants available in Java. Give an example of each. How Symbolic Constants are useful in developing programs? [CO1][L5] **20**

Q.3 a) Design a program to print the Fibonacci series up to n terms. [CO1][L6] **10**

b) Give the syntax, purpose and flowchart of the following:
   i) Else-if ladder statement ii) For Loop [CO1][L1] **10**

End Semester Examination, May 2022

BCA – Fourth Semester

ELEMENTS OF COMPUTER GRAPHICS
(BCA-DS-403/BCA-404A (CB)/BCA-404(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) User can make any change on image with the use of:
   i) Non-interactive graphics ii) Interactive graphics
   iii) Both i) and ii) iv) None of these

b) Which algorithm is a faster method for calculating pixel positions?
   i) Bresenham's line algorithm ii) Parallel line algorithm
   iii) Mid-point algorithm iv) DDA line algorithm

c) A display controller serves to pass the contents of:
   i) Frame buffer to monitor ii) Monitor to frame buffer
   iii) Both i) and ii) iv) None of these

d) If the boundary is specified in a single color, and if the algorithm proceeds pixel by pixel until the boundary color is encountered is called:
   i) Scan-line fill algorithm ii) Boundary-fill algorithm
   iii) Flood-fill algorithm iv) Parallel curve algorithm

e) To store black and white images, black pixels are represented by_____ in the frame buffer and white pixels by_____.
   i) Zero and one ii) One and Zero
   iii) Both i) and ii) iv) None of these

f) The operation that is used for repositioned the object are called:
   i) Rubber band method ii) Gravity field
   iii) Dragging iv) None of these

g) The rectangle space in which the world definition of region is displayed are called:
   i) Screen coordinate system ii) Clipping window or world window
   iii) World coordinate system iv) None of these

h) The centre region of the screen and the window can be represented as_____.
   i) 0000 b) 1111
   iii) 0110 d) 1001

i) The transformation in which an object can be shifted to any coordinate position in three dimensional plane are called:
   i) Translation ii) Scaling
   iii) Rotation iv) All of these

j) The painter algorithm are based on the property of:
   i) Polygon ii) Frame buffer
   iii) Depth buffer iv) None of these **2x10**

End Semester Examination, May 2022

BCA - Fourth Semester

SYSTEM PROGRAMMING - (BCA-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 Multiple choice questions/True or false/Short answer questions:

a) Select the system software that always resides in main memory.
   i) Text editor ii) Loader
   iii) Linker iv) Assembler [CO1][L1]

b) The type of program that performs certian tasks associate to managing computer resources are called.
   i) Operating system ii) utility
   iii) Language translator iv) None of these [CO2][L1]

c) Which computer program accepts the high-level language and converts it into assembly language?
   i) Interpreter ii) Linker
   iii) Assembler iv) Compiler [CO1][L1]

d) In which parsing, the parser constructs the parse tree from the start symbol and transforms it into the input symbol.
   i) Bottom-up parsing ii) Top-down parsing
   iii) None of the above iv) Both i) and ii) [CO3][L1

e) Which phase of the compiler checks the grammar of the programming?
   i) Code Optimization ii) Semantic Analysis
   iii) Code Generation iv) Syntax Analysis [CO4][L1]

f) Program generation activities and program execution activities are the processing activities that come under _____.
   i) processing activities ii) language processing activities
   iii) all of the above iv) none of the above [CO3][L1]

g) The first pass of the assembler is only to define the _____; the second pass can then generate _____.
   i) address, instruction ii) symbols, data
   iii) symbols, instruction and addresses iv) address, symbol [CO2][L1]

h) Type-o grammar are also known as:
   i) Context sensitive grammars ii) Phase structure grammars
   iii) Context free grammars iv) Regular grammars [CO5][L1]

i) MOT (Machine operation table) contains.
   i) name ii) length
   iii) binary code and format iv) all of the above [C01,L1]

j) MOVE instruction is used to move a value between memory and a register.
   i) True ii) False [CO2][L1] **2x10**

End Semester Examination, May 2022

BCA – Fourth Semester

FUNDAMENTALS OF ARTIFICIAL INTELLIGENCE (BCA-DS-405)

Time: 3 hrs. Max Marks: **100**

No. of pages: 3

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/True or false/Short answer questions:

a) Slots and facets are used in: [CO2] [L-1]
   i) Semantic networks ii) Frames
   iii) Rules iv) all of these

b) "The cases of uncertainty mostly happen in those cases where the conditions are neither completely true nor completely false." [CO2] [L-1]
   i) True ii) False

c) How many types of entities are there in knowledge representation? [CO2] [L-1]
   i) Facts ii) Symbols
   iii) Both i and ii iv) None of the above

d) Consider the following statement: [CO2] [L-1]
   "The Existential Quantifier is used at the places where only some part of the subject's population is to be defined under the predicate."
   By reading the above statement, what are the phrases for which the existential quantifier can be applied?
   i) For all ii) For some
   iii) For every iv) All of the above

e) A perceptron adds up all the weighted inputs it receives, and if it exceeds a certain value, it outputs a 1, otherwise it just outputs a 0 [CO5] [L-3]
   i) true ii) false
   iii) sometimes iv) can't say

f) The first widely-used commercial form of Artificial Intelligence (Al) is being used in many popular products like microwave ovens, automobiles and plug in circuit boards for desktop PCs. It allows machines to handle vague information with a deftness that mimics human intuition. What is the name of this AI? [CO2] [L-1]
   a) Boolean logic ii) Human logic
   iii) Fuzzy logic iv) Functional logic

g) What is Artificial Intelligence? [CO1] [L-1]
   i) Putting your intelligence into computer
   ii) Programming with your own intelligence
   iii) Making a machine intelligent
   iv) Putting more memory into computer

h) If the English Philosopher Thomas Hobbes could be called "grandfather" of artificial intelligence, then who could be called as father of AI? [CO1] [L-1]
   i) A. M. Turing ii) John McCarthy
   iii) Allen Newell iv) Herbert Simon

End Semester Examination, May 2022

BCA – Sixth Semester

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 a) Garbage collector can be forcefully called by using system gc(): [CO1][L1]
   i) True ii) False

b) The _____ loop is similar to the for loop, but it executes the statement block for each element in a collection or array. [CO2][L2]
   i) For ii) For each
   iii) Do While iv) While

c) Which data type should be more preferred for storing a simple number like 35 to improve execution speed of a program? [CO2][L2]
   i) sbyte ii) short
   iii) int iv) long

d) Correct way to assign values to variable 'c' when int a=12, float b=3.5, int c; [CO2][L2]
   i) c = a + b; ii) c = a + int(float(b));
   iii) c = a + convert.ToInt32(b); iv) c = int(a + b);

e) Types of 'Data Conversion' in C#? [CO3][L2]
   i) Implicit Conversion ii) Explicit Conversion
   iii) Implicit Conversion and Explicit Conversion
   iv) None of the above

f) Number of constructors a class can define is: [CO2][L2]
   i) 1 ii) 2
   iii) Any number iv) None of the above

g) ADO Stands for _____. [CO5][L2]

h) JIT stands for _____. [CO1][L2]

i) What is the use of try and catch? [CO2][L2]
   i) It is used to manually handle the exception
   ii) It helps to fix the errors
   iii) It prevents automatic terminating of the program in case when an exception occurs
   iv) All of the above

j) Choose the correct statement which makes exception handling work in C#.NET.
   i) Net runtime makes search for the exception handler where exception occurs
   ii) If no exception is matched, exception handler goes up the stack and hence finds the match there.
   iii) If no match is found at the highest level of stack call, then unhandled exception is generated and hence termination of program occurs
   iv) All of the above [CO3][L2]**2x10**

PART-A

Q.2 Write short notes on:

End Semester Examination, May 2022

BCA – Sixth Semester

SECURITY OF INFORMATION SYSTEM

BCA-DS-603/BCA-606A (CB)/ BCA-606(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 of the following virus overtake computer system, when it boots and destroy information? [CO-4] [L-1]
   i) System infectors ii) Trojan
   iii) Boot infectors iv) Stealth virus

b) Which of the following is defined as an attempt to steal, spy, damage or destroy computer systems, networks, or their associated information? [CO-1] [L-1]
   i) Cyber attack ii) Computer security
   iii) Cryptography iv) Digital hacking

c) The modern cipher is usually a complex _____ cipher made of a combination of different simple ciphers. [CO-4] [L-1]
   i) Square ii) Secret
   iii) Round iv) Plain

d) Which of the following is not a cybercrime? [CO-4] [L-1]
   i) Denial of Service ii) Man in the Middle
   iii) Malware iv) AES

e) Firewalls are used for _____. [CO-3] [L-1]
   i) Routing ii) Security
   iii) Tunnelling iv) Congestion control

f) Governments hire some highly skilled hackers for providing cyber security for the country or state. These types of hackers are termed as _____. [CO-3] [L-1]
   i) Nation / State sponsored hackers ii) CIA triad
   iii) Special Hackers iv) Government Hackers

g) Data Encryption Techniques are particularly used for _____. [CO-4] [L-1]
   i) Protecting data in data communication system
   ii) Reduce storage space requirement
   iii) Enhances data integrity
   iv) Decreases data integrity

h) What is the existence of weakness in a system or network is known as?[CO-1] [L-1
   i) Attack ii) Exploit
   iii) Vulnerability iv) Threat

i) Cryptographic algorithms are based on mathematical algorithms where these algorithms use _____ for a secure transformation of data. [CO-2] [L-1]
   i) secret key ii) external programs
   iii) add-ons iv) secondary key

j) _____ is the concept that tells us about the replacement of every alphabet by another alphabet and the entire series gets 'shifted' by some fixed quantity. [CO-3] [L-1]

End Semester Examination, May 2022

BCA - Sixth Semester

MULTIMEDIA AND ANIMATION

(BCA-DS-604/ BCA-DS-603(CB)/BCA-DS-603A (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 question:

a) How many types of video compressions?
   i) 2 ii) 3 iii) 4 iv) 6

b) If frames are displayed on screen fast enough, we get an impression of:
   ii) Signals ii) Motions iii) Packets iv) Bits

c) Which file creates a perfect reproduction of the original images?
   i) Shockwave ii) Nx View iii) GIF iv) JPG

d) The text color in a presentation should contrast with the _____ color.
   i) CPU ii) Frame iii) Stack iv) Background

e) In video compression, an independent frame that is not related to any other frame is called:
   i) B Frame ii) C-Frame iii) I-Frame iv) P-Frame

f) Progressive download is most useful for:
   i) Short video clips ii) long video clips
   iii) Extremely long and high quality videos iv) None of these.

g) In Joint Photographic Experts Group (JPEG), a gray scale picture is divided into blocks of:
   i) 5 x 5 ii) 6 x 6 iii) 7 x 7 iv) 8 x 8

h) Sometimes real time traffic needs:
   i) Organization ii) Traffic iii) Channeling iv) Translation

i) Before audio or video signals can be sent on Internet, they need to be:
   i) Channelized ii) Managed iii) Digitized. iv) Organized.

j) The characteristic of the eye to retain the image for a short time after it has been presented is known as:
   i) Persistence of vision.
   ii) Learning power.
   iii) Memory mapped input.
   iv) None of these.

[CO1][L [1,2] **2x10**

PART-A

Q.2 a) How is multimedia database different from other databases? CO [1]L[3] **10**

b) 'Multimedia is multifaceted and is used in various segments of real life'. Elaborate the statement. CO [1]L[2] **10**

Q.3 a) Elaborate on various font editing softwares. CO [2]L[3] **10**

b) Why do we need various text effects in real life? What do they signify? CO [2]L[2] **10**

End Semester Examination, May 2022

OPEN ELECTIVE - COMMON FOR ALL BRANCHES

SOCIAL MEDIA NORMS AND ETIQUETTE (BCA-OE-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 questions:

a) Social network is considered the most popular for business to business marketing?
   i) Facebook ii) Orkut
   iii) Ryze iv) LinkedIn [CO1][L1]

b) _____ methods of social network marketing should a company always use.
   i) Blogging the only
   ii) Twitter, Blogs, Facebook
   iii) YouTube
   iv) Depends on the company and its product [CO1][L1]

c) Causes of necrosis includes
   i) Injury ii) Cancer
   iii) Infection iv) All of the above [CO1,2][L2]

d) Recently, Ministry of Information and Broadcasting has launched in which account of social media platform to counter fake news?
   i) WhatsApp ii) Telegram
   iii) Instagram iv) Twitter [CO4][L1]

e) What is meant by Brand Management?
   i) Managing the marketing staff
   ii) Management of the marketing budget
   iii) The company executive management
   iv) Creating a consistent image for the company [CO3,4][L1] **2×5**

f) ***Write short notes on:***
   i) Social Media Mining.
   ii) Government and Social Media. [CO1][L1] **5×2**

PART-A

Q.2 a) What are the rules of netiquette? How much they are important in the professional life? [CO1,2][L2] **10**

b) Describe how social networking is helpful in the search of a job? [CO1,2] [L2] **10**

Q.3 a) Discuss various methods to prevent Social Media from ruining our social skills. [CO 2][L3]**10**

b) Explain the strategies for listening and talking within online communities. [CO 2][L3]**10**

Q.4 Differentiate between:

a) Staking and Robbery.
b) Defamation and Harassment.
c) Blogging and Micro blogging.
d) Social media and Social networking. [CO3,4][L3] **5×4**

End Semester Examination, May 2022

OPEN ELECTIVE - COMMON FOR ALL BRANCHES

LEGAL AWARENESS RELATED TO IT (BCA-OE-003)

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 extensions.gov,.edu,.nic ,and .net are called as:
   i) Mail addresses ii) DNSs
   iii) Domain codes iv) Email targets

b) _____ is a famous technological medium for the spread of malware, facing problems of spam, and phishing attacks.
   i) Cloud ii) Pen drive
   iii) Website iv) Email

c) Many cybercrimes come under the Indian Penal Code. Which one of the following is an example?
   i) Sending threatening message by email ii) Forgery of electronic records
   iii) Bogus website iv) All of these

d) _____ involves transmitting computer virus to destroy computer systems or files:
   i) Cyber terrorism ii) Cyber vandalism
   iii) Cyber torts iv) Cyber spoofing

e) Which of the following is the most accurate description of arbitration?
   i) An informal meeting between the parties involving a discussion as to how the issue may be resolved.
   ii) An adjudicative process where the parties submit their dispute, for a binding decision, to an impartial tribunal.
   iii) A meeting between the parties where an impartial third party facilitates discussi
   iv) None of the options given is correct

f) ADR procedures are:
   i) less expensive than going to court
   ii) slow
   iii) quick

g) If a company develops a new technology that improves its main product, what type of intellectual property can they use to stop others from copying their invention?
   i) Copyright ii) Geographical indications
   iii) Patents iv) Registered designs
   v) Trademarks

h) Which section of IT Act deals with Hacking of computer systems and its penalties?
   i) Section 65 ii) Section 66
   iv) Section 67 iii) Section 68

i) What does a trademark protect?
   i) An invention ii) A work of art
   iii) Logos, names and brands iv) The look, shape and feel of a product

End Semester Examination, May 2022

B. Sc. (IT) – 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.*

Q1 a) The initial steps concerned in the process of knowledge discovery is: [CO3][L1]
- i) Data Selection
- ii) Data Integration
- iii) Data Cleaning
- iv) Data Transformation

b) Out of the following, which one is the proper application of data mining? [CO3][L2]
- i) Fraud Detection
- ii) Market Management and Analysis
- iii) Risk Management and Corporate Analysis
- iv) All of the above

c) The issue of pattern evaluation comes under which of these: [CO3][L2]
- i) Performance Issues
- ii) Diverse Data Types Issues
- iii) User Interaction and Mining Methodology Issues
- iv) None of the above

d) What is the time horizon in the data warehouse? [CO1][L2]
- i) 3-4 years
- ii) 5-6 years
- iii) 5-10 years
- iv) 1-2 Years

e) Total fact table the star schema is composed of? [CO2][L1]
- i) 4
- ii) 3
- iii) 2
- iv) 1

f) Where is data warehousing used? [CO1][L2]
- i) Transaction System
- ii) Logical System
- iii) Decision Support System
- iv) None of the above

g) Small logical units where data warehouses hold large amounts of data is known as _____. [CO2][L1]
- i) Data Marts
- ii) Data Storage
- iii) Access Layer
- iv) None of the above

h) Identify the type of relationship between fact and dimension table in a star schema. [CO1][L3]
- i) One-to One
- ii) Many to Many
- iii) One to many
- iv) Many to one

i) What do you understand by Information? [CO1][L2]

j) What do you understand by Data Cube? [CO2][L1] **2x10**

PART-A

Q.2 Describe the architecture of data warehouse with a suitable diagram. Also, explain how data warehousing is subject-oriented and time-variant. Give example of each.

CO1,2][L5][20]

End Semester Examination, May 2022

B. Sc. (Information Technology) - Sixth Semester

SOFTWARE TESTING (BSCA-DS-602)

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) Which Model is most popular for student's small projects?
   i) Waterfall Model ii) Spiral Model
   iii) Quick and Fix Model iv) Prototyping Model

b) Select the option that suits the Manifesto for Agile Software Development.
   i) Individuals and interactions ii) Working software
   iii) Customer collaboration iv) All of the mentioned

c) How is plan driven development different from agile development?
   i) Outputs are decided through a process of negotiation during the software development process
   ii) Specification, design, implementation and testing are interleaved
   iii) Iteration occurs within activities
   iv) All of the mentioned

d) White Box techniques are also classified as:
   i) Design based testing ii) Structural testing
   iii) Error guessing technique iv) None

e) Exhaustive testing is:
   i) Always possible ii) Practically possible
   iii) Impractical but possible iv) Impractical and impossible

f) Boundary value analysis belongs to:
   i) White Box Testing ii) Black Box Testing
   iii) White Box & Black Box Testing iv) None

g) During software development, which factor is most crucial?
   i) People ii) Product
   iii) Process iv) Project

h) Which is not the part of operating procedure manual?
   i) User Manuals ii) Operation Manuals
   iii) Documentation Manuals iv) Installation Manuals

i) Most creative phase in software development is:
   i) Requirement Analysis ii) Coding
   iii) Design iv) Testing

j) A system that does not interact with external environment is called:
   i) Closed system ii) Open system
   iii) Logical system iv) Hierarchical system [CO1][L1,2] **2x10**

PART-A

Q.2 Define the term software engineering, also discuss how software differs from a program and write down the characteristics of Software. [CO2][L2] **20**

End Semester Examination, May 2022

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 in brief:

a) Explain the goals of machine learning.
b) Define 'bagging'.
c) What is the role of a Kernel in support vector machine classifier?
d) Describe boosting.
e) What is a perception? Explain in brief.
f) Explain in brief KNN classifier.
g) When do we use principal component analysis?
h) What is cross-validation?
i) What is "Naïve" in Naïve Bayes Theorem?
j) List the important features of Reinforcement Learning. [CO- 1,2,3,4,5] [L-2] **2x10**

PART-A

Q.2 a) Explain the term "machine learning". How is it different from Deep Learning? Explain the same by elucidating the differences between the two. [CO- 1] [L-1]**10**

b) What are the applications of Machine Learning? Under what circumstances, we need to use machine learning? [CO- 1,2] [L-1] **10**

Q.3 a) Explain the concept of entropy and information gain while defining decision tree algorithm. [CO-2] [L-2] **10**

b) List all important metrics while evaluating classification algorithms in machine learning. Which one is better and why? Explain. [CO-2,3 [L-2] **10**

Q.4 List all of the strong association rules, along with their support and confidence values, which match the following met rule, where X is a variable representing customers and item denotes variables representing items (e.g., "A", "B", etc.).
$\forall x \in$ transaction, buys(X, item1) $\wedge$ buys(X, item2) $\Rightarrow$ buys(X, item3) The point of the met rule is to tell you to only worry about association rules of the form $X \wedge Y \Rightarrow Z$ (or $\{X, Y\} \Rightarrow Z$ if you prefer that notation). [CO-3] [L-3] 2**0**

PART-B

Q.5 a) Mention the differences between understanding the structure of text by human and text by machine. [CO-4] [L-3] **10**

b) How Naïve Bayes Algorithm works for Text Mining in Machine Learning? Explain the same by giving a suitable example. [CO-4] [L-4] **10**

Q.6 Is Random Forest an ensemble algorithm? How is random forest related to decision tree? List some real-world applications of ensemble learning. [CO-5] [L-4] **20**

Q.7 a) What is Reinforcement Learning? Compare it with other ML techniques.

End Semester Examination, May 2022

B. Sc. (Information Technology) – Second Semester

DATA STRUCTURE AND ALGORITHM (BSCIT-DS-201)

Time: 3 hrs. Max Marks: **100**

No. of pages: 2

Note: *Attempt **Five** Question in all; **Q1 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 nodes in a tree have no ancestors?
   i) 0. ii) 1.
   ii) 2. iv) n.

b) Which data structure is used for implementing recursion?
   i) Queue. ii) Stack.
   iii) Arrays. iv) List.

c) A technique for direct search is:
   i) Binary Search. ii) Linear Search.
   iii) Tree Search. iv) Hashing.

d) The complexity of multiplying two matrices of order m*n and n*p is:
   i) mnp. ii) mp.
   iii) mn. iv) np.

e) A(n) _____ is a graph in which each connection hastwo directions.
   i) Undirected graph. ii) Weighted graph.
   iii) Bidirectional graph. iv) None of the above.

f) The largest element of an array index is called its:
   i) Lower bound. ii) Range.
   iii) Upper bound. iv) All of these. **1x6**

Answer in brief:

g) What are the techniques of graph traversing?
h) What do you mean by a threaded tree?
i) What is the meaning of sorting?
j) What is overflow and underflow condition in a linked list?
k) Describe the structure of node in doubly linked list.
l) Differentiate Linear and Binary Search. Which is better and why?
m) What is Dequeue? [CO 1] [L1] **7x2**

PART-A

Q.2 a) Write an algorithm for insertion in single linked list at Beg, Mid., End. And also explain it diagrammatically. [CO 1] [L2] **12**

b) An array A [5][5] is stored in the memory with elements with element occupying 4 bytes of space. Assuming the base address of A to be 1000, compute the address of A[2][4] when the array is stored. i) Row wise ii) Column wise. [CO 2] [L3] **8**

Q.3 a) Sort the given list using Heap sort:
23, 34, 45, 12, 17, 18, 45, 56, 32, 42. [CO 3] [L4] **15**

b) Write an algorithm to binary search. [CO 4] [L2] **5**

End Semester Examination, May 2022

B. Sc. (IT) – 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 Explain the following:

a) Give the output of the following Python code?

```
x = 'abcd'
for i in x:
print(i.upper())
```

b) What is the difference between Python Arrays and lists?

c) Show typecasting by converting string to an int datatype in python.

d) How can you access array elements?

e) List some applications of python.

f) Mathematical operations can be performed on a string. State whether true or false.

g) Which programming language is a good choice between Java and Python?

h) Who introduced the Python programming language and with which file extension?

i) What is the output of print str + "TEST" if str = 'Hello World!'?

j) Python is an interpreted language. Explain. **2x10**

PART-A

Q.2 a) Mention the advantages of using Python over any other programming language in context to current scenario's programming approach. [CO 1,2,3] [L4] **10**

b) Define algorithm? Explain characteristics of an algorithm. [CO 1,2,3] [L1] **10**

Q.3 a) Explain with an example the structure of python program. [CO1,2,3] [L2] **10**

b) What are the features and applications of Python? [CO1,2,3] [L1] **10**

Q.4 a) What is data type? List out the types of data types with examples. Also with the help of an example perform typecasting. [CO1,2,3] [L1] **10**

b) Elaborate the string and its methods with examples. [CO1,2,3] [L3] **10**

PART-B

Q.5 List various types of operators in Python and write any four types of operators. If the age of Ram, Sam, and Khan are input through the keyboard, write a python program to determine the eldest and youngest of the three. [CO1,2,3][L4] **20**

Q.6 a) Perform a Python program to create an array of five integers and display the array items in reverse order. [CO 2,3] [L2] **10**

b) Explain the syntax of the following statements:
i) for loop ii) while loop iii) if - else iv) if-elif-else. [CO3,5] [L2] **10**

Q.7 Explain built-in exceptions. Examine the need for exceptions using an example. With the help of an example show exception with the arguments in python.

[CO2,4,6] [L-3] **20**

End Semester Examination, May 2022

B. Sc. (Information Technology) – Second Semester

DATABASE MANAGEMENT SYSTEM (BSCIT-DS-203)

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 Explain the following in brief:

a) Entity and Object.
b) Attribute and Domain of an attribute.
c) Role of DBA.
d) Physical Data Independence.
e) Transitive Dependency.
f) DML.
g) Update Table.
h) Primary Key.
i) Network Data Model.
j) Concurrent Transactions. **2x10**

PART-A

Q.2 a) Distinguish between Data and Information. [CO1,2] [L1,2,3] **5**

b) What are the problems of manual database and what is the solution of this problem? Explain the advantages and disadvantages of DBMS. [CO1,2][L1,2,3] **15**

Q.3 Consider an airline reservation system, in which travel agents are allowed to make reservations. Design the views (three level architecture) of this application along with conceptual view. Also explain the mapping and data independence required for the same. [CO2][L1,3] **20**

Q.4 a) Define data base anomalies. [CO3] [L3, 4] **5**

b) Discuss the advantages and disadvantages of representing the data in normalized form. Consider a relation scheme R with example of your own, having all functional dependencies, bring the relation in normalized form after removing all dependencies. [CO3] [L3,4] **15**

PART-B

Q.5 Write the syntax and examples of following commands:

a) Insert command.
b) Select Table with where clause.
c) Update table.
d) Group by clause. [CO4,5] [L1,2,3] **5×4**

Q.6 Discuss the following:

a) Entity Integrity Rule and Referential Integrity Rule.
b) Role of Keys and Various types of Keys. [CO5][L3][L4] **10x2**

End Semester Examination, May 2022

B.Sc. (IT) – Fourth Semester

INFORMATION SYSTEM SECURITY – (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) 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

b) 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

c) The modern cipher is usually a complex _____ cipher made of a combination of different simple ciphers. [CO-4] [L-1]
   i) Square ii) Secret
   iii) Round iv) Plain

d) One way to preserve the integrity of the document is through the use of: [CO-2] [L-1]
   i) Eye-Rays ii) Finger Prints
   iii) Biometrics iv) X-Rays

e) Firewalls are used for_____. [CO-5] [L-1]
   i) Routing ii) Security
   iii) Tunnelling iv) Congestion control

f) Which of the following ciphers is a block cipher? [CO-4] [L-1]
   i) Caesar cipher ii) Vernam cipher
   c) Playfair cipher iv) None of the above

g) Data Encryption Techniques are particularly used for _____. [CO-4] [L-
   i) Protecting data in data communication system
   ii) Reduce storage space requirement
   iii) nhances data integrity iv) Decreases data integrity

h) PKI Stands for_____. [CO-3] [L-1]
   i) Private Key Infrastructure ii) Public Key Infrastructure
   iii) Public Key IDEA iv) Private Key IDEA

i) A worm _____ modify a program. [CO-1] [L-1]
   i) Does not ii) Does
   iii) May or may not iv) None of these

j) Interception is an attack on: [CO-1] [L-1]
   i) Availability ii) Confidentiality
   iii) Integrity iv) Authenticity **2x10**

End Semester Examination, May 2022

B. Sc. (Information Technology) – Fourth Semester

OPERATING SYSTEMS (COMP621)

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) Multiprogramming systems: [CO2] [L-1]
   i) Are easier to develop than single programming systems
   ii) Execute each job faster
   iii) Execute more jobs in the same time period
   iv) Are used as only one large mainframe computers

b) Bringing a page into memory only when it is needed, this mechanism is called: [CO2] [L-1]
   i) Deadlock ii) Page fault
   iii) Dormant paging iv) Demand paging

c) What is the method of handling deadlocks? [CO3] [L-1]
   i) Use a protocol to ensure that the system will never enter a deadlock state.
   ii) Allow the system to enter the deadlock state and then never recover
   iii) Pretend that deadlocks never occur in the system
   iv) All of the above

d) When a program is loaded into the memory and it becomes a process, it can be divided into which of the sections? [CO2] [L-1]
   1) stack 2) heap 3) text 4) data
   i) 1 ii) 1,2
   iii) 1,2,3 iv) 1,2,3,4

e) The processes that are residing in main memory and are ready and waiting to execute are kept on a list called: [CO3] [L-1]
   i) Device queue ii) Ready queue
   iii) Job queue iv) None of the above

f) To create a file: [CO4] [L-1]
   i) Allocate the space in file system
   ii) Make an entry for new file in directory
   iii) Both i) and ii)
   iv) None of the above

g) File type can be represented by: [CO4] [L-1]
   i) File name ii) File extension
   iii) File identifier. iv) None of the above

h) In critical section: [CO3] [L-1]
   i) Several processes access and manipulate the same data concurrently
   ii) No process access and manipulate the same data concurrently
   iii) When one process is executing in its critical section, no other process is allowed to execute in its critical section
   iv) None of the above

End Semester Examination, May 2022

B. Sc. (Information Technology) – Fourth Semester

SERVER ADMINISTRATION (CONE 618)

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) You have just finished installing Windows Server 2012 on a new server. Your colleague has informed you that its essential that you must activate Windows Server. Which of the following command line tools can be used to Activate Windows Server? [CO1] [L1]
   i) Cscript C:\windows\system32\slmgr.vbs –ato
   ii) Netdom C:\windows\system32\slmgr.vbs –ato
   iii) Ocsetup C:\windows\system32\slmgr.vbs –ato
   iv) NetshC:\windows\system32\slmgr.vbs–ato

b) Forest include _____. [CO2] [L2]
   i) One domain only.
   ii) One or more than One domain

c) A domain controller provides _____ to allow authentication to resources on the network. [CO3] [L1]
   i) User account provisioning
   ii) Logon processing
   iii) Resource access processing
   iv) Database Replication
   v) Domain Naming Master

d) What is a PAN? [CO4] [L2]
   i) Personal area network
   ii) Popular area network
   iii) Part area network
   iv) Public area network

e) Which terminology is being described below: This trust is a manually created trust that shortens the trust path to improve the speed at which authentication occur between domain trees. [CO1][L1]
   i) Quick Trust
   ii) Simple Trust
   iii) Easy Trust
   iv) Shortcut Trust

f) Active directory domain is _____? [CO2][L2]
   i) Logical Grouping of Objects.
   ii) Website for company.

g) One of the following choices is not an AD objects. "Check it" [CO2][L2]
   i) Users.
   ii) Printers.
   iii) Laptops.
   iv) TV.

h) GPO is provide centralized management and configuration of OS. [CO3][L1]
   i) True
   ii) False

i) Which of the following is not a part of active directory structure? [CO3][L1]
   i) Organizational Unit
   ii) Group policy
   iii) Domain
   iv) Tree

j) Complex networks today are made up of hundreds and sometimes thousands of _____. [CO4][L2]
   i) Documents
   ii) Components
   iii) Servers
   iv) Entities **2x10**

End Semester Examination, May 2022

B.Sc. (Information Technology) – Fourth Semester

CLOUD COMPUTING (CONE623)

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 in brief:

a) What is the difference between scalability and elasticity?
b) What are the security benefits of cloud computing?
c) Give some examples of large cloud provider and databases.
d) What is the difference between cloud and traditional data centers?
e) Give some examples of large cloud provider and databases.
f) Why API's is used in cloud services?
g) What do you mean by VPN? What does it contain?
h) What are the basic clouds in cloud computing?
i) Which services are provided by Window azure operating system?
j) How would you secure data for transport in cloud? [CO1,CO2] [L1] **2x10**

PART-A

Q.2 a) Define the term: 'Cloud'. Also give a brief about how various steps lead to cloud computing. [CO1,CO2] [L1] **10**

b) How is Grid and Cloud different? Also, differentiate between cloud computing and grid computing, by mentioning the advantages and drawbacks of both. [CO4] [L2] **10**

Q.3 Explain the Hypervisor architecture in details. Also, differentiate between the types of Hypervisors. [CO4] [L2] **20**

Q.4 What are the fundamental requirements for cloud application architecture? With a neat diagram write about Google App Engine for PaaS applications. [CO3] [L3] **20**

PART-B

Q.5 "Security is a key issue in Cloud Computing". Comment on the statement by considering various security challenges incurred. [CO5] [L3] **20**

Q.6 In cloud computing trust is the key component, how a cloud vendor maintains trust amongst users? Explain with various technologies of trust management. [CO5, CO7] [L2] **20**

Q.7 Explain the following:

a) Cloud Administration.
b) Service Attributes of Cloud Computing.
c) Cloud Bursting.
d) System Abstraction.

[CO4,CO6] [L3] **5x4**

End Semester Examination, May 2022

MCA – Second 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 Answer in brief:

a) The Worst case occur in linear search algorithm when:
   i) Item is somewhere in the middle of the array
   ii) Item is not in the array at all
   iii) Item is the last element in the array
   iv) Item is the last element in the array or is not there at all

b) The Average case occur in linear search algorithm:
   i) When Item is somewhere in the middle of the array
   ii) When Item is not in the array at all
   iii) When Item is the last element in the array
   iv) When Item is the last element in the array or is not there at all

c) The complexity of the average case of an algorithm is:
   i) Much more complicated to analyze than that of worst case
   ii) Much more simpler to analyze than that of worst case
   iii) Sometimes more complicated and some other times simpler than that of worst case.
   iv) None or above

d) _____ is conceptually a top down approach for solving problems:
   i) Divide ii) Backtracking
   iii) Dynamic programming iv) Divide and Conquer

e) According to strassen's method the complexity of matrix multiplication is_____.

f) Define 'backtracking'.

g) How Knapsack problem can be solved using Greedy method.

h) Explain the concept of travelling saleman problem.

i) What are various strategies of branch and bound?

j) Differentiate between trees and graphs. [CO1][L1] **2x10**

PART A

Q.2 a) What do you mean by asymptotic notations? List each notation and explain what it signifies. [CO1][L2] **10**

b) Solve the knapsack problem using greedy method with no of inputs and capacity of bag 15. Profits and Weights are given below.
n=7 m=15
(p1,p2,p3,p4,p5,p6,p7) = (10,5,15,7,6,18,3)
(w1,w2,w3,w4,w5,w6,w7) = (2,3,5,7,1,4,1) [CO2][L4] **10**

Q.3 a) Write the algorithm for merge sort. Analyze its complexity. [CO3][L2] **10**

b) Design the state space tree for merge sort with given list. [CO3][L3] **10**
29, 27, 22, 56, 17, 19, 32

End Semester Examination, May 2022

MCA – Second Semester

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 Multiple choice questions:

a) In a _____ connection, more than two devices can share a single link.
   i) Point-to-point ii) Primary
   iii) Multipoint iv) Secondary [CO3][L1]

b) Communication between a computer and a keyboard involves _____transmission.
   i) Full-Duplex ii) Half-Duplex
   iii) Simplex iv) None of these [CO1][L1]

c) In a network with 25 computers, which topology would require the most extensive cabling?
   i) Star ii) Ring.
   iii) Mesh iv) Bus [CO2][L1]

d) Which topology requires a central controller or hub?
   i) Star ii) Mesh
   iii) Bus iv) Ring [CO2][L1]

e) The information to be communicated in a data communications system is the _____.
   i) Medium ii) Protocol
   iii) Transmission iv) Message [CO1][L1]

f) Frequency of failure and network recovery time after a failure are measures of the_____ of a network.
   i) Performance ii) Security
   iii) Reliability iv) Feasibility [CO1][L1]

g) The _____ layer changes bits into electromagnetic signals.
   i) Physical ii) Transport
   iii) Data Link iv) None of these [CO4][L1]

h) Network congestion occurs _____.
   i) in case of traffic overloading
   ii) when a system terminates
   iii) when connection between two nodes terminates
   iv) in case of transfer failure [CO3][L1]

i) Transmission control protocol _____.
   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 mentioned [CO5][L1]

j) The _____ layer lies between the network layer and the application layer.
   i) Data Link ii) Physical
   iii) Transport iv) None of these [CO4][L1]

2x10

End Semester Examination, May 2022

MCA - Second Semester

ARTIFICIAL INTELLIGENCE (MCA-DS-404)

Time: 3 hrs. Max Marks: **100**

No. of pages:

Note: *Attempt **FIVE** questions in all; **Q.1 is compulsory**. Attempt any **TWO** questions from **PART-A** and **TWO** questions from **PART-B**. Each question carries equal marks.*

Q.1 Attempt all questions in brief.

a) Write the history of artificial intelligence. [CO1][L-2]
b) Describe optimal problem with suitable example. [CO2][L-3][L-2]
c) Define 'utility theory'. [CO1][L-2][L-6]
d) What are statistical learning models? [CO2][L-1][L-2]
e) Define 'Bayes classifier'. [CO3][L-2][L-1]
f) Justify the use of searching in game. [CO3][L-1]
g) Give PEAS description for different agent types. [CO1][L-3]
h) Write issues of any search problem. [CO5][L-3]
i) What is natural language processing? [CO2][L-1]
j) Write down the differences between syntactic process and semantic process. [CO2][L-2] **2x10**

PART-A

Q.2 Define intelligent agent. Explain various types of agent programs with suitable example. [CO3][L-2] **20**

Q.3 a) What is heuristic function? Differentiate between blind search and heuristic search strategies. Justify with the suitable example. [CO5][L-2] **10**

b) Explain about the Hill climbing algorithm with its drawback and how it can be overcome? [CO4][L-2][L-3] **10**

Q.4 Explain the approaches of knowledge representation also briefly outline the features of five different languages used in artificial intelligence. [CO3][L-2][L-3] **20**

PART-B

Q.5 What is adversarial search? Write the steps for game problem formulation. State and explain minimax algorithm with tic-tac-toe game. [CO4][L-2][L-3] **20**

Q.6 What do you mean by expert system? Explain different components of expert system. [CO3][L-2] **20**

Q.7 Explain the following in detail:

a) Naïve Bayes model. [CO3][L-2][L-6] **10**
b) Learning with hidden data- EM algorithm. [CO4][L-2][L-6] **10**

End Semester Examination, May 2022

MCA – Second Semester

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 ***Fill in the blanks:***

a) The _____ consists of Mobile Station (MS), Base Sub Station and Base Transceiver Station (BTS). [CO1] [L1]

b) The GPRS stands for _____. [CO2] [L1]

c) The full form of SIM is _____. [CO1] [L1]

d) In GSM model, BTS stands for _____. [CO1] [L1]

e) In Network sub system, the VLR represents _____. [CO1] [L1]

State whether the following statements are TRUE / FALSE:

f) The wireless network provides more security than wired network. [CO1] [L1]

g) The GSM architecture uses radio waves for communication. [CO5] [L1]

h) GPRS was introduced to provide data services to subscribers. [CO1] [L1]

i) GGSN and NNTP are part of GPRS. [CO1] [L1]

j) Wi-Fi is more reliable than 4G. [CO3] [L1]

2x10

PART-A

Q.2 a) Compare the architecture of GSM and GPRS for mobile communications. [CO4] [L5] **15**

b) What are limitations of GPRS? [CO1] [L1] **5**

Q.3 a) Justify the need of IEEE 802.11 standard in today's time and how is it relevant in today's time? [CO3] [L2] **15**

b) Differentiate between wired and wireless communications. [CO3] [L1] **5**

Q.4 a) "WAP is not a single protocol; it is actually a stack of protocols." Justify the above statement. [CO4] [L5] **15**

b) What is the utility of Wireless Applications Protocol? [CO4] [L1] **5**

PART-B

Q.5 a) What is RFID and what are its applications? [CO1] [L1] **5**

b) Explain the characteristics of Adhoc networks. [CO1] [L1] **5**

c) Differentiate between pro-active and reactive routing. [CO1] [L1] **10**

Q.6 a) Explain various routing protocols in mobile communications. [CO2] [L4] **15**

b) What are the desired properties of routing protocols in mobile communications? [CO6] [L-2] **5**

Q.7 a) Illustrate the WIMAX architecture and applications in detail. [CO4] [L-2] **10**

b) Explain reverse tunneling with an example. [CO1] [L-3] **10**

End Semester Examination, May 2022

MCA – Second Semester

SYSTEM PROGRAMMING (MCA-DS-407)

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 Explain the following:

a) Explain the term 'Device Driver'.
b) Define 'Absolute loader'.
c) List the sub phases of a compiler linked with the hardware of the computer system.
d) Describe static and dynamic linking.
e) Summarize the usage of macro expansion counter.
f) Discuss 'impure interpreter'.
g) Give advantage of a multi pass compiler over a single pass compiler.
h) List types of 'Interrupts'.
i) State some features of system programming.
j) What is the need of program relocation? [CO1,2,3] [L1,2] **2x10**

PART-A

Q.2 a) Explain the evolution of system software with proper diagram. [CO1,2] [L 2] **10**
b) Depict diagrammatically how a language is processed? [CO1,2] [L1] **10**

Q.3 a) Describe the various storage allocation strategies in detail. [CO2,3] [L2] **10**
b) What is file system? Explain file system implementation in brief. [CO1,4] [L2] **10**

Q.4 a) What are the different types of intermediate codes? Also explain their implementation techniques. [CO2,3] [L2] **10**
b) Explain the different phases of a compiler. Illustrate the output of each phase for the following statement: a=b+c – d*5 [CO2,4] [L2] **10**

PART-B

Q.5 a) Explain the different ways for passing macro parameters. [CO2,5] [L2] **10**
b) Define 'macros'. State its advantages. Give examples for nested macros. [CO2,5] [L1] **10**

Q.6 a) Describe the different functions of a loader in detail. [CO2,3] [L1] **10**
b) Discuss about direct linking loader. [CO2,4] [L2] **10**

Q.7 a) Explain the design of two-pass assembler with suitable examples. [CO4,5] [L2] **10**
b) What is LEX tool? Explain working of LEX with suitable diagram and example. [CO4,5] [L2] **10**

End Semester Examination, May 2022

MCA – Fourth Semester

ADVANCE JAVA (MCA-DS-601)

Time: 3 hrs. Max Marks: **10**

No. of pages:

Note: *Attempt **FIVE** questions in all; **Q.1 is compulsory**. Attempt any **TWO** questions from **PART-A** and **TWO** questions from **PART-B**. Each question carries equal marks.*

Q.1 Answer the following:

a) What are the major components of the JDBC?
   i) Driver Manager, Driver, Connection, Statement, and Result Set.
   ii) Driver Manager, Driver, Connection, and Statement.
   iii) Driver Manager, Statement, and Result Set.
   iv) Driver Manager, Connection, Statement, and Result Set [CO1][L1]

b) Which of the following is not a valid statement in JDBC?
   i) Statement ii) Prepared Statement
   iii) Query Statement iv) Callable Statement [CO2][L1]

c) Is StAX parser a PULL API?
   i) True ii) False [CO2][L1]

d) What DOM stands for?
   i) Direct Object Model ii) Document Object Modeling
   iii) Document Object Model iv) Document Output Model [CO1][L1]

e) Which methods are used to bind the objects on Http session instance and get the objects?
   i) set Attribute ii) get Attribute
   iii) Both i) and ii) iv) None of the above [CO3][L1]

f) Which class provides stream to read binary data such as image etc. from the request object?
   i) Servlt Input Stream ii) Servlet Output Stream
   iii) Both i) and ii) iv) None of the above [CO3][L1]

g) EJB is a specification for J2EE server, not a product; Java beans may be a graphical component in IDE.
   a) True b) False [CO3][L1]

h) Can you make use of a Servlet Output Stream object from within a JSP page?
   i) true ii) false [CO3][L1]

i) Which of the following is the correct syntax to declare comments in JSP?
   i) <%--- This is JSP comment--%> ii) <!-- This is JSP comment-->
   iii) //.. iv) All of Above [CO3][L1]**2x10**

PART-A

Q.2 a) What JDBC? Explain the role and responsibility of JDBC API. [CO2][L4] **10**

b) What is Thin Driver? Which driver is fast among the four JDBC drivers? Explain with reason. [CO3][L4] **10**

Q.3 a) What is DOM? Define DOM tree with an example. [CO3][L4] **10**

b) How do you add a node at the beginning of a list of child node? [CO3][L4] **10**

End Semester Examination, May 2022

MCA – Fourth Semester

SOFTWARE PROJECT MANAGEMENT (MCA-DS-602)

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 are the signs that a software project is in trouble?
   i) The product scope is poorly defined.
   ii) Deadlines are unrealistic.
   iii) Changes are managed poorly.
   iv) All of the above. [CO2] [L1]

b) Which of the following are considered stakeholder in the software process?
   i) Customers ii) End-users
   iii) Project managers iv) All of the above [CO1] [L2]

c) Which of the following is not considered as a risk in project management?
   i) Specification delays ii) Product competition
   iii) Testing iv) Staff turnover [CO3] [L3]

d) The process each manager follows during the life of a project is known as:
   i) Project Management ii) Manager life cycle
   iii) Project Management Life Cycle iv) All of the mentioned [CO1] [L1]

e) Identify the sub-process of process improvement.
   i) Process introduction ii) Process analysis
   iii) De-processification iv) Process distribution [CO3] [L3]

f) Agile Software Development is based on:
   i) Incremental Development
   ii) Iterative Development
   iii) Linear Development
   iv) Both Incremental and Iterative Development [CO2] [L4]

g) A 66.6% risk is considered as:
   i) very low ii) low
   ii) Moderate iv) high [CO2] [L3]

h) Quality planning is the process of developing a quality plan for:
   i) Team ii) project
   iii) Customers iv) project manager [CO4] [L2]

i) Purpose of process is to deliver software.
   i) in time ii) with acceptable quality
   iii) that is cost efficient iv) both in time & with acceptable quality
   [CO3] [L2]

j) Which two models doesn't allow defining requirements early in the cycle?
   i) Waterfall & RAD ii) Prototyping & Spiral
   iii) Prototyping & RAD iv) Waterfall & Spiral [CO5] [L2] **2x10**

PART-A

Q.2 a) List and discuss some of the points specific for identifying the risks during software

End Semester Examination, May 2022

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 options:

a) _____ is an essential process where intelligent methods are applied to extract data patterns.
   i) Data Warehousing ii) Data Mining
   iii) Data Base iv) Data Structure

b) Data mining can also applied to other forms such as _____.
   i) Data streams ii) Sequence data
   iii) Networked data iv) Text data
   v) Spatial data
   a) i, ii, iii and v only b) ii, iii, iv and v only
   c) i, iii, iv and v only d) All i, ii, iii, iv and v

c) Rapid miner is one of the _____.
   i) Learning technique. ii) OLAP tool.
   iii) Purest search technique. iv) Data warehousing tool.

d) In K-means method, K indicates _____.
   i) Number of clusters. ii) Number of iterations.
   iii) Number of total records. iv) Random number.

e) _____ is a comparison of the general features of the target class data objects against the general features of objects from one or multiple contrasting classes.
   i) Data Characterization ii) Data Classification
   iii) Data discrimination iv) Data selection

f) Strategic information is needed for:
   i) Day to day operations ii) Meet government requirements
   iii) Long range planning iv) Short range planning

g) KDD describes the _____.
   i) Whole process of extraction of knowledge from data
   ii) Extraction of data ii) extraction of information
   iv) Extraction of rules

h) _____ is a process to remove incorrect or missing values.
   i) Selection. ii) Pre processing.
   iii) Transformation. iv) Interpretation.

i) Hidden knowledge can be found by using _____.
   i) Searching algorithm. ii) Pattern recognition algorithm.
   iii) Searching algorithm. iv) Clues.

j) _____is an example of frequent itemset mining.
   i) Social Network Analysis ii) Market Basket Analysis
   iii) Outlier Detection iv) Intrusion Detection [CO1, CO2][L2] **2x10**

PART A

End Semester Examination, May 2022

MCA – Second Semester

EMPLOYABILITY SKILLS ENHANCEMENT (MCA-ID-001)

Time: 3 hrs. Max Marks: **50**

No. of pages: 5

Note: ***All questions are compulsory.*** *Each question has* ***FOUR*** *options. Fill the right option in the answer table given below. Each question carries* ***ONE*** *mark. No negative marking. Options filled in the answer table will be considered.*

ANSWER TABLE

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.**

PART-A (Aptitude Section)

Q.1 If the number 517?324 is completely divisible by 3,then the smallest whole number in place of? will be: [CO-1] [L-1]

a) 2 b) 1 c) 3 d) 7

Q.2 Which of the following can be used to illustrate that not all prime numbers are odd? [CO-1] [L-1]

a) 1 b) 2 c) 3 d) 4

Q.3 The product of two numbers is 4107. If the H.C.F. of these numbers is 37, then the greater number. [CO-1] [L-1]

a) 101 b) 107 c) 111 d) 185

Q.4 Six bells commence tolling together and toll at intervals of 2, 4, 6, 8 10 and 12 seconds respectively. In 30 minutes, how many times do they toll together? [CO-1] [L-1]

a) 4 b) 10 c) 15 d) 16

Q.5 Shweta is an expert in bargaining. Once she went to a nearby shop. When Shweta asked the price of Shampoo Sachet the shopkeeper told her the price by increasing 27% of the original cost. But Shweta insisted to decrease the price by 27% so the shopkeeper sold it by decreasing the price by 27%. What is the loss or gain of shopkeeper and by how much percent? [CO-1] [L-1]

a) 5.54% loss b) 5.54% gain c) 7.29% loss d) No gain no loss

Q.6 If the area of a rectangle is increased by 44% and its breadth increased by 20%, what is the percentage increase in its length? [CO-1] [L-1]

a) 15% b) 20% c) 10% d) 12%

Q.7 The weight of a A is 25 % less than that of B. By what percentage is the weight of B