End Semester Examination, Dec. 2022 B.SC (IT) -First Semester REQUIREMENT MODELLING (7.217)

Time: 3 hrs.

Max. Marks: **60** *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.

- a) Reuse-based software engineering is a software engineering strategy where the Q.1 development process is geared to reusing existing software. i) True ii) False [CO1][L1] b) The open source movement has meant that there is a huge reusable code base available at: i) Free of cost ii) Low cost iii) High cost iv) Short period of time [CO1][L1] c) Mistakes made in the system analyses stage show up in i) System design ii) System development iii) Implementation iv) All of these [CO1][L1] d) Decision-Table is a way i) Of representing multiple conditions ii) Of representing the information flow iii) To get an accurate picture of the system iv) All of these. [CO1][L1] e) Once net requirements have been calculated, the next step is to i) Determine the production schedule ii) Determine machine and manpower requirements iii) Calculate gross requirements iv) Start the production process [CO3][L1] f) The management information system is ------ human machine based system: i) An interpreted ii) An interstellar iii) An integrated iv) An interdependent [CO3][L1] **2×6** PART – A a) What is Information system? What are the main components of an Q.2 information system? Explain briefly. [CO1][L2] **6** b) Explain the difference between Information System and Management Information System. [CO1][L2] 6
- Q.3 a) What planning dimensions determine information system development? Elaborate. [CO2][L3] **6**

- b) What is the main purpose of a development methodology? Explain methodologies used in developing information systems? [CO2][L3] **6**
- Q.4 a) What is the role of information systems in the strategic planning process?
 - [CO3][L4] **6** b) What strategies should be followed for the successfully apply management information systems to a business? [CO3][L4] **6**

<u>PART B</u>

- Q.5a) How the requirements can be gathered in information system? Explain the 5
stages of requirement gathering.[CO4][L4] 6
 - b) What are main challenges in gathering requirements? How can we improve gathering requirements? [CO4][L3] **6**
- Q.6 a) What is non function requirement in information system. What are the types of non functional requirement? Explain the advantages and disadvantages of non functional requirement.
 - b) What is fit criteria in requirements? What are the six 6 properties for measuring non-functional requirements? [CO5][L5] **6**
- Q.7 a) What are the 4 levels at which software reuse is possible? Explain briefly. [CO6][L5] **6**
 - b) Which process model leads to software reuse? Why? [CO6][L5] 6

BCA – Fifth Semester

RDBMS USING ORACLE (BCA-503A (CB)/ BCA-503(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 questions:
 - a) Describe is deadlock. Give a real life example of deadlock.
 - b) What is the importance of recovery procedure?
 - c) What is a serializability schedule?
 - d) Explain drop table command.
 - e) What are the causes of failures?
 - f) What is full form of DML?
 - g) Explain the function of drop command.
 - h) Explain difference between DBMS and RDBMS.
 - i) Define 'cursor'.
 - j) What is the difference between Tree Data Model and Network Data Model?

[CO-2][L-2] **2x10**

<u> PART – A</u>

- Q.2 Define different CODD rules for effective RDBMS implementation. [CO-2][L-1] 20
- Q.3 a) Compare "Logical" and "Physical" structure of a database.[CO-1][L-5] **10**b) Explain "Oracle" memory structure in context to ORDBMS.[CO-1][L-2] **10**
- Q.4 Discuss the following with syntax, purpose and example:
 - a) Union operator.
 - b) Group by.
 - c) Distinct.
 - d) Length.
 - e) Delete.

<u>PART B</u>

Q.5 a) Describe various data types available in PL-SQL. Give example of each.

[CO-5][L-2] **10**

[CO-4][L-1] **4×5**

b) Discuss various Loops available in PL-SQL with the help of an example for each.

[CO-5][L-2] 10

- Q.6 What is exception handling? Describe the various exceptions used in PL/SQL. Create a suitable code for raising zero-divide exception in PL/SQL code block. [CO-5][L-6] **20**
- Q.7 Write short notes on the following:
 - a) Fragmentation in DDBMS.
 - b) Timestamp based protocol.

[CO-6][L-1] **10×2**

BCA – Sixth Semester

MULTIMEDIA AND ANIMATION (BCA-603A/BCA-DS-604)

Time:	3 h	rs.	Max Marks: 100
Note:	Att frc qu	tempt FIVE questions in all; Q.1 is co lor om PART-A and TWO questions from P. pestion.	<i>mpulsory</i> . Attempt any TWO questions ART-B . Marks are indicated against each
Q.1	a) b)	The people when weave multimedia into i) Programmers iii) Software engineers Session initiation protocol (SIP) is very: i) Independent	 meaningful tapestries are called: ii) Multimedia developers iv) Hardware engineers ii) Flexible iv) Complex
	c)	How many types of video compressions i) 2 iii) 4	exist? ii) 3 iv) 6
	d)	 in Gray scale colour mode, we get i) 2 24 ii) 2 16 	ii) 2.8 iv) 2.2
	e)	audio/video refers to audio/video applications. i) Interactive	ii) L'use of the internet for interactiveii) Streaming Live
	f)	iii) Streaming StoredAll of the following are technologies us excepti) spy ware	iv) none of the above ed to gather information about you online ii) cookies
	g)	iii) gmailWhich image files are lossy format?i) GIFii) INFC	iv) anonymizersii) MPEGiii) DNC
	h)	 iii) JPEG A printed page might be presented in wl i) newscape iii) flat-file 	iv) PNG hich of these orientations? ii) portrait iv) x-beight
	i)	How many steps process for creating a 3 i) 2 iii) 4	BD animation is required? ii) 3 iv) 5
	j)	A series of slides displayed in a particulai) Placeholderiii) Layout	ir sequence is called: ii) Template iv) Slide show 2 × 10
		PART-	<u>A</u>

- Q.2 What do you understand by the term Multimedia? Explain the impact of Multimedia on social platforms. [CO-1] [L-1] **20**
 - Q.3 a) Explain the need of Hypermedia and Hypertext applications. Give their advantages.

[CO-2] [L-2] **10** [CO-2] [L-2] **10**

b) Discuss various font editing and design tools.

- Q.4 a) Elaborate on the various attributes of sound and images used in multimedia.
 [CO-3] [L-3] 10
 b) Differentiate between MIDI and digital audio.
 [CO-3] [L-4] 10 *PART-B*Q.5 What is Animation? Explain its types. Mention various principles of animation.
 [CO-4] [L-2] 20
 Q.6 Write short notes on *(any two):*
 - a) Video and its display.
 - b) Digital video containers (Codecs and video format converters).
 - c) Non linear editing (NLE) in videos.
 - [CO-5] [L-2] 10×2
- Q.7 a) Give a detailed role of the various stages of multimedia project. [CO-6] [L-3] 10
 b) Hardware and Software requirements for multimedia projects have changed over the last few years. Comment. [CO-6] [L-2] 10

End Semester Examination, Dec. 2022 BCA - First Semester

ELEMENTS OF MATHEMATICS (BCA-DS-101)

Time:	3 h	Max Marks: 100					
Note:	te: 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	Mu a) b) c)	Itiple Choice questions: What do we call the number of ne i) reduced echelon matrix iii) determinant of a matrix If A and B are two square matrice i) A . B iii) B-A If cos X = ² / ₃ then tan X is equal	on-zero rows in a matrix? ii) order of a matrix iv) rank of a matrix es, then A.B is same as which ii) B . A iv) A-B to:	[CO3][L2] ch of the following? [CO4][L3]			
	d)	 i) 5/2 iii) 5/2 The coefficient of the middle tern i) 5! iii) 216 	ii) $\sqrt{(5/2)}$ iv) $2/\sqrt{5}$ n in the expansion of $(2+3x)^2$ ii) 6 iv) 8!	⁴ is: [CO3][L4]			
	e)) If n is even in the expansion of i) nth term iii) [(n/2)-1]th term	$(a+b)^n$, the middle term is: ii) (n/2)th term iv) [(n/2)+1]th term	[CO2][L2]			
	f) g)	 Which of the following option is a B is possible? i) both are rectangular ii) both have same order iii) number of rows of A is equal iv) number of rows of A is equal A determinant vanishes if one of elements? 	correct when multiplication of to rows of B to number of columns of B of the entire row or column	consists of all zero [CO4][L2]			
	h)	 i) True Define the following terms: i) Diagonal matrix ii) Identity matrix iii) Null Matrix 	ii) False 2ART-A	[CO2][L2] 2½×8			
Q.2	a)	Solve the following system of equ 6x+y-3z=5 x+3y-2z=5	uations by Cramer's Rule:				
	b)	2x+y+4z=8 Find a,b,c, d From the equation: $\begin{bmatrix} a-b & 2a+c \\ 2a-b & 2a+c \end{bmatrix} = = \begin{bmatrix} -1 \\ 0 \end{bmatrix}$	5	[CO3][L3] 10			
		au = b 3c + a c 0	121	[CO2][L4] 10			

- Q.3 a) Out of 6 boys and 4 girls, a committee of 3 is to be formed. In how many ways this can be done if the committee contains: [CO2][L5] **10** i) Exactly 2 girls. ii) At least two girls. b) Find the middle terms in the expansion of: $(x^2 - \frac{2}{x})^{10}$ [CO3][L5] 10 Q.4 a) simplify: $\frac{9.(4^{x})^2}{16^{x+1}-2^{x+1}.8^x}$ [CO2][L4] 10 b) Expand the following expression $(2x - y)^4$ using Binomial expansion. [CO2][L4] **10** PART-B Q.5 a) Verify the following: $\tan\theta\cdot\sin\theta\cdot\cos\theta=\sin^2\theta$ [CO4][L4] **10** b) If $\cos ec \theta - \sin \theta = a^3$ and $\sec \theta - \cos \theta = b^3$, then prove that $a^2b^2(a^2 + b^2)$. [CO4][L4] 10 Q.6 Using Maclaurin's theorem find the series of the following: b) $\cos x$ c) $\sin x$ d) $\log(1+x)$ [CO4][L4] 5×4 a) e^n Q.7 a) Differentiate w.r.t x: i) $y = (5+3x)^{10}$ ii) $y^2 + x^3 - xy + \cos y = 0$ [CO5][L4] **10**
 - b) If $y = \sqrt{x} + \frac{1}{\sqrt{x}}$ show that $2x\frac{dy}{dx} + y = 2\sqrt{x}$ [CO4][L5] **10**

BCA - First Semester

HARDWARE INTERFACES (BCA-DS-102)

Time:	3 h	irs.		Max Marks: 100
Note:	A frc qu	ttempt FIVE questions in all; Q.1 om PART-A and TWO questions f vestion.	! is compulsory . Attempt any from PART-B . Marks are indicate	TWO questions ed against each
Q.1	An	swer the following questions:		
	a)	What is the full form of CPU?		[L1][CO1]
		i) Computer Processing Unit i	ii) Computer Principle Unit	
		iii) Central Processing Unit i	iv) Control Processing Unit	
	b)	Which of the following language de	oes the computer understand?	[L1][CO1]
		i) Computer understands only C L	Language	
		ii) Computer understands only As	sembly Language	
		iii) Computer understands only Bir	ary Language	
	c	Which of the following is the brain	of the computer?	
	C	i) Central Processing Unit	ii) Memory	
		iii) Arithmetic and Logic unit	iv) Control unit	
	d)	Which of the following is not a cha	aracteristic of a computer?	[L1][CO5]
	.,	i) Versatility i	ii) Accuracy	[][]
		iii) Diligence i	v) Decision making	
	e)	Which of the following is the small	est unit of data in a computer?	[L1][CO4]
		i) Bit i	ii) KB	
		iii) Nibble i	iv) Byte	
	f)	Which of the following monitor lo	ooks like a television and is norr	nally used with
		non-portable computer systems?		[L2][CO3]
		I) LED I	II) LCD	
	~)	III) CRI	IV) Flat Panel Monitors	
	g)	which of the following is designed	to control the operations of a cor	
		i) Keyboard	ii) Mouse	
		iii) Printer	iv) Operating System	
	h)	Which of the following is physical	device of a computer?	[L1][CO1]
	,	i) Hardware	ii) Software	[][]
		iii) System Software i	iv) Package	
	i)	Which of the following device pro	ovides the communication betwe	en a computer
	-	and the outer world?		[L1][CO1]
		i) Processor i	ii) I/O Devices	
		iii) Drivers i	iv) Storage	
	j)	Which of the following is latest ver	rsion of Pentium series?	
		I) Pentium I	II) Pentium II	
		III) Pentium III	iv) Pentium IV	[LI][C01] 2x10
		D		

<u>PART-A</u>

- Q.2 a) Which mobile processor is widely used these days and write the characteristics of robust mobile processor. [CO-1] [L-2] **10**
 - b) Why there is a need for i-series processors these days and which new features

Q.3	have been introduced in i-series processors?a) Explain the internal architecture of a Laser printer.b) Differentiate between serial and parallel port.c) What is the role of keyboard controller?	[CO-1] [L-4] 10 [CO-3] [L-2] 10 [CO-3] [L-4] 5 [CO-3] [L-1] 5
Q.4	a) What is the importance of virtual memory?b) Compare the internal architecture of SSD with HDD.	[CO-4] [L-1] 5 [CO-4] [L-4] 15
	<u>PART-B</u>	
05	a) Explain the POST process of computer during booting	[CO_1] [L_2] 10

Q.5 a) Explain the POST process of computer during booting. [CO-1] [L-2] 10
b) "SMPS plays a very important role in computer. Without SMPS, the motherboard components may melt because of high current." Justify the above statement.

[CO-1] [L-5] **10**

- Q.6 Why there is a need for buses in computer. Explain various buses present in any computer. [CO3] [L-4] 20
- Q.7 a) Differentiate between the working of Ransomware and Viruses. [CO-5] [L-4] **10**

b) Suggest 5 ways to make your system secure from malware and other threats.

[CO-5] [L-2] 10

BCA – First Semester

HARDWARE INTERFACES (BCA-DS-102/BCA-103A (CB)/BCA-103(CB))

Time:	Time: 3 hrs. Max Marks: 100				
Note:	Attempt FIVE questions in all; Q.1 is compulsory . Attempt any T from PART-A and TWO questions from PART-B . Each question marks.	WO questions carries equal			
Q.1	Multiple choice questions: a) Which of the following is the fastest printer? i) Desk jet ii) Laser jet iii) DMP b) Which of the following is smallest memory? i) SSD ii) Cache iii) RAM c) All the components of a computer are attached on i) Processor ii) Motherboard iii) Hard Disk d) The technique can increase the processor speed but the computer hardware. i) Over clocking ii) Over processing iii) Over head e) Pentium means the processor was of generation. ii) First Generation ii) Fourth Generation iii) Fifth Gen Define the following: f) USB. g) Plug and play. h) Cache memory. i) Malware. [j) Rectifier. [[CO-1] [L-1] [CO-4] [L-1] [CO-1] [L-1] (CO-1] [L-1] (CO-1] [L-1] eration [CO-1] [L-1] [CO-1] [L-1] [CO-1] [L-1] [CO-5] [L-1] [CO-1] [L-1] 2 × 10			
Q.2	a) Explain the role of Processor, Motherboard, RAM, Hard disk and SMb) Differentiate between mini-computer and super-computers.	IPS. [CO1][L2] 15 [CO-1] [L-4] 5			
Q.3	a) Explain the usage of various ports available in computer.b) Explain the working of DMP and Deskjet printer.	[CO-3] [L-2] 10 [CO-3] [L-2] 10			
Q.4	 a) List the various types of memory in computer. b) Draw the internal architecture of a hard disk drive. Explain the component of the hard disk drive. 	[CO-4] [L-2] 10 working of each [CO-4] [L-3] 10			
Q.5	 a) How BIOS is useful for computer? What are different activities puttee booting process? b) Why the computer uses various beeps during booting process? List their meaning during booting process. 	erformed during [CO-3] [L-2] 10 It the beeps and [CO-3] [L-4] 10			
Q.6	a) The requirement of graphics processor has forced companie Graphics	es to introduce			

processor unit (GPU) in latest computer". Justify the above statement by citing importance of AGP. [CO-5] [L-5] **10**

[CO-5] [L-4] **5**

- b) Differentiate between the working of industry standard architecture and peripheral components interconnect. [CO-3] [L-4] 10
- a) Why an anti-virus needs to be updated at regular intervals for better security? Q.7
 - b) Differentiate between the bots, viruses and worms.
 - [CO-5] [L-4] 5 c) How ransomware disturb the whole IT infrastructure around the world? Why it was [CO-5] [L-2] 10 so difficult to find its solution?

BCA – First Semester

INTRODUCTION TO INFORMATION TECHNOLOGY AND C PROGRAMMING (BCA-DS-104)

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.
- Multiple choice questions: Q.1 a) Binary equivalent of the decimal number 25 is i) 11001 ii) 10011 iii) 1001 iv) None of these. b) C language is available for which of the following operating systems? i) DOS ii) Windows iii) Unix iv) All of these c) Find the odd one: i) Speaker ii) Mouse iii) VDU iv) Printer d) Which of the following is an Impact printer? i) Dotmatrix printer ii) Laser Printer. iii) Inkjet printer iv) None of these. e) Flash memory is a type of _____ chip. i) ROM ii) PROM iii) EEPROM iv) EPROM f) The software used to translate assembly language program into a machine language program is called i) Assembler ii) Compiler iv) Linker. iii) Interpreter g) Who is the father of computer? i) Allen turing ii) Charles babbage. iii) Simur cray iv) Augusta adaming. h) What is a mouse? 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 iv) Arithmetic and Logicunit. iii) Mouse j) Hexadecimal equivalent of $(562)_{10}$ is ii) 232 i) 322 iii) 250 iv) 312 [CO-1] [L-1] 2×10 PART-A
- Q.2 a) Explain digital computer. Draw block diagram of digital computer and explain each component of it. [CO-2] [L-2] **10**
 - b) Describe a software. Differentiate between the types of software with examples.

[CO-2] [L-3] 10

- Q.3 a) Differentiate between the different data types in C. Give examples. [CO3] [L-3] **10**
 - b) Explain the different types of Operators in C with their application. [CO-4] [L-2] 10
- Q.4 a) Differentiate between while and do-while statements. Give the syntax for: i) while ii) do while iii) for (break iv) continue. [CO-3] [L-4] **10**
 - b) Write an algorithm, flowchart, and C program to find the greatest of three numbers. [CO-4] [L-5] **10**

<u>PART-B</u>

- Q.5 a) State the need of arrays in C language. Describe the types of array that C supports. Give the advantages and disadvantages of arrays. [CO-1] [L-1] **10**
 - b) Analyze the different types of string manipulation functions with any three examples. [CO-2] [L-3] **10**
- Q.6 a) Differentiate between:
 - i) Call-by-value and Call-by-reference.
 - ii) Actual arguments and formal arguments.
 - b) Define user defined function in C. Explain the concept of function declaration, function definition and function call in user defined function. [CO-1] [L-1] **10**

[CO- 5] [L-4] 10

- Q.7 a) Explain with example the declaration and initialization of a structure. Differentiate between structure and union. [CO-5] [L-2] **10**
 - b) Define a 'pointer'. How is a pointer initialized? Describe typical applications of pointers in developing programs.
 [CO-4] [L-1] 10

BCA – First Semester

INTRODUCTION TO IT AND PROGRAMMING IN C (BCA-DS-104 / BCA-106(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	Mu a)	Iltiple choice questions: What is the output of this stat main()	ement?	[CO-3][L-2]			
		{					
		int $a = 1$, $b = 2$, $c = 3$:					
		printf("%d", a + = (a + = 3, a + a + a + a + a + a + a + a + a + a	5, a))				
		}					
		i) 6	ii) 9				
		iii) 12	iv) 8				
	b)_	is the size of `int'.		[CO-2][L-2]			
		i) 2	ii) 4				
		iii) 8	iv) Compiler dependent				
	c)	What does this declaration m	ean int x : 4; ?	[CO-3][L-3]			
		i) X is a four-digit integer.					
		ii) X cannot be greater than	a four-digit integer.				
		iii) X is a four-bit integer.					
		iv) None of the above					
	d)	is not a valid C	C variable name.	[CO-2][L-1]			
		i) int number	ii) float rate.				
		iii) int variable count.	iv) int \$main				
	e)	How many times will the follo	wing loop execute.	[CO-1][L-1]			
		for $(j = 1; j \le 10; j = j-1)$					
		i) Forever	ii) Never				
		iii) O	iv) 1				
	f)	Which of the following is not	a valid variable name declaration?	[CO-2][L-1]			
		i) inta3;	ii) int3a;				
		iii) intA3;	iv) None of the above.				
	g)	Which of the following staten	nent is not true?	[CO-3][L-2]			
		i) A pointer to an int and a p	pointer to a double are of the same size.				
		ii) A pointer must point to a data item on the heap (free store).					
		iii) A pointer can be reassigned					
		iv) A pointer can point to an a					
	h)	What is the 16-bit compiler a	llowable range for integer constants?	[CO-1][L-1]			
		i) -3.4e38 to 3.4e38	ii) -32767 to 32768				
		iii) -32668 to 32667	iv) -32768 to 32767				
	i)	What will be the output of thi	is program?	[CO-5][L-3]			
	-	main()		_			
		<pre>{ printf("bye"); main(); }</pre>					

- i) Wrong statement ii) It will keep on printing bye iii)It will print bye once iv) None of the these
- j) What does the statement means x = y + 1?
- i) x = x y + 1
- ii) x = -x y 1
- iii) x = x + y 1
- iv) x = x y 1

<u>PART-A</u>

Q.2 Write short notes on: a) Output devices.

c) Assembler.

- b) Primary memory.
- d) Basic Characteristics of computer.

[CO-2][L-2] 5×4

[CO-5][L-3] **2×10**

- Q.3 a) Twenty-five numbers are entered from the keyboard into an array. The number to be searched is entered through the keyboard by the user. Write a program to find if the number to be searched is present in the array and if it is present, display the number of times it appears in the array.
 - b) Explain the various type of operators used in C language. Illustrate with the use of suitable example. [CO-1][L-2] 10
- Q.4 a) Differentiate between exit controlled and entry controlled loop. [C0-5][L-4] 5
 - b) Why loop is so important in a programming language? Explain the syntax of "for loop" with suitable example. Write a program to print the table of any number using for loop. [CO-4][L-6] 10
 - c) What is the role of switch Statement? Write a program to determine the week day corresponding to the number entered by the user using switch-case.

[CO4][L-2][L-6] **5**

<u>PART-B</u>

Q.5 a) How array elements are initialized and accessed during compile time and run time? Write a program to count the occurrences of a number in a matrix.

[CO-4][L-2][L-6] 10

[CO-4][L-1][L-6] 5×2

[CO-4][CO-5][L-2] **5×2**

- b) What is Chain of pointers? Define the most commonly used string manipulation function and illustrate its use with the help of suitable program. [CO-1][L-1] **10**
- Q.6 a) How parameter passing is performed in a function? Create a program to swap two numbers using call by value. [CO-4][L-1][L-6] **10**
 - b) Write short notes on:
 - i) Local and global variables
 - ii) Identifiers
- Q.7 a) Write short notes on:
 - i) Pointer and Structure.
 - ii) Nested If Else.
 - b) A factory has 3 division and stocks 4 categories of products. An inventory table is updated for each division and for each product as they are received. There are three independent suppliers of products to the factory:
 - 1. Write a program to take a transaction and update the inventory.
 - 2. If the cost per item is also given write a program to calculate the total inventory values. [CO5][L-2] **10**

BCA – First Semester

DATABASE MANAGEMENT SYSTEM (BCA-DS-105/BCA-204 A (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 Choose the correct option:

-	a) The physical storage structures or dev	vices could be changed without a	ffecting the
	conceptual schema. This is known as		
	i) Physical data independence	ii) Logical data independence	
	iii) External data independence	iv) None of the above	[CO-1][L-1]
	b) GRANT and REVOKE are:		
	i) DDL	ii) DML	
	iii) DCL	iv) None of the above	[CO-4][L-1]
	c) What is true about unique and primary	y key?	
	i) Unique can have multiple NULL val	ues but primary can't have.	
	ii) Unique can have single NULL value	e but Primary can't have even sing	le.
	iii) Both can have duplicate values		
	iv) None of the above		[CO-4][L-1]
	d) The repetition of data in separate files	is known as:	
	i) data integrity	ii) program-data dependence	
	III) data redundancy	iv) data independence	[CO-2][L-1]
	e) Groups of procedures, functions, va	riables statements are put in a	single unit
	called		
	as:		
	I) Class	II) PL/SQL	
		IV) None of the above	[CO-4][L-1]
	r) when an E-R diagram is mapped to ta	bles, the representation is redund	lant for:
	I) weak entity sets	ii) weak relationship sets	
	III) strong entity sets	IV) strong relationship sets	[CO-6][L-1]
	g) which command enables alteration the	e data stored in existing records?	
	I) Entity Integrity	II) Referential Integrity	FCO 4151 41
	III) BOTH I) and II)	IV) None of the above	
	n) The values appearing in given attribution	utes of any tuple in the reference	ing relation
	relation according to	integrity constraint	relefenceu
	i) Deforential	ii) Drimony	
	i) Referencing	ii) Fililidiy	
	ii) The shilty to guery data as well	IV) Specific	[CO-4][L-1]
	I) The ability to query data, as well	as insert, delete, and alter tuples	s, is offered
	i) TCL (Transaction Control Language		
	ii) DCL (Data Control Language)	=)	
	ii) DCL (Data CONTON Language)		
	III) DDL (Data Deminition Langauge)		

- iv) DML (Data Manipulation Langauge)
- j) The number of tuples in a relation is known as:

- i) Cardinality
- iii) Modality

ii) Degree

iv) None of the above [CO-4][

<u>PART-A</u>

- Q.2 a) Explain the various characteristics of database approach. [CO-1] [L-2] **10**
 - b) Discuss the concept of data independence in three level architecture of data base management system. Also explain three levels of schemas in data base management system diagrammatically. [CO-2][L-2, 4] **10**
- Q.3 What do you mean by data model? Explain various data models in Database with their merits and demerits. [CO-1][L-2, 3] **20**
- Q.4 a) Write the following queries using following schema. Student (student-Id, student-Name, Address, Gender, Course, Percentage).
 - i) Insert five records in student table.
 - ii) List all the students who are enrolled in course —B.Sc.
 - iii) Update the record of student whose roll no is 3 from BCA to MCA.
 - iv) Add column —Age to table.
 - v) List the order of students from higher percentage to lower percentage.

[CO-4][L-6] 2×5

b) Write any two DML commands in SQL with format and example. [CO-4][L-2] **10**

<u>PART-B</u>

Q.5 a) Explain BCNF and 3NF with appropriate examples. Prove BCNF is stronger than 3NF.

[CO-5][L-2, 3] **10**

- b) What is functional dependency? Write down the rules for finding functional dependency from a set of functional dependency. [CO-5][L-2] **10**
- Q.6 What do you mean by concurrency, what types of problems occur during concurrency and explain shared and exclusive locks with example? [CO-3][L-2] **20**
- Q.7 a) Define distributed database. Explain various types of fragmentations used in distributed database management system with example. [CO-6][L-2] **10**
 - b) What do you mean by database security? Explain various security measures that need to be taken care while maintaining the database. [CO-3][L-1, 2] **10**

BCA - First Semester

DATABASE MANAGEMENT SYSTEM (BCA-DS-105)

Time:	3 h	IrS.			Max Marks: 100
Note:	A frc qu	ttempt FIVE questions in all; Q om PART-A and TWO questions vestion.	. 1 i fro	s compulsory . Attem, m PART-B . Marks are	ot any TWO questions indicated against each
Q.1	An	swer the following questions:			
	a)	Which type of data can be stored	l in [.]	the database?	
		i) Image	ii)	Text, files	
		iii) Data in the form of	iv)	All of the above.	
	b)	To which of the following the ter	m "l	DBA" referred?	
		i) Data	ii)	Data Bank	
	_	iii) Database Administrator	iv)	None of the above	
	c)	In the architecture of a database	sys	tem external level is the	e:
		i) physical level	ii)	logical level	
	N	iii) conceptual level	iv)	view level	
	d)	Which function is used to find the	e co	unt of distinct departme	ents?
		I) DIST) :)	Distinct	
	\sim	III) COUNT		Count, Dist	
	e)	i) 1NE			
		I) INF iii) 2NE	ー)) ー i、ハ		
	f)	Weak entity set is represented as	(۱۷ 	וווד	
	1)	i) Underline	ii)	Double line	
		iii) Double diamond	iv)	Double rectangle	
	a)	Which of the following gives a lo	nica	structure of the datab	ase graphically?
	97	i) ERD	ii)	DFD	
		iii) Physical data	iv)	None	
	h)	Teacher>Teaches> Student s	hov	s the relationship.	
	,	i) 1:1, 1:N	ii)	1:1, M:N	
		iii) N:N, N:N	iv)	1:1, 1:1	
	i)	For each attribute of a relation	, th	ere is a set of permi	tted values, called the
		of that attribute.			
		i) Domain	ii)	Relation	
		iii) Set	iv)	Schema	
	j)	The log is a sequence of		$_$ recording all the ι	pdate activities in the
		database.			
		i) Log Records	ii)	Records	
		III) Entries	iv)	Redo	[CO1-6][L1] 2×10
		<u> </u>	<u> 74</u> 6	<u> 7-A</u>	

Q.2 a) Define the term 'DBMS'. Elaborate the applications of DBMS. [CO1][L2] 10
b) Discuss the role and functions of DBMS. Draw overall structure of DBMS and explain its components in detail. [CO1][L-2] 10

Q.3 a) Draw an ER diagram of university management system. [CO6] [L6] **10**

- b) State the major advantages and disadvantages of the three record based data models.
 - i) Network Model. ii) Hierarchical Model. [CO6] [L1] **5×2**
- 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 down the SQL command which will show the Regd. No of Pradeep.
- c) Write down the SQL command which will show the Name and Branch column.
- d) Write a SQL command which will count the number of rows existing in STUDENT table.
- e) Write a SQL command to delete a record from the student table where Branch is 'ETC'.
- f) Update the name of the '0001' REGD.No.
- g) Add rollno as a New Column in the existing table.
- h) Display the records of CSE branch students details.
- i) Fetch the student details whose name start from R letter.
- j) Display the schema of the table.

[CO4][L3] 20

<u>PART-B</u>

- Q.5 a) Explain the database anomalies with their respective solutions. [CO5] [L2] 10
 b) Describe the concept of Normalization and differentiate between First and Second Normal form with suitable example. [CO5] [L1,2] 10
- Q.6 a) What are the conflicts and transaction precedence graph for the following schedule: [CO3] [L6] 10 [CO3] [L6] 10 [CO3] [L6] 10
 b) Explain different type of database locking techniques. [CO3] [L2] 10
- Q.7 a) Discuss about the database security techniques. [CO3][L1,3] 10
 b) Write short notes on *any two* terms:
 - i) Log based recovery.
 - ii) Shared lock.
 - iii) Checkpoint.
 - iv) Exclusive lock.

[CO3][L2] **5×2**

BCA – First Semester BUSINESS COMMUNICATION (BCA-DS-106/BSCIT-DS-104)

Time: 2 hrs.

Max Marks: 50

No. of pages: 4

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.

.1	The attitude base	d on the concept that	"ev	ery individual will	have	an intention to
	a) Robavioral	b) Cognitivo	ن در ا (م	Affoctivo	נטי _ ל	Desitive
	d) Dellavioral	D) Cognitive	C)	Allective	u,) POSILIVE
0.2	į.	s the only component	of a	ttitude which incl	udes l	beliefs and ideas.
Ľ	a) Behavioral	b) Cognitive	<i>c</i>)	Affective	d) Positive
		, -	,		-	
Q.3	The two broad are	eas of communication	are	:		
	a) Oral and writte	en communication	b)	Verbal and non-w	/erbai	communication
	c) Oral and non-	verbal communication	d)	Verbal and writte	en col	mmunication
0.4	Gossin and rumou	ır are nart of		communication.		
211	a) Formal	b) Informal	<i>c</i>)	_ eenindinediieni Horizontal	d) Vertical
	.,		-7			,
Q.5	is the	wordless form of com	mu	nication which tak	es the	e form of posture,
	body language, fa	ncial expression, eye c	onta	act, tension, breat	hing a	and tone etc.
	a) Verbal commu	nication	b)	Garbage commu	nicati	on
	c) Informal comm	nunication	d)	Non-verbal comm	nunic	ation
06	Through	we use hody parts	esr	ecially arms leas	hani	ds and head to
<i>Ų.</i> 0	convev meaning.		CSμ	celarly arris, legs,	, nan	
	a) Gestures	b) Proxemics	C)	Time language	d) Paralanguage
	,	,	,		,	
Q.7	Listening and hea	ring refers to:				
	a) one and the sa	ame thing	b)	mental and phys	ical a	cts, respectively
	c) a specific act v	ersus a general act	d)	None of the abou	le.	
08	What does the co	ncent of diversity in th	א סל	orknlace refer to?	,	
Q.0	a) Social differen	res among employees				
	b) Physical differen	ences among employees ences among employe	es.			
	c) Historical diffe	rences among groups				
	d) Demographic	differences among em	ploy	lees		
Q.9	Ram and Jyoti's fa	ather bought toys for a	ther.	n. They gifted the	boy a	an airplane. Which
	a) Exclusion (Mai	ullure is myrmyrlleu i' rainalization)	ו נו ה	E SIdlement. Fauality		
	c) Feminism	ginalization)	d)	Sterentvne		
0.10	Inclusion of neon	le with special needs:	u)	Stereotype		
£	a) Is compulsory	to people without disa	abili	ties		
	b) Will increase t	he burden in colleges	ana	workplace		
	c) Requires a cha	ange in attitude, conte	ent a	nd approach to te	eachir	ng.
	d) Is a unrealistic	c approach				
011	Castura pastura	ave contact are care	ida	rad to be		
Q.11	a) not important	b) Social Skills	nuer	eu lu De body languago	ہ) soft skills
		Dj SUCIAI SKIIIS	C)	bouy language	u,	/ JUIL JAIIIJ
Iden	tify the correct to	ense in the followin	g se	entences		
<u> </u>						
<i>Q.12</i>	I haven't had brea	aktast yet.				

b) present continuous*d)* none of these

a) present perfect c) present simple

Q.13	Did Tara call you yesterday a) Past simple b) Pas	/? st continuous c)	Past perfect	d)	None of these
Q.14	<i>Will he still be travelling thi a) Future perfect c) Future simple</i>	is evening? b) d)	<i>Future continuous None of these</i>		
Fill in	the blanks from the foll	owing options:			
Q.15	When I was a small child, w a) lived b) live	wev ev	vith my grandparent. are living	s. d)	were living
Q.16	<i>My uncle forced my friend a) have stayed back c) staying back</i>	d and I b) d)	 to stay back none of these.		
Q.17	I have since to a. known him b) kno	wo years. ow him c)	knew him	d)	none of these
Q.18	Prasanna had a good a) trup b) tro	for stage op c)	r. truped	d)	troupe
Q.19	The phonetics is divided in a) Two b) Thi	to brai ree c)	nches. Four	d)	five
Q.20	How many word classes and a) 4 b) 5	e there in English c)	n language? 8	d)	6
Q.21	What is the smallest sounda) phoneb) phone	l unit called? onetics c)	phonology	d)	Phonography
Q.22	This is not the branch of pl a) articulatory b) arti	honetics. istically c)	acoustic	d)	auditory
Q.23	In verb the stress is on the a) First part b) Sec	e. cond part			
Q.24 Q.25	In a group discussion, one a) Hostility b) Ign Which of these must be av a) Speaking facts c) Speaking with clarity	must communica norance c) roided in a group b) d)	ate with: Knowledge discussion? Asking questions Speaking fast	d)	Assertiveness
Q.26	In a group discussion a per a) Initiator b) Sta	rson who begins anter c)	the discussion is call Beginner	ed: d)	Moderator
Q.27	Which of the following is m a) Seminar b) Wo	nore interactive a prkshop c)	nd student centric. Lecture	d)	Group Discussion
Q.28	What is the rule to decide a a) Always wear black b) The colour of the belt s	the color of the b hould match the	elt (for men)? colour of the shoe		

c) The colour of the belt should match the colour of the pair of trousersd) The colour of the belt should match the colour of the tie

Q.29	What should not be a) Your family info c) Information abo	e included in a self in rmation put the job role	troc b) d)	luction? information about y none of the above	ourself
Q.30	How to start a self a) By giving your r c) By giving the de	introduction? name etails of job role	b) d)	By giving your famil None of these	ly details
Q.31	Find the number of a) 8	factors of 250. b) 16	c)	24	d) 32
Q.32	Find the number of a) 8	even factors of 340. b) 6	c)	4	d) 2
Q.33	Find the product of a) 28018	factors of 280. b) 28024	c)	2808	d) 2809
Q.34	Find the sum of fac a) 40043	tors of 4004. b) 5444	c)	9000	d) 9408
Q.35	Find the number of a) 1	f prime factors of 218 b) 2	37. с)	4	d) 8
Q.36	How many factors (a) 496	of 27 * 36 * 52 * 92 b) 480	* 1 C)	<i>02 are multiples of 1 405</i>	8? d) 505
Q.37	Average age of 5 b of the 5 th boy is: a) 15 vrs	oys is 16 years of wh	hich	that of 4 boys is 16	yr 3 months. The age
Q.38	The average age of the average age of	f 30 girls is 13 yrs. Ti remaining 12 girls.	he a	average of first 18 gil	dy 15 yrs 2 monais Is is 15 yrs. Find out
	a) 12 yrs	b) 10 yrs	<i>c)</i>	16 yrs	d) 10.5 yrs
Q.39	The average of 13 results is 60. If the average of first 7 results is 59 and that of last 7 results is 61, what will be the seventh result?				
	a) 90	<i>b) 50</i>	<i>c)</i>	75	d) 60
Q.40	The average of nin that of the last thre	e numbers is 50. The e numbers is 52. The	e av en,	erage of the first five the sixth number is:	e numbers is 54 and
	a) 34	b) 24	<i>c</i>)	44	d) 30
Q.41	In a class of 45 stu	dents Aditya's rank is	s tw	elve from top what i	s his rank from

bottom. a) 33 c) 35 b) 34

d) cannot be determined

Q.42	' In a class of 42 students Nutan's Rank i a) 21 c) 23		<i>is 22 from bottom what is her rank from top. b) 22 d) Cannot be determined</i>			
Q.43	' In a class, Sonal's rank is 10th from top a) 24 c) 26		what is his rank from below: b) 25 d) Cannot be determined			
Q.44	If A is to the south of B and C is to the e			east of B, in what direction is A with respect to		
	a) North-east	b) North-west	c)	South-east	d) South-west	
Q.45	A is 40 m South-west of B. C is 40 m South-east of B. Then, C is in which direction of					
	a) East	b) West	<i>c)</i>	North-east	d) South	
Q.46	Raj travelled from a point X straight towards east to Y at a distance of 80 metres. He turned right and walked 50 metres, then again turned right and walked 70 metres.Finally, he turned right and walked 50 metres. How far is he from the starting point?a) 10 metresb) 20 metresc) 50 metresd) 70 metres					
Q.47	Pointing to a photograph, a man said, "I have no brother or sister but that man's father is my father's son." Whose photograph was it?					
	a) His own	b) His son	<i>c)</i>	His father's	d) His nephew's	
Q.48	Pointing towards a boy, Veena said, "He is the son of only son of my grandfather." How is that boy related to Veena?					
	a) Aunt	b) Uncle	<i>c)</i>	Mother	d) Data inadequate	
Q.49	Introducing Reena, Monika said, "She is the only daughter of my father's only daughter." How is Monika related to Reena?					
	a) Aunt	b) Niece	<i>c)</i>	Cousin	d) Data inadequate	
Q.50	Pointing to a man a woman said, "His mother is the only daughter of my mother." How is the woman related to the mother?					
	a) Mother	b) Daughter	<i>c)</i>	Sister	d) Grandmother	

BCA and B.Sc. IT - First Semester

BUSINESS COMMUNICATION (BCA-DS-106/BSCIT-DS-104)

Time: 3 hrs.

Max Marks: **100**

No. of pages: 3

Note: All questions are compulsory. Marks are indicated against each question.

- Q.1 Answer the following in brief:
 - a) What is non-verbal communication?
 - b) What are Listening skills? How is listening different from hearing?
 - c) What are the objectives of communication?
 - d) What is a Memorandum?
 - e) 'A formal letter or E-Mail should always start with a correct salutation'. Explain.
 - f) What is the role of feedback in business communication?
 - q) What is facial expression? Give an examples for facial expressions.
 - h) How do postures and gestures aid nonverbal communication?
 - i) Mention the role of personal appearance and grooming in Business Communication.
 - i) Mention some of the personality traits in GD.

2x10

0.2 Multiple Choice questions:

- a) At each stage in the process of communication, there is a possibility of interference which may hinder the process. Such interference is known as
 - i) sender

iii) barrier

- ii) receiver
- iv) none of them
- b) As a means of communication, e-mails have features of the immediacy of both and _____.
 - i) reading, receiving
- ii) writing, sending
- iii) calling, receiving
- iv) receiving, sending
- c) The primary goal of communication is to _____.
 - i) to create barriersiii) to effect a change ii) to create noises
 - iv) none of these
- d) While writing a professional email, one should always ensure to mention someone's name in BCC? i) TRUE
 - ii) FALSE
- e) The most common goal of business communication is______.
 - i) favorable relationship between sender and receiver
 - ii) organizational goodwill
 - iii) receiver response
 - iv) receiver understanding
- f) Downward communication flows from ______ to ______.
 - i) Upper to Lower ii) Lower to Upper
 - iii) Diagonal iv) Horizontal
- q) A memorandum (MEMO) is considered a brief form of communication.
 - i) External ii) Internal

iii) Formal Use

iv) Legal Use

ii) Use of simple words

- h) Simplicity in writing essentially means
 - i) Use of simple sentences
 - iv) plainness iii) Use of simple tense
- i) While listening to a song, we do the "Empathetic" type of listening. i) True
 - ii) False
- j) The tone of our voice conveys our mood, interest, anger etc. to the audience. ii) False i) True
- k) Only 7% of what we communicate is through body language ii) False i) True
- I) Communication in a large group can never have barriers or misunderstandings. i) True ii) False
- m) CC section in a professional email is for those who have to action on the email.
 - ii) False i) True
- n) Business Letters are the only formal way to communicate within an organization. ii) False i) True
- o) BCC in a business email is for
 - i) Those who have to action on the email
 - ii) Those who just need to be informed
 - iii) When all others need not know about them
 - iv) All of the above.
- p) Usage of correct salutation in any form of formal business communication is essential.
 - i) True
- ii) False q) When communicating with people from different culture it is best to assume
 - i) differences until similarity is proven
 - ii) similar interpretation of symbols
 - iii) similar understanding of ideas
 - iv) people are all the same
 - r) In general humans are
 - i) Indifferent communicators
 - ii) Perfect Communicators
 - iii) Good Communicators
 - iv) Poor Communicators
 - s) The word communication is derived from the Latin word.
 - ii) Communicate
 - iii) Communicate iv) Communis
 - t) Generally speaking in business we communicate
 - i) Both a one-way and two-way process
 - ii) Two way process

i) Community

- iii) One-way process
- iv) Three-way process

2×20

5

5

- Q.3 Explain the process of communication in brief. What is the purpose of E-mail in business communication? 0.4.
- Q.5 Explain the 'Full Block Format' of a business letter. 5

- Q.6 Explain the significance of the parts of an email: CC, BCC, To, Subject.
- Q.7 Discuss the 7 C's of communication.

- 10
- Q.8 Write a cover letter to Mr. Amit Yadav, Manager IT of ABC Ltd., submitting your candidature for an opening in his organization, about which an advertisement was published in a newspaper. **10**

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**. Each question carries equal marks.
- Q.1 Answer the following questions:

a)	for a given graph G having v vertices and e edges which is connected and has no			
-	cycles, which of the following statem	ents is true?	[CO1][L1]	
	i) v=e	ii) v = e+1		
	iii) v + 1 = e	iv) $v = e - 1$		
b)	What is the value of the postfix expr	ession 6 3 2 4 + $-$ *?	[CO2][L2]	
,	i) 1	ii) 40		
	íii) 74	iv) -18		
c)	In a simple graph, the number of eq	dges is equal to twice the sum of the	degrees	
,	of the vertices.	5	[CO3][L1]	
	i) True	ii) False		
d)	Which of the following sorting algori	thms can be used to sort a random I	inked list	
,	with minimum time complexity?		[CO5][L1]	
	i) Insertion Sort	ii) Quick Sort		
	iii) Heap Sort	iv) Merge Sort		
e)	Which one of the following is an app	lication of stack data structure?	[CO2][L2]	
	i) Managing function calls	ii) The stock span problem		
	iii) Arithmetic expression evaluation	iv) All of the above		
f)	In Postfix expressions, the operators	come after the operands.	[CO3][L2]	
	i) True	ii) False		
g)	Which of the following options is not	true about the binary search tree?	[CO4][L2]	
	i) The value of the left child should	be less than the root node		
	ii) The value of the right child should	d be greater than the root node.		
	iii) The left and right sub trees shoul	d also be a binary search tree		
	iv) None of the above.			
h)	The optimal data structure used to s	olve Tower of Hanoi is	[CO2][L2]	
	i) Tree	ii) Heap		
	iii) Priority queue	iv) Stack		
i)	Which of the following concepts mak	e extensive use of arrays?	[CO1][L1]	
	i) Binary trees	ii) Scheduling of processes		
	ii) Caching	iv) Spatial locality		
J)	Assuming int is of 4 bytes, what is th	ne size of int arr.[15];?		
	1) 15	II) 19		
	iii) 11	iv) 60	2×10	

<u>PART-A</u>

Q.2 a) Differentiate between primitive and non-primitive data structure. [CO-1][L-3] 10
 b) How multidimensional array can be declared and initialized? Create a program to addition of two matrixes. [CO-2][L-3] 10

Q.3 a) List out the various operations that can be performed on a stack. [CO-1][L-1] **10**

 b) How stack is used to evaluate the postfix expression? Write an algorithm for evaluation of postfix expression. Evaluate the following expression: ABC + * CBA - + * [CO-4] [L-4] 10

Q.4 Write an algorithm to delete an element from the middle of the linked list. Illustrate it with the suitable example. [CO-4] [L-3] **20**

<u>PART-B</u>

Q.5	a)	Explain AVL in detail. List out the various operations that can be performed on AVL			
		tree.	[CO-5] [L-2] 10		
	b)	Construct a binary tree from the given traversals. Pre-order $* + a - b c / - d e - + f g h$ In order $a + b - e * d / f + g - h$	[CO-4] [L-3] 10		
Q.6	a) b)	Explain the Kruskal algorithm with suitable examples. Explain depth first search algorithm with example.	[CO-4] [L-2] 10 [CO-4] [L-2] 10		
Q.7	a)	What is hashing? Explain the different techniques to resolve collision	in hash table.		

	[CO-5] [L-2] 10
b) Create a program for performing the binary search.	[CO-5] [L-5] 10

BCA – Second Semester

INTERNET TECHNOLOGIES (BCA-DS-202)

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)	Expansion of SMTP is				
		i) Simple Mail Transfer Protocol ii) Simple Message Transfer Protocol				
		ii) Simple Mail Transmission Protoco	col iv) Simple Message Transmission Protocol			
	b)	If a server has no clue about where	to find the address for	or a hostname then		
	-	i) Server asks to the root server	ii) Server asks to it	s adjacent server		
		iii) Request is not processed	iv) None of the mer	ntioned		
	c)	DHCP (dynamic host configuration p	rotocol) provides	to the client.		
		i) IP address	ii) MAC address			
		iii) Url	iv) None of the mer	ntioned		
	d)	HTTP is protocol.				
		i) application layer	ii) transport layer			
		iii) network layer	iv) data link layer			
	e)	FTP server listens for connection on	port number	·		
		i) 20	ii) 21			
		iii) 22	iv) 23			
	f)	In File Transfer Protocol, data transf	er cannot be done in	·		
		i) stream mode	ii) block mode			
	_	iii) compressed mode	iv) message mode			
	C	Choose the correct option:				
	g)	Which component is included in IP s	ecurity?			
		i) Authentication Header (AH)	ii) Encapsulating Se	curity Payload (ESP)		
		iii) Internet key Exchange (IKE)	iv) All of the mentioned			
	h)	An attempt to make a computer reso	ource unavailable to i	its intended users is called		
		i) Denial-of-service attack	ii) Virus attack			
	.`	III) Worms attack	IV) Botnet process			
	I)	Which of the following is a form of L	OS attack?			
		i) Vulnerability attack	II) Bandwidth flood	ing		
	• •	III) Connection flooding	iv) All of the mentio	pned		
	J)	Website which is used to search othe	er website by typing	a keyword is		
		I) Social network	II) Search engine			
		iii) Router	iv) Search Page	[CO-2,3,4,5] [L- 3] 2 × 10		
		<u>PAI</u>	<u>RT-A</u>			
Q.2	a)	Explain the architecture of internet i	n detail.	[CO-2] [L-2] 10		

b) Which mode is best to connect internet. Justify your answer with suitable reasons. [CO-2] [L-1] **10**

 Q.3
 a) What is the role of web browser in accessing internet? List down the mandatory steps required to access internet.
 [CO-2] [L-2] 10

b) Discriminate between Links and URLs in Internet technologies. [CO-2] [L-2] **10**

Q.4 Explain the working of a DNS in detail. Also discuss the various types of records supported by it. [CO-3] [L-3] **20**

<u>PART-B</u>

- Q.5 Converse the need of legal protection from cybercrimes. Also explain data security threat techniques in detail. [CO-4] [L-3] **20**
- Q.6 a) Discuss various hacking stages. Explain its each stage in detail. [CO-4] [L-3] 10
 - b) Elaborate cross site scripting attack. Also discuss various types of various cross site scripting attack in detail.
 [CO-5] [L-4] 10
- Q.7 Write short notes on the following:
 - a) Active and Passive scanning.
 - b) SQL script injection.
 - c) Machine-to-Machine integration in IOT.
 - d) Applications of internet of things.

[CO-6] [L-3] 5×4

BCA – Second Semester

SOFTWARE ENGINEERING (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.
- a) _____ is a software development activity that is not a part of software Q.1 processes.
 - i) Validation iii) Development

- ii) Specification
- iv) Dependence
- b) _____ is defined as the process of generating analysis and designing documents.
 - i) Re-engineering
 - iii) Software re-engineering
- ii) Reverse engineering
- iv) Science and engineering
- c) What is a functional requirement?
 - i) specifies the tasks the program must complete
 - ii) specifies the tasks the program should not complete
 - iii) specifies the tasks the program must not work
 - iv) All of the above
- d) What does SDLC stands for?
 - i) System design life cycle
 - iii) Software development life cycle
- e) Who proposed the spiral model?
 - i) Barry Boehm
 - iii) Royce

f)

- ii) Pressman
- iv) IBM
- suits the Manifesto for Agile software development. i) Customer collaboration
 - ii) Individuals and interactions
- iii) Working software
- iv) All of the above
- a) Software debugging is known as
 - i) identifying the task to be computerized
 - ii) creating program code
 - iii) creating the algorithm
 - iv) finding and correcting errors in the program code
- h) In agile development it is more important to build software that meets the customers' needs today than worry about features that might be needed in the future. (True/False)
- i) Requirements models depict software in which three domains.
 - i) architecture, interface, component. ii) cost, risk, schedule.
 - iii) information, function, behavior. iv) None of the above.

j) Non-functional requirements can be safely ignored in modern software development

projects. (True/False)

[CO-1,2,3,4,5] [L-3] **2×10**

PART-A

ii) Software design life cycle

iv) System development life cycle

- 0.2 a) Define 'software process'. How is it different from a software product? Discuss any two software process models. [CO-1,2] [L-1] 10
 - b) Discuss advantages and disadvantages of prototyping model over evolutionary model of software development. [CO-1,2] [L-2] 10
- Q.3 What is cost estimation? Explain various cost estimation techniques used in software engineering. Discuss how COCOMO model helps in cost estimation. [CO-2,3 [L-2] 20
- Q.4 a) Draw ER diagram and DFD level 1 for university examination system. Also mention the requirements that has been considered for a typical university examination [CO-3] [L-3] 10 system.
 - b) Discuss any two requirements elicitation techniques with suitable examples.

[CO-2,3] [L-2] **10**

PART-B

How is testing integrated with the life cycle of a software product? Is it sufficient to Q.5 test a software product only at the end of its life cycle? Explain. [CO-4] [L-4] **20**

Q.6 a) Enumerate the important steps involved in developing a software system using object-oriented methodology. [CO-5] [L-2] 10 [CO-5] [L-2] 10

- b) Outline the criteria for selecting a software design method.
- Q.7 a) Discuss integration testing. What are different approaches for it? Explain any three approaches with merits and demerits. [CO-6] [L-2] 10
 - b) Explain all process metrics required for software maintenance of software.

[CO-6] [L-3] **10**

End Semester Examination, Dec. 2022 **BCA** -Third Semester **OBJECT ORIENTED PROGRAMMING IN C++**

(BCA-DS-301/BCA-302A (CB))

Time: 3 hrs.

Max. Marks: 100 No. of pages: 2

[CO3][L1]

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 auestion.

- Multiple Choice Questions: Q.1
 - a) The major goal of inheritance in C++ is:
 - i) To facilitate the conversion of data types
 - ii) To help modular programming
 - iii) To facilitate the re usability of code
 - iv) To extend the capabilities of a class
 - b) Which type is best suited to represent the logical values? [CO4][L1]
 - i) Integer
 - ii) Boolean
 - iii) Character
 - iv) All of the above

c) To be called object-oriented, a programming language must allow: [CO2][L1]

- i) Functions that return values
- ii) Library of predefined functions
- iii) Inheritance
- iv) All of these
- d) Which of the following statements is false?
 - i) A function is a block of code that performs a specific task
 - ii) Functions allow programmers to break large and complex problems into small and manageable tasks
 - iii) Functions allow programmers to use existing code to perform common tasks
 - iv) Functions can be called, or invoked, only once in a program
- e) Which of the following concepts means determining at runtime what method to invoke? [CO4][L1]
 - i) Data hiding
 - ii) Dynamic Typing
 - iii) Dynamic binding
 - iv) Dynamic Loading

f) Which of the following is a mechanism of static polymorphism? [CO2][L1]

- i) Operator overloading
- ii) Function Overloading
- iii) Templates
- iv) All of the above

g) Which of the following is example of encapsulation: [CO1][L1]

- i) Steering wheel of the car
- ii) Car
- iii) Color of the car

- [CO2][L1]

iv) Music system of the car

- h) Polymorphism reduces the effort required to extend an object system by:
 - i) Coupling objects together more tightly
 - ii) Enabling a number of different operations to share the same name
 - iii) Making objects more dependent on one another
 - iv) Removing the barriers imposed by encapsulation. [CO3][L1]
- _____ is a blueprint or prototype that defines the variables and the methods i) common to all objects of a certain kind. Select the best word to complete this sentence. [CO2][L1]
 - i) Class
 - ii) Inheritance
 - iii) Polymorphism
 - iv) Aggregation
- j) A blueprint for creating an object in C++ is called _____. [CO2][L1] i) A Class
 - ii) An instance
 - iii) A map
 - iv) A pattern

PART-A

- a) Describe how data are shared by functions in a procedure oriented programs? 0.2
 - b) Distinguish between the following terms:
 - i) Objects and classes.
 - ii) Data abstraction and data encapsulation.
- a) Explain the function classification with the passing of arguments with the help of a Q.3 [CO2,3,4][L2] 15 programming example. [CO2][L1] **5**
 - b) Define an Enumeration data type.
- a) How can we make an outside function accessible to private data members of its Q.4 class? List the merits and demerits of them. [CO2,3][L2] 10
 - b) Describe the mechanism of accessing data members and member functions in the following cases: [CO2][L2] **10**
 - i) Inside the main program.
 - ii) Inside the member function of the same class.
 - iii) Inside a member function of another class.

PART-B

- a) Explain the term 'constructor overloading'. Implement the need of constructor Q.5 overloading with the help of a program. [CO3,4][L4] **10**
 - b) Write an interactive program to overload == operator on strings.

[CO4][L4] **10**

- a) In what orders are the class constructors called when a derived class object is Q.6 created? Explain with the help of an example. [CO3,4] [L2] **10**
 - b) When do we make a virtual functions pure? What are the implications of making a function a pure virtual function? [CO3,4][L2] 10
- Q.7 a) What are the advantages of using exception handling mechanism in a program? [CO5][L2] **10**
 - b) Elaborate the basic difference between manipulators and ios member functions in implementation with examples. [CO4,CO5][L2] **10**

2x10

[CO1,2][L2] **10**

[CO1,2][L2] **10**

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

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) Channel characteristics.
 - b) Serial vs. Parallel communication.
 - c) 2-dimentional parity check.
 - d) IPv6 subnetting.
 - e) FDM vs. TDM.
 - f) Computer Network.
 - g) GPO.
 - h) Modem.
 - i) Firewall.
 - j) Cloud computing.

<u>PART-A</u>

- Q.2 a) What is digital to digital conversion? Explain with the help of diagram any two line coding schemes. [CO-1][L-1] **10**
 - b) Differentiate between synchronous and asynchronous serial data communication.

[CO-2][L-3]**10**

[CO-2][L-1] 2x10

2x10

- Q.3 a) Classify error detection methods and explain with example the process of cyclic redundancy check method. What are its advantages and disadvantages over parity and check sum methods? [CO-2][L-4] 20
- Q.4 Write short notes on the following:
 - a) Synchronous time division multiplexing.
 - b) Modems vs. DSL.

<u>PART-B</u>

- Q.5 a) Discuss the process of DNS in Internet. What is domain controller? [CO-3][L-1] 10
 b) What is active directory? Discuss in brief the process of active directory management. [CO-3][L-2] 10
- Q.6
 a) What are network file and print services? Discuss the process of file storage and sharing in the servers.

 [CO-4][L-3] 10
 - b) Discuss file server security in detail. [CO-4][L-2] **10**
- Q.7 a) What is network group policy and how is it implemented? CO-5][L-4] **10** b) Discuss how server availability and reliability can be maintained? [CO-6][L-3] **10**
End Semester Examination, Dec. 2022 B.Sc. (IT) – Third Semester COMPUTER ARCHITECTURE AND ORGANIZATION (BSCIT-DS-303)

Time:	3 hrs.	Max	x Marks: 100
Note:	Attempt FIVE questions in all; Q.1 is compulsory . Attempt any PART-A and TWO questions from PART-B . Marks are ind. question.	TWO qui Vicated	uestions from against each
Q.1	 Answer the following: a) Draw logic diagram of full adder. b) State Boolean distributive law. c) Explain flip-flop. d) Draw truth table and symbol for X-OR Logic gate. e) What do you mean by subtractor? f) Difference between registers and counters. g) Compare encoder and decoder. h) How cache memory differs from virtual memory? i) What is race around condition? j) Write truth table for XY'Z+X'YZ+XYZ'. 	01-5] [I	_1][L2] 2x10
	PART-A		
Q.2	 a) Discuss various types of logic gates. Also discuss their application b) Perform following operations: i) Convert (3B4F)₁₆ to ()₁₀ ii) Convert (540)₁₀ to ()₈ 	ons.	[CO1][L2] 10
	iii) 110001011 + 111	I	[CO2][L2] 10
Q.3	Define K-Maps. Reduce the Boolean expression using K-map: F (P, Q, R, S) = $\sum (0,3,5,6,7,11,12,15)$	[[CO5][L2] 20
Q.4	a) Explain and compare sequential and combinational circuit.b) Draw truth table and circuit diagram of 8 by 3 encoder.		[CO4][L2] 10 [CO4][L2] 10
	<u>PART-B</u>		
Q.5	What is the shortcoming of an S-R flip flop? Explain how its sho using J-K flip flop. Also, describe its operating principle.	rtcomin 	g is removed [CO4][L2] 20
Q.6	a) Design 8x1 multiplexer. b) Describe the following terms: ROM, PROM and EPROM.		[CO1][L2] 10 [CO3][L2] 10
Q.7	 a) Compare static and dynamic memories. b) Write short notes on: i) Multiplexers. ii) De-Morgan's LAW. iii) Comparators. 	[CO:	[CO3][L2] 8 2,5,3][L2] 12

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

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. Each question carries equal marks.

- Q.1 a) What is the intelligent agent in AI and where are they used?
 - b) How is machine learning related to AI?
 - c) Give a brief introduction to the Turing test in AI
 - d) What are the different components of the Expert System?
 - e) What are the various techniques of knowledge representation in AI?
 - f) What are the different areas where AI has a great impact?
 - q) What is a heuristic function and where is it used?
 - h) Differentiate between 'Knowledge base' and 'database'.
 - i) What are the arguments of a predicate?
 - i) List various heuristic search techniques.

PART-A

Q.2 a) How would you define "Intelligence"? Do you think that computers or machines are

as intelligent as humans? Justify your answer. [CO-1] [L-3] 10

- b) List and discuss the potentially positive and negative effects on society of the development of artificial intelligence. [CO-1] [L-2] **10**
- Q.3 a) What do you understand by state space search. Explain it with the help of an example. [CO-2][L-2] **5**
 - b) Discuss Hill Climbing algorithm in detail along with the problems encountered in it. [CO-2][L-2] **15**
- a) What are the features of knowledge representation schemes? Q.4 [CO-3] [L-2] **5**
 - b) What do you understand by predicate logic? How will you perform resolution?

[CO-3] [L-3] **15**

PART-B

- Q.5 How game playing is performed using Mini max search strategy. Discuss in detail by taking an example [CO- 4] [L-3] **20**
- Q.6 a) What are the characteristics of an Expert system? Also discuss applications of expert systems.

[CO-3] [L-2] 10

- b) What do you understand by NLP? What are the problems encountered in handling [CO-3] [L-3] 10 NLP.
- Q.7 Discuss the following:
 - a) Artificial Neural Network.
 - b) Types of Machine Learning.

[CO-5] [L-2] **10**×**2**

2x10

B. Sc. (Information Technology) – Fourth / Fifth Semester INFORMATION SYSTEM SECURITY (COMP-609)

Time:	3 h	rs.	Ma	ax Marks: 100
Note:	Att fro qu	tempt FIVE questions in all; Q.1 is co om PART-A and TWO questions from P estion.	mpulsory . Attempt any TWO ART-B . Marks are indicated a	<i>questions</i> <i>questions</i> <i>qainst each</i>
Q.1	Mu a) inte	Itiple Choice Questions: We are provided the plain text "SUN".	You need to convert the giv	en plain text
		cipher text under the Ceasar cipher enough options is the correct cipher text for the i) UWP iii) WUP	cryption technique. Which of given text if the key is 2? ii) NUS iv) OSL	the following [CO-4] [L-1]
	b) wit	You are supposed to use hill cipher for h	or encryption technique. You	are provided
		the following matrix, $\Delta = \begin{bmatrix} 4 & 2 & 2 & 1 \end{bmatrix}$		
		Is the given matrix 'A', a valid key to be i) Yes	used for encryption? ii) No	[CO-4] [L-1]
	c)	Which one of the following is active attaMasquerade	ii) Traffic analysis	[CO-1] [L-1]
	d)	iii) EavesdroppingTo verify a digital signature we need thei) Sender's Private key	iv) Shoulder surfing e: ii) Sender's Public kev	[CO-1] [L-1]
	e)	 iii) Receiver's Private key The secure socket layer provides. i) Encryption of messages sent by both ii) Server authentication iii) Optional client authentication 	iv) Receiver's Public key client and server	[CO-2] [L-1]
		iv) All of the above.		
	f)	A concern of authentication that deals w i) General access iii) Functional authorization	ith user rights.ii) Functional authenticationiv) Auto verification	[CO-2] [L-1]
	g) it	Which of the following refers to stealing	g one's idea or invention of ot	hers and use
		for their own benefits? i) Piracy	ii) Plagiarism	[CO-1] [L-1]
	h)	iii) Intellectual property rightsWhich one of the following usually usedi) Aircrack-ngiii) Norton	 iv) All of the above in the process of Wi-Fi-hackin ii) Wireshark iii) All of the above 	g? [CO1][L-1]
	i)	Which of the following are famous and infiltrate the user's system?i) DDos and Derive-by Downloadsiii) Phishing and Password attacks	ii) Malware and Malvertisingiv) All of the above	by hackers to [CO-1] [L-1]

g) Which one of the following statements is correct about Email security in the network

security methods?

- i) One has to deploy hardware, software, and security procedures to lock those apps down.
- ii) One should know about what the normal behavior of a network look likes so that
 - he/she can spot any changes, breaches in the behavior of the network.
 - iii) Phishing is one of the most commonly used methods that are used by hackers

to

gain access to the network

iv) All of the above

<u>PART-A</u>

- Q.2 Classify various security threats associated with the below attacks with a suitable example:
 - a) Wiretapping.
 - b) Insertion of spurious message.
 - c) Non availability of data.
 - d) Attack on confidentiality.
 - e) Attack on integrity.
- Q.3 What is risk management? Why is the identification of risks, by listing assets and their vulnerabilities, so important to the risk management process? [CO2] [L2] **20**
- Q.4 What are the differences between a policy, a standard, and a practice? What are the three types of security policies? Where would each be used? What type of policy would be needed to guide use of the Web e-mail and office equipment for personal use?

[CO3] [L2] **20**

<u>PART-B</u>

Q.5 What is the typical relationship among the untrusted network, the firewall, and the trusted network? How is an application layer firewall different from a packet-filtering firewall? Why an application layer firewall is sometimes called a proxy server?

[CO4][L3] **20**

Q.6 Use Vigenere Cipher with key HEALTH to encrypt the message "Life is full of surprises". What is the difference between mono alphabetic and poly alphabetic cipher?

[CO4] [L4] **20**

Q.7 What is the relationship between HVAC and physical security? Describe four physical characteristics of the indoor environment which are controlled by a properly designed HVAC system. What are the optimal temperatures and humidity ranges for computing systems? [CO-5] [L-3] 20

2×10

[CO1] [L2] **4**×**5**

[CO-2] [L-1]

B. Sc. (Information Technology) – Fourth Semester OPERATING SYSTEMS (COMP621)

Time: 3 hrs.	Ma A	ix Marks: 100
Note: Attempt FIVE questions in all; Q.1 is co from PART-A and TWO questions from P question.	DESTITUTION OF CONTRACT OF CONTRACT. OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT. OF CONTRACT OF CONTRACT OF CONTRACT OF CONTRACT. OF CONTRACT OF CONTRACT, CONTRACT OF CONTRACT. OF CONTRACT, CONTRA	<i>questions qainst each</i>
 Q.1 Multiple choice questions/True or false/Sho a) Operating system: i) Enables the programmer to draw a ii) Provides a layer, user friendly interfiii) Links a program with subroutine it r iv) All of the above 	ort answer questions: flow-chart ace eferences	[CO-1] [L-1]
 i) Fair-share scheduling ii) Non-preemptive scheduling 	ii) Deadline scheduling iv) Pre-emptive scheduling	[CO-3] [L-1]
c) What is the name of the operating systemi) Real time system	ii) Time sharing system	rms of actual [CO-2] [L-1]
 d) Because of virtual memory, the memor i) Processes iii) Instructions 	iv) Batch system y can be shared among: ii) Threads iv) None of the above	[CO-4] [L-1]
 e) is the concept in which a pro secondary memory according to the red i) Paging iii) Segmentation 	 cess is copied into main memory quirement. ii) Demand paging iv) Swapping 	ory from the [CO-3] [L-1]
 f) To create a file: i) Allocate the space in file system iii) Both i) and ii) 	ii) Make an entry for new fileiv) None of the above	[CO-4] [L-1] in directory
g) File type can be represented by:i) File nameii) File identifier	ii) File extension iv) None of the above	[CO-4] [L-1]
 h) What are the requirements for the solu i) Mutual exclusion iii) Bounded waiting 	tion to critical section problem? ii) Progress iv) All of the above	[CO-3] [L-1]
i) In which type of the following OS, the ii) Network operating systemiii) Batch operating system	response time is very crucial? ii) Realtime operating system iv) Unix operating system	[CO-3] [L-1] 1
j) A program in execution is called:i) A page	ii) A process	[CO-2] [L-1]
III) A virtual memory	IV) A Demand page	2×10

<u>PART-A</u>

- 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] **10**

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

Q.4 State the purpose of CPU scheduling. Several algorithms have been developed for CPU scheduling. Explain the well-known CPU scheduling algorithms. [CO-3] [L-2] **20**

<u>PART-B</u>

- Q.5 Deadlock occurs in many situations in our daily lives. Define deadlocks in operating systems. 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. [CO4] [L-2] **20**

B.Sc. (Information Technology) – Fifth Semester **INFORMATION TECHNOLOGY PROJECT MANAGEMENT (COMP701A)**

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 auestion.
- Answer the following questions: Q.1
 - a) The transit time consists of:
 - i) Time taken by raw material from machine to machine.
 - ii) Time consumed in moving the work between various departments.
 - iii) Time taken by a worker to machine a component.
 - iv) None of the above.
 - b) Software project management comprises of a number of activities, which contains.
 - i) Project planning.

ii) Scope management.

iii) Project estimation.

- iv) All mentioned above.
- c) Critical path method is used in which of the following processes:
 - i) Sequence Activities. ii) Define Activities.
 - iii) Develop Schedule.

iv) Estimate Activity Durations.

- d) A Gantt chart indicates:
 - i) elapsed time of different activities on project.
 - ii) activities occurring in parallel.
 - iii) the sequence of activities.
 - iv) overall elapsed time on project.
- e) A document prepared for the customer during project initiation and planning which describes about the final outcome delivered by the project and outlines the work required at high level to complete the project is the:
 - i) Information systems plan.
- ii) Statement of work.
- iii) Mission statement.
- iv) Baseline project plan.
- f) A software project manager is a person who undertakes the responsibility of carrying out the software project.
 - i) True

- ii) False
- g) Gantt chart are used for _____.
 - iii) Scheduling and routing. A project can be considered
- h) A project can be considered to have failed if it:
 - i) Does not meet the users' requirements.
 - ii) Does not meet the business requirements.
 - iii) Overrun significantly on estimated delivery date.
 - iv) Is significantly over budget.
- i) Work study is concerned with _____
 - i) Improving present method and finding standard tools.
 - ii) Motivation of workers.
 - iii) Improving production capabilities.
 - iv) All of the above.
- i) Procurement cycle time is the time consumed in:

- i) Receiving of raw material.
- ii) Inspection of various raw materials.
- iii) Inspection of purchased components parts.
- iv) All of the above.

[CO1-6]L[1,2] 2x10

<u>PART-A</u>

- Q.2 How stakeholders are being identified and why it is required to know more about them? [CO-1][L-2] **20**
- Q.3 What are the techniques that can be used to collect project requirements? (Mention techniques for collecting requirements + different classification of requirements.) [CO-2][L-3] **20**
- Q.4 a) What are the steps being taken to do risk planning? [CO-3][L-2] **10**
 - b) QA and QC are for ensuring the quality of the final deliverables. What's the difference between them? [CO-03][L-3] **10**

<u>PART-B</u>

- Q.5a) What is Gantt chart? How Gantt chart helps in project scheduling? Describe
support your answer with suitable example.[CO-4][L-4] 10
 - b) The situation which leads to termination of project. Justify with a suitable example.

[CO-5][L-2] **10**

- Q.6 How does organizational structure influence resource acquisition? And, how can the necessary resources can be acquired? [CO-5][L-2] **20**
- Q.7 a) Elaborate on the different methods of resolving conflicts in project management.

[CO-6][L-2] **10**

b) Describe the various types of organizations and identify its suitability for the different project. [CO-6][L-2] **10**

B. Sc. (Information Technology) – Fifth Semester **NETWORK SYSTEM SECURITY (CONE 709A)**

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) 'A' is the technique of using someone else's computer while they have left it unattended momentarily. Identify 'A' and describe the threats associated with it.
 - b) A person is wearing gloves and has to authenticate his identity through his hand. Identify the kind of authentication. What kind of issue he will face to authenticate his identity?
 - c) Define the two mechanisms for security on IP packet.
 - d) Discuss the objectives of digital signature.
 - e) Differentiate between Known-Plain text Analysis and Chosen-Plain text Analysis.
 - f) Explain the advantages of OSPF protocol.
 - g) Define 'Netmask'. Evaluate how it achieves network security.
 - h) Differentiate between cookies and spyware.
 - i) Describe the concept of 'Location Spoofing' in virtual private networks
 - j) Explain the concept of firewall configuration management. [CO-1] [L-1] **2**×**10**

<u>PART-A</u>

- Q.2 Differentiate between security and protection. Discuss in detail the threats to users, data, and hardware. [CO-1] [L-3] **20**
- Q.3 a) Discuss the different routing protocols to ensure secure routing. [CO-3] [L-3] **10**
 - b) List and explain the different methods to secure administrative access in a networking device. [CO- 3] [L-1] **10**
- Q.4 a) In a debit card, analyze the type of user authentication that is implemented. Examine the advantages of this type of user authentication. [CO-4] [L-5] **10**
 - b) Illustrate with diagram the IP security architecture along with the services offered.

[CO-3][L-3] **10**

<u>PART-B</u>

- Q.5a) Differentiate between encryption and Decryption.[CO-4] [L-3] 10b) Explain the need and the benefits of a VPN connection.[CO-4] [L-3] 10
- Q.6 Describe dynamic routing. Explain the functioning of EIGRP and OSPF Protocol in detail.

[CO-5] [L-1] **20**

Q.7 'X' is a network security device, either hardware or software-based, which monitors all incoming and outgoing traffic and based on a defined set of security rules it accepts, rejects, or drops that specific traffic. Outline the need, types, and describe the functioning of 'X' in network security. [CO-5] [L-2] **20**

B. Sc. (Information Technology) – Fourth Semester SERVER ADMINISTRATION (CONE618)

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) Which of the following features is available when Windows Server 2012 is installed using the GUI option but without the desktop experience feature installed? [CO1] [L1]
 ii) Metro-style start screen
 iii) Built-in help system
 - i) Metro-style start screeniii) All of the above
- iv) Windows media player
- b) Which feature of active directory allows you to implement specific configurations for
 - users and computers?
 - i) Organizational Unit
 - iii) Site

- ii) Object
- iv) Group policy
- c) Which is the default protocol used in directory services?
 - i) LDAP (Lightweight Directory Access Protocol).
 - ii) DHCP

i) Internet

- iii) Domain controller
- iv) None of the above
- d) Transmission of digital data between two or more computers is called? [CO-4] [L-2]
 - ii) Network
 - iii) Ethernet
 - iv) Data communication
- e) Dynamic memory is a great feature that allows you to manage the amount of memory that Hyper-V virtual machines consume. How would you identify the memory a virtual machine consumes when dynamic Memory is not enabled? [CO1][L1]
 - i) View the amount of RAM listed under startup in the memory page of the virtual machine
 - ii) View the amount of RAM listed under static in the memory page of the virtual machine
 - iii) View the amount of RAM listed under maximum in the memory page of the virtual machine
 - iv) None of the above
- f) We use (OU) organization unit to _____
 - i) Counting the computers. ii) Classify and sort the object.
 - iii) Domain controller iv) Tree
- g) It is a database that keeps track of a huge amount of stuff and gives us a centralized way to manage all our network machine, users, and resources. [CO3][L1]
 ii) Forest
 ii) Active Directory
- h) Active Directory was first introduced with the release of Windows _____. [CO3] [L1]
 ii) 2000 ii) Server 2012
 - iii) 7 iv) XP
- i) A group of objects, such as users or devices that share the same AD database. [CO3][L1]
 ii) Forest
 iii) Domain
 - i) Forest ii) Domain iii) Tree iv) Container

i) What are the ways to establish a physical connection between networked computing

devices to access data communication?

i) Ethernet cable media

iii) Both i) and ii)

- ii) Wireless media
- iv) None of the above

PART-A

- What is the different version of window server and how it is different from other Q.2 versions? Also, explain the different role of window server. [CO-1] [L-1] **20**
- Q.3 Write short notes on the following:
 - a) DNS and types of DNS service.
 - b) Types fsmo roles.
 - c) Active directory.
 - d) Forests, trees, and domains.

[CO-2] [L-1] **5**×**4**

Q.4 a) Explain group policy and the mechanics behind creation of group policy. [CO3][L2] 10 b) Explain the tools used for network configuration. [CO-3] [L-2] 10

PART-B

- Write the steps of displaying the MAC address of a system. And how can you display Q.5 the mapping between link names, devices, and locations on a system? [CO-3,4] [L-2] 20
- Q.6 Explain how file servers can be configured? Discuss the bit locker drive encryption technique. [CO-4,5] [L-2] 20
- Q.7 Illustrate the steps required to perform below configurations:
 - a) Configuring network load balancing.
 - b) Configuring Windows firewall.

[CO5] [L2] 10×2

[CO-4] [L-2]

2×10

B.Sc. (Information Technology) - Third Semester ADVANCE COMPUTER NETWORKING (CONE710)

Time:	3 h	rs.		Max. Marks: 100
Note:	Atta PA qu	empt FIVE questions in all; Q.1 is con IRT-A and TWO questions from P. estion.	npulsory . Attempt an ART-B . Marks are it	ndicated against each
Q.1	Mi a) b)	u ltiple choice questions: Which of following is a small single site i) LAN iii) RAM In which of the following networks, rease	e network? ii) DSL iv) USB sembly buffers are requ	[CO-1][L-1] ired? [CO2][L1]
	c)	 i) Packet-switched networks iii) Message-switched networks In IEEE standards, 802.5 is also called i) Ethernet iii) Wireless Token Area Network 	 ii) Circuit-switched ne iv) None of these [CO-2][L-1] ii) Token Bus iv) Token Ring 	etworks
	d)	The design issue of Data link Layer in (i) Framing iii) Synchronization of bits	OSI Reference Model i ii) Representation of iv) Connection contro	is: [CO-2][L-1] bits ol
	e)	AM and FM are example ofi) Digital-to-digitaliii) Analog-to-analog	_modulation. ii) Digital-to-analog iv) Analog-to-digital	[CO1][L1]
	f)	In time-domain plot, the horizontal axi i) Signal amplitude iii) Phase	s is a measure of ii) Frequency iv) Time	[CO1][L1]
	g)	In Manchester and differential Manch of the bit is used for	ester encoding, the ti [CO1][L1]	ransition at the middle
	h)	 i) Bit transfer iii) Baud transfer In transmission, we send bits or gaps. It is the responsibility of the 	 ii) Synchronization iv) None of the above bits one after anothe receiver to group the b 	e r without start or stop pits. [CO3][L1]
	i)	 i) Synchronous iii) Isochronous is a dynamic mapping proto given IP address. 	 ii) Asynchronous iv) None of the above col in which a physica 	e l address is found for a [CO4][L1]
	j)	 i) ARP iii) ICMP Packet in the IP layer are called i) Data gram 	ii) RARP iv) None of the above	2
		iii) Router	iv) MAC	[CO4][L1] 2x10

<u>PART-A</u>

Q.2 Explain the following: a) Relevance of PAM and PCM.

- b) Purpose of carrier signal in Modulation.
- c) How does AM differ from ASK.

[CO-1][L-1] **20**

- Q.3a) State and explain the major classes of Guided Media. Also discuss how guided
media differs from unguided media?[CO-2][L-2] 10
 - b) How do the layers of the TCP/IP protocol suite correlate to the layers of the OSI Model? Discuss. [CO-4][L-2] **10**
- Q.4 What are the main difference between a distance vector routing protocol and a link state routing protocol? Explain inter domain and intra domain routing protocols. [CO-2][L-2] **20**

<u>PART-B</u>

Q.5 "VLAN trunking, helps to extend a VLAN across the network". Justify the statement with a suitable example. Also discuss Spanning Tree Protocol (STP), Per-VLAN Spanning Tree (PVST), Per-VLAN Rapid Spanning Tree (PVRST), Multi protocol Label Switching (MPLS) in relation to VLAN with a suitable example.

[CO-3][L-3] **20**

- Q.6 Explain HDLC Protocol. How do the three HDLC frames types differ from one another? Discuss all the three frame types. Also discuss three station types in HDLC. Mention the use and relevance of HDLC protocol as well.[CO-2][L-2]
 20
- Q.7 Why is Frame Relay a better solution for connecting LANs than T-lines? How many virtual connections can be defined in a UNI? [CO-5][L-3] **20**

MCA – First Semester

FUNDAMENTALS OF COMPUTER PROGRAMMING (MCA-DS-001)

Time: 3 hrs.

Max Marks: **100** *No. of pages: 1*

[CO-4] [L-2] **20**

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)	Differentiate	between	object	oriented	(C++)	and p	procedure	oriented(C)
		programming.							[CO-1] [L-1]
	b)	Differentiate b	between va	riable an	d identifie	r.			[CO-1] [L-1]
	c)	Explain the dif	fferent dat	a types a	nd their si	ze.			[CO-1] [L-1]
	d)	Differentiate b	between Us	ser define	ed and buil	t in funct	ions.		[CO-2] [L-1]
	e)	Differentiate b	between co	mpiler a	nd interpre	eter.			[CO-2] [L-1]
	f)	Which symbol	is used to	take inp	ut in c pro	gramming	g.		[CO-3] [L-3]
		i) &	ii) (@	iii)	\$	-	iv) #	
	g)	Which header	file is used	d to for a	rithmetic c	peration	s?	-	[CO-4] [L-1]
		i) stdlib.h	ii) s	string.h	iii)	stdarg.h		iv) ath.h	
	h)	Which header	file is used	d for stri	ng operati	ons?			[CO-3] [L-1]
		i) stdlib.h	ii) s	string.h	iii)	stdarg.h		iv) math.h	1
	i)	What will be	the output	of the fo	llowing co	de snippe	et?		[CO-2] [L-1]
		#include <std< td=""><td>lio.h></td><td></td><td></td><td></td><td></td><td></td><td></td></std<>	lio.h>						
		int main()							
		{ int a = 3	s, b = 5; i	nt t = a;	a = b; b =	= t; printí	f("%d %	6d", a, b);re	eturn 0;}
		i) 33	ii) (35	iii)	55		iv) 5 3	
	j)	Who is the fat	ther of Java	a languag	ge?				[CO-2] [L-3]
		i) Steve Jobs	s ii) .	James Go	osling iii)	Dennis F	Ritchie	iv) Rasmu	s Lerdorf
									2×10
				F	PART-A				

- Q.2 Write a program for printing the table and explain it with flow chart. [CO-3] [L-1] 20
- Q.3 Draw and describe all symbols of flow chart. Draw a flow chart for finding the greater value among 3 variables. [CO-3] [L-2] **20**
- Q.4 Explain the open source ethics. How do you contribute to an open source project? [CO-5] [L-2] **20**

<u>PART-B</u>

- Q.5 Explain the detail working of compiler.
- Q.6 Differentiate between pseudo code and algorithm with suitable example. [CO2] [L-2] 20
- Q.7 Describe the difference between server side vs. client side programming. [CO3][L-4] 20

MCA – First Semester

ELEMENTS OF MATHEMATICS (MCA-DS-002)

No. of pages: 2 Note: Attempt FIVE questions in all. O.1 is compulsory. Attempt any TWO questions from PART-A and TWO questions from PART-B. Marks are indicated against each auestion. Answer the following questions: 0.1 a) If $A = \begin{bmatrix} -1 & 8 \\ 3 & 8 \end{bmatrix}$ and $B = \begin{bmatrix} -3 & 5 \\ 4 & 3 \end{bmatrix}$ find AB. [CO1][L2] b) Define 'lower triangular matrix'. [CO1][L2] c) What will be the probability of getting even numbers if a dice is thrown? i) ½ ii) 2 iii) 4/2 iii) 5/2 d) The probability of getting two heads when two coins are tossed is: [CO2][L2] i) 1/6 ii) 1/2 iii) 1/3 iv) 1/4 e) Evaluate 32!/30! [CO2][L2] i) 930 ii) 870 iii) 770 iv) 670 f) In how many words can be formed by using all letters of the word COUNT: i) 120 ii) 200 [CO2][L2] iii) 400 iv) 206 q) 3 books are to be selected out of a 6 books. In how many ways can this be done? i) 130 ii) 120 iii) 300 iv) 365 [CO2][L2] h) If (1, 3), (2, 5) and (3, 3) are three elements of A x B and the total number of elements in A x B is 6, then the remaining elements of A x B are: [CO3][L2] i) (1, 5); (2, 3); (3, 5) ii) (5, 1); (3, 2); (5, 3) iv) None of these iii) (1, 5); (2, 3); (5, 3) i) The third term in the expansion $(x - y)^{12}$ is _____ [CO3][L2] j) If $A = \begin{pmatrix} 1 & 2 \\ 2 & 4 \end{pmatrix}$ find A^{2} . [CO3][L1] 2×10 <u>PART-A</u> Q.2 a) Solve by Cramer's rule:

4x+y-2z=5 x+3y-2z=5 2x+y+4z=8

Time: 3 hrs.

[CO1][L3] **10**

Max Marks: 100

b) If
$$A = \begin{pmatrix} 1 & 1 & 3 \\ 1 & 3 & -3 \\ -2 & -4 & -4 \end{pmatrix}$$
. Find A^{-1} [CO1][L4] **10**

- Q.3 a) Find the domain for which the functions f(x) = 2x 1 and $g(x) = 1 3x^2$ are equal. [CO3][L5] 10
 - b) If f(x) = ax + b, where a and b are integers, f(1) = -5 and f(2) = 3, then find a and b. [CO3][L5] **10**
- Q.4 a) In a competition, a school awarded medals in different categories. 36 medals in dance, 12 medals in dramatics and 18 medals in music. If these medals went to a total of 45 persons and only 4 persons got medals in all the three categories, how many received medals in exactly two of these categories? [CO4][L4] 10
 - b) $A = \{1, 3, 5, 7, 8, 9\} B = \{2, 3, 5, 7, 8\}$ what is $A \cap B, A \cap B, A \cap B, B \cap A$?

[CO4][L4] 10

<u>PART-B</u>

Q.5 a) Out of 7 consonant and 4 vowels, how many words of 3 consonants and two vowels can be formed. [CO2][L5] 10

b) Find the middle terms in the expansion of $\left(2x^2 - \frac{1}{x}\right)^{\circ}$ [CO3][L5] 10

- Q.6
 a) The points A (−1, 0), B (3, 1), C (2, 2) and D (−2, 1) are the vertices of a parallelogram.

 [CO4][L5] 10

 b) The points (4, 5), (7, 6) and (6, 3) are collinear.
- Q.7 a) If $P(A) = 7 \ 13$, $P(B) = 9 \ 13$ and $P(A \cap B) = 4 \ 13$, evaluate P(A|B). [CO4][L4] **10** b) Find the probability that a leap year has 52 Sundays. [CO2][L4] **10**

MCA - First Semester

LINEAR ALGEBRA AND STATISTICAL TECHNIQUES (MCA-DS-301)

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 Answer the following questions:
 - a) The set of all real numbers under the usual multiplication operation is not a group since.
 - i) multiplication is not a binary operation;
 - ii) multiplication is not associative;
 - iii) identity element does not exist; iv) zoro has no inverso

	iv) zero nas no inverse.		
b)	The null space of A is equal to th	e null space of ATA.	
-	i) Yes	ii) Yes.	[CO1][L1]
c)	The determinant of Null matrix is	:	[CO1][L1]
	i) 1	ii) 0	
	iii) Depends on the matrix	iv) None of the mentioned	
d)	If for a square matrix A and B, nu	ull matrix O, $AB = O$ implies $BA=O$.	[CO1][L1]
	i) True	ii) False	
e)	A matrix that is both symmetric a	and upper triangular must be a:	
	i) diagonal matrix	ii) non-diagonal but symmetric	
	iii) both A and B	iv) none of the above.	[CO3][L1]
f)	A consistent linear system of two	equations in two un-known has:	
	i) exactly one solution	ii) infinitely many solutions	
	iii) exactly two solutions	iv) either A or B	[CO3][L1]
g)	Which matrix does not have an ir	nverse by solving it?	
	i) Non square matrices	ii) Square Matrix	
	iii) Rectangular Matrix	iv) Symmetric Matrix	[CO3][L1]
L->	Trans Dimension Distribution of Val	a the a would be a statistic and he lie the	المرابطة التعاصيا متدمر

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 _____. [CO3][L1] i) np ii) n iv) np(1-p)

iv) In Certain Cases.

ii) No

- iii) p i) Can we divide matrices?
- i) Yes
 - iii) May Be

[CO3][L1]

[CO3][L1]

- j) What are Homogeneous Equation:
 - i) Where R.H.S. is not equal to zero
 - ii) Where R.H.S is equal to Zero
 - iii) Where R.H.S. is a variable
 - iv) Where R.H.S. is an expression.

[CO3][L1] 2×10

PART-A

Q.2	 a) Prove the statement "Every finite integral domain is a field". b) Prove that V2 is a vector space over R which is defined as: V2 ={ (x,y) : x,y ∈ R } with addition and scalar multiplication 	[CO2][L4] 5 on V2 by
	(x,y) + (x',y') = (x+x', y+y') and a $(x,y) = (ax, ay)$.	[CO2][L4] 5
	c) Find the rank of a matrix $\begin{bmatrix} 1 & 2 & 3 \\ 1 & 4 & 2 \\ 2 & 6 & 5 \end{bmatrix}$. [CO2][L4]	10
Q.3	a) Solve the following system of linear equations: 5x -y+3z = 4 x-4y+6z = 2	
	 5x-3y+2z= 3 b) Find the value of 'λ' such that the system x+y+z=2; x+2y-has: i) No Solution. ii) A Unique Solution. 	[CO3][L4] 10 +z=-2; x+y+(λ -5)z=0 [CO3][L4] 10
Q.4	 a) Using the consistency theorem show that the equations: 3x+3y+2z=1 x+2y=4 10y+3z=-2 2x-3y-z=5 Are consistent and hence obtain the solutions for x, y, and z. b) Verify the Cayley- Hamilton theorem for the Matrix: 	[CO3][L5] 10
	$A = \begin{pmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{pmatrix}$	[CO3][L5] 10

<u>PART-B</u>

Q.5 a) Find the correlation coefficient between age and playing habits of the following students:

Age	15	16	17	18	19	20
No. of students	250	200	150	120	100	80
Regular Players	200	150	90	48	30	12

[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.
- Q.6 a) Explain the following:
 - i) Hypothesis.
 - ii) Null Hypothesis.
 - iii) Type I error.
 - iv) Type II error.
 - v) Standard error.
 - b) Calculate mean median mode from the following data:

[CO5][L3] **10**

Marks	0-10	10-20	20-30	30-40	40-50
No. of Students	12	18	20	25	23

[CO5][L5] 10

10

Q.7 a) Solve the following linear programming problem graphically: Minimize Z = 3 x + y subject to the constraints: $x + y \ge 1$ $2x + 3y \ge 2$ $x \ge 0, y \ge 0$ [CO6][L5]

b) Sunaina 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][L6] 10

MCA - First Semester DATA STRUCTURES (MCA-DS-302)

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 auestion. Q.1 Answer the following questions: a) Which of the following is the disadvantage of the array? i) Stack and Queue data structures can be implemented through an array. ii) Index of the first element in an array can be negative iii) Wastage of memory if the elements inserted in an array are lesser than the allocated size iv) Elements can be accessed sequentially. [CO2][L1] b) The data structure required to evaluate a postfix expression is i) Oueue ii) Stack iii) Array iv) linked-list [CO2][L1] c) Which one of the following is the process of inserting an element in the stack? i) Insert ii) Add iv) None of the above. iii) Push [CO2][L1] d) In which traversal technique of binary tree first root and then left and right subtrees is done? i) postorder ii) preorder iii) inorder iv) none of these [CO2][L1] e) If each node in a tree has value greater the every value in its left subtree and has value less than every value in its right subtree, the tree is called ii) Full binary tree i) Complete tree iv) AVL tree iii) Binary search tree [CO2][L1] f) Which data structure is mainly used for implementing the recursive algorithm? ii) Stack i) Queue iii) Binary tree iv) Linked list. [CO2][L1] g) There is no need to specify the size of the array when_____ i) Initialization is a part of definition ii) It is a formal parameter iii) It is a declaration iv) All of the above [CO2][L1] h) Which of the following is a collection of different data types? i) String ii) Structures iii) Char iv) None of the above. [CO2][L1] i) Which of the following is the prefix form of A+B*C?ii) +AB*C i) A+(BC*) ii) ABC+* iv) +A*BC [CO2][L1] j) How can we initialize an array in C language? i) intarr[2]=(10, 20) ii) intarr(2) = $\{10, 20\}$

Time: 3 hrs.

<u>PART-A</u>

- Q.2 a) Explain the following with relevant examples:
 - a) Big "O" Notation.
 - b) Traversing a data structure.
 - c) Time and space complexity.
 - d) Dynamic memory allocation.
- Q.3 a) Demonstrate the application of Stack by converting the following expression from Infix to Postfix:

b) Write the algorithm to convert Infix notation to postfix notation using stack.

[CO3][L2]

- 10
- Q.4
 a) Explain diagrammatically and also with the help of code in C language the representation of linked list in memory.
 [CO4][L2] 10
 - b) Write the algorithm to insert the element at the end of Lined List. [CO3][L2] **10**

<u>PART-B</u>

- Q.5 a) Explain diagrammatically the representation of Binary Tree in memory.[CO3][L2] **5**
 - b) Give the output of traversal of the following Tree data structure in In-order, Pre -Order and Post-order traversal:



[CO3][L4] **15**

Q.6 a) "A spanning tree is a sub-graph of an undirected connected graph, which includes all the vertices of the graph with a minimum possible number of edges." Justify this statement by extracting the Spanning Tree from the following Graph:

[CO2][L2] **5×4**

2×10



[CO4] [LO5] **10**

- b) "Searching element in AVL tree takes less time as compared to binary search Tree when the nodes are large in number." Justify this statement with the help of an example.
 [CO3][LO5] 10
- Q.7Sort the following elements using bubble sort method. Also give the complexity of the
algorithm in the best, average and worst cases.
9, 258, 12, 16, 5, 7, 3, 1[CO1,CO3][L03]20

End Semester Examination, Dec. 2022 MCA – First Semester

OBJECT ORIENTED PROGRAMMING IN JAVA (MCA-DS-303)

Time:	3 hrs.		Max Marks: 100
Note:	Attempt FIVE questions in all; Q.1 is from PART-A and TWO questions from question.	compulsory . Attempt any 1 n PART-B . Marks are indicate	TWO questions of against each
Q.1	a) Which of the following is not an OOP i) Polymorphism	S concept in Java? ii) Inheritance	[CO-1][L-1]
	 b) Which exception is thrown when java i) Memory error iii) Memory out of bounds exception 	is out of memory? ii) Out of memory error	[CO-1][L-1]
	 c) What does the expression float a = 3 i) 0 	5 / 0 return? ii) Not a Number	[CO-1][L-1]
	d) Which one of the following is not ani) Protected	iv) Run time exception access modifier? ii) Void	[CO-1][L-2]
	iii) Publice) What do you mean by chained excepi) Exceptions occurred by the virtual	iv) Private tions in Java? al machine error	[CO-3][L-2]
	 ii) An exception caused by other ex- iii) Exceptions occur in chains with d iii) Name of the abave 	ceptions liscarding the debugging inforr	nation
	f) What is the stored in the object obj box obj;	in following lines of Java code?	? [CO-3][L-2]
	 i) Memory address of allocated men ii) NULL iv) Garbage 	mory of object iii)Any arbitrary pointer	
	g) Which of the following classes can c	atch all exception which canno	t be caught? [CO-3][L-2]
	i) Runtime iii) Exception	ii) Error iv) None	
	 h) Which of these keywords is used to i) interface iii) ovtopds 	iii) extend ii) extend	? [CO-4][L-2]
	 i) Extends i) What is Truncation in Java? i) Floating-point value assigned to a ii) Floating-point value assigned to a iii) Integer value assigned to floating 	a Floating type an integer type g type	[CO-2] [L-2]
	iv) Integer value assigned to floatingj) Which of the following is advantagei) Slow performance	J type of using JDBC connection pool ii) Using more memory	? [CO-5] [L-2]
	iii) Using less memory	iv) Better performance	2×10

PART-A

- 0.2 a) Explain the importance of object-oriented programming language. List out the feature of object-oriented programming languages. [CO-1][L-1] **10** [CO-1][L-2] 10
 - b) Demonstrate the structure of java program.
- Q.3 a) Create a class Rectangle .The class has two attributes length and width, each of which defaults to 0.It has methods that calculate the perimeter and area of the rectangle. It has set and get methods for both length and width...The set method should verify that length and width are floating point numbers larger than 0.0 and less than 20.0. [CO-5] [L-6] 10
 - b) Differentiate between Shadowing and method overriding? Write a program to demonstrate the concept of method overriding. [CO- 4] [L-4] 10
- a) How interface is different from an abstract class? Elaborate with the help of Q.4 examples. [CO-4][L-3] 10
 - b) Illustrate the various levels of access protection available for packages and their implications. [CO-4][L-5] 10

PART-B

- Q.5 a) Define "Exception in Java". Create a program to generate a custom exception if the programmer's salary is entered less than zero. [CO-4][L-6] 10
 - b) Differentiate between checked and unchecked Exceptions. [CO-3][L-4] 10
- Q.6 a) What is the significance of Applet class in creating an Applet? How parameters can be passed to the Applet? [CO-5][L-2] 10
 - b) How event handling is useful for programmers? Demonstrate one example to show [CO-5][L-2] 10 the concept of event handling.
- Q.7 a) Elaborate the different types of AWT Components? How these Components added to containers. [CO-6][L-6] 10
 - b) Design a GUI interface by using the required AWT components to perform delete operation on a customer database. [CO-6][L-6] 10

MCA – First Semester

WEB APPLICATION DEVELOPMENT USING PHP (MCA-DS-305)

Time: 3 hrs.	I	Max Marks: 100 <i>No. of pages: 2</i>		
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) Name the tag which is the root elemen i) <html></html>	t of a web page. ii) <title></title>	[CO1] [L-1]		
 b) Identify the operator used for concater i) + 	nation of two strings.	[CO3] [L-1]		
iii) &&c) The correct way for defining a functioni) functionName(parameters){function	iv) All of them in PHP? n body}	[CO4] [L-1]		
ii) function {function body}iii) function functionName(parameters)iv) None of these	{function body}			
 d) Variable name in PHP starts with – i) !(exclamation) 	ii) \$(Dollar)	[CO3] [L-1]		
iii) &(Ampersand)e) A large number of php functions have l	iv) #(Hash) been duplicated from:	[CO3] [L-1]		
iii) unix f) keyword is used to refer to a	iv) all of the above property or method in a cla	ss [CO4] [I -1]		
i) protected iii) private	ii) public iv) this			
g) MySQL can run on which operating sysi) Unix and Linux only	tems? ii) Linux and Mac only	[CO4] [L-1]		
iii) Unix& Linus& Windows and othersh) Which function reads a directory into ai) scandir();	iv) Any operating systemn array?ii) readdir();	[CO4] [L-3]		
iii) scandirectory();i) This property is not supported by PHP.i) friendly:	iv) readdirectory()	[CO2] [L-3]		
j) including,j) public;j) Choose the correct syntax while referring in consists bref. "any file is"	iv) static ng to an external script nam	ne "myfile.js".		
i) <script ;<br="" nref="myfile.js"></script>				

<u>PART-A</u>

Q.2 a) A form is used to input user's information. How can we design a form in HTML? Write HTML code to design a Registration form for Manav Rachna International Institute of Research and Studies. [CO-1][L1] **10**

b) Write the source code for the frame:i) divided into 4 rows (20%,50%, remaining).

[CO1] [L1] **10**

ii) divide second row into 2 equal columns

iii) divide third row into 3 equal columns.

Every frame shall have a source file.

- Q.3 a) Pen down the logical operators used in JavaScript[CO3] [L-2] 10b) Explain the working of conditional operator in JavaScript.[CO3] [L-2] 10
- Q.4 Write short note on and support your statement with code and example:
 - a) Operators in PHP.
 - b) Data types in PHP.

[CO3] [L2] **10×2**

<u>PART-B</u>

- Q.5 a) Answer the following questions:
 - i) What is a file in PHP?
 - ii) What is the purpose of a file in PHP?
 - iii) Which function is used to delete a file?
 - iv) What is the use and syntax of a file?
 - v) What is the use of flock() function?

- [CO5] [L2] **2×5**
- b) Summarize your views on Arrays and its types in PHP. Explain how to create and use arrays in PHP. [CO3) [L2] **10**
- Q.6 Inheritance is considered to be an important aspect of Object-oriented programming in PHP. Write a program to explain the concept of Inheritance in PHP. [CO-4][L-2] **20**
- Q.7 a) Implement the concept of MySQL database in PHP and code for every type to support your answer:
 - i) Cross join
 - ii) Inner Join
 - iii) Outer join
 - iv) Self join

- [CO-5][L-1] **10**
- b) How to handle an exception in php with try, throw and catch? Write a program for the same. [CO-5][L-3] **10**

End Semester Examination, Dec. 2022 MCA – First Semester

WEB APPLICATION DEVELOPMENT USING PHP (MCA-DS-305)

Time:	3 h	rs.		Max Marks: 100
Note:	Att frc qu	empt FIVE questions in all; Q.1 is co m PART-A and TWO questions from I estion.	ompulsory . Attempt any PART-B . Marks are indicate	TWO questions ed against each
Q.1	Mu a) b)	Itiple choice questions:If you don't want the frame windows tothe <frame/> lines?i) saveii)iii) noresizeivWhich function reads a directory into andi) scandir()ii)iii) scandirectory()ivIf the background image is smaller that	 be resizeable, simply add dontresize none array? readdir() readdirectory() the screen, what will hap 	to [CO-1] [L-1] [CO-3] [L-1]
	c) d)	 i) It will be stretched ii) It will leave a blank space at the bo iii) It will be repeated Variable name in PHP starts with: 	ttom of your page	[CO-3] [L-1]
	e)	 i) !(exclamation) ii) iii) &(Ampersand) iv Which is NOT a predefined target for lin i) _son ii)) \$(Dollar)) #(Hash) nks?) _parent	[CO-1] [L-1]
	f)	<pre>III) _blank IV What will be the output of the following <?php \$alphabet = array ("L", "M", "N"); echo (next(\$alphabet)); php> i) l iii)</pre>) none j php code?	[CO-1] [L-1]
	g)	iii) N iv This version of PHP had introduced the i) PHP 4 ii iii) PHP 5 3) Error advanced concepts of OOF) PHP 5	P. [CO-4] [L-1]
	h)	Which function reads a directory into a i) scandir(); ii) iii) scandirectory():	n array? readdir();	[CO-4] [L-3]
	i)	This property is not supported by PHP. i) friendly; ii) iii) public:) final;	[CO-3] [L-3]
	j)	Choose the correct syntax while refer i) <script ;="" href="myfile.js" ii)<="" td=""></script>		

PART-A

Q.2 Create the following HTML page using different HTML tags:

Community Courses Bath Autumn 1997					
Course Name	Course Tutor	Summary	Code	Fee	
After the Civil War	Dr. John Wroughton	The course will examine the turbulent years in England after 1646. 6 weekly meetings starting Monday 13th October.	H27	£32	
An Introduction to Anglo–Saxon England	Mark Cottle	One day course introducing the early medieval period reconstruction the Anglo-Saxons and their society. <i>Saturday</i> 18th October.	H28	£18	
The Glory that was Greece	Valerie Lorenz	Birthplace of democracy, philosophy, heartland of theater, home of argument. The Romans may have done it but the Greeks did it first. Saturday day school 25th October 1997	H30	£18	

[CO-2] [L-2] 20

- Q.3 Explain CSS with reference to HTML. Explain the different ways using which we can embed various styles of CSS in HTML. [CO-3] [L-2] **20**
- Write short notes on following and support your statement with code and example: Q.4
 - a) Operators in PHP.
 - b) Data types in PHP.

[CO-3] [L-1] 10×2

PART-B

- Q.5 a) Answer the following questions:
 - i) What is a file in PHP?
 - ii) What is the purpose of a file in PHP?
 - iii) Which function is used to delete a file?
 - iv) What is the use and syntax of a file?
 - v) What is the use of flock() function?
 - [CO-5] [L-2] **10** b) Summarize your views on Arrays and its types in PHP. Explain how to create and use arrays in PHP. [CO-3] [L-2] 10
- How are object oriented programming and PHP related to each other? Justify your Q.6 [CO-4] [L-2] 20 answer with the help of object-oriented programming concepts.
- Q.7 Write short notes and write necessary code too:
 - a) Database operations: Insert, Delete, Update, Select.
 - b) Joins in MySQL.

[CO-5][L-1] 20

MCA - Second Semester

ANALYSIS AND DESIGN OF ALGORITHM (MCA-DS-403)

Time:	3 h	rs.		Max Marks: 100 <i>No. of pages: 2</i>			
Note:	Аі Q.	ttempt FIVE questions in all; takin 1 is compulsory. Marks are indicate	g at least ONE question In against each question.	from each UNIT.			
Q.1	An	swer the following questions:	, ,				
	a)	The complexity of bubble sort algorit	inm is:				
		I) U(n)	I) $O(\log n)$				
	L \	III) U(n2)	IV) U(n log n)				
	D)	i) O(n)	$\lim_{n \to \infty} O(\log n)$				
		(1) O(1)	$\begin{array}{c} \text{II} & \text{O(10g II)} \\ \text{iv} & \text{O(n log n)} \end{array}$				
	\sim	III) U(II2) The indirect change of the values of	iv) O(II log II)	another module is			
	C)	called:					
		i) internal change	ii) inter-module change				
		iii) side effect	iv) side-module update				
	d)	is conceptually a top dov	vn approach for solving prob	lems.			
		i) Divide	ii) Backtracking				
		iii) Dynamic programming	iv) Divide and Conquer				
	e)	According to strassen's method the o	complexity of matrix multiplie	cation is			
	f)	The worst case occur in linear search	n algorithm when:				
		i) Item is somewhere in the middle					
		ii) Item is not in the array at all.					
		iii) Item is the last element in the ar	ray.				
		iv) Item is the last element in the ar	ray or is not there at all.				
	g)	The average case occur in linear sea	rch 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.						
	h)	The complexity of the average case	of an algorithm is:				
		i) Much more complicated to analyz	than that of worst case.				
		ii) Much more simpler to analyze the	an that of worst case.				
		iii) Sometimes more complicated and case.	d some other times simpler t	han that of worst			
		iv) None on the above.					
	i)	The complexity of linear search algor	rithm is:				
		i) O(n)	ii) O(log n)				
		iii) O(n2)	iv) O(n log n)				
	j)	The complexity of binary search algo	rithm is:				
		i) O(n)	ii) O(log)				
		iii) O(n2)	iv) O(n log n)	2×10			
0.2	-)	Muito gonorol classither for such that	RT-A	l opp he applied to			
Q.2	a)	while general algorithm for greedy f	neuroa. now greedy method				
		SUIVE KIIAPSACK PRODIEM?		TO			

b) Solve the knapsack problem using greedy method with no of inputs and capacity of bag 15 profits and weights are given below.

n = / 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)	10

- Q.3 10 a) Write the algorithm for merge sort. Analyze its complexity. b) Design the state space tree for merge sort with given list: 23, 34, 12, 16, 17, 19, 2 10
- Explain strassens matrix multiplication method. Also analyze its complexity. 20 Q.4

PART-B

- Q.5 a) What do you mean by backtracking? Explain algorithm for the same also draw the state space representation of 8 queen's problem. 10
 - b) Solve the given graph using Dijekstra's algorithm with a as source vertex: 10



Consider the graph and solve travelling salesman problem using dynamic Q.6 programming approach: 20



- Q.7 a) Explain the relationship between P, NP, NP Hard, NP Complete. 10 10
 - b) State and prove Cook's theorem.

MCA - Fifth Semester

ADVANCE DATABASE SYSTEMS (MCA-DS-502)

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 of the following is not related with security of a database?
 - i) Encryption ii) Passwords iii) Normalization iv) View
 - b) The special operator used to check whether a subquery returns any rows is_ iv) IN
 - i) BETWEEN ii) EXISTS iii) LIKE
 - c) Which of the following do you create first when creating a database?
 - i) Primary keys ii) Foreign keys
 - iii) Data dictionary iv) All of the above
 - d) Which of the following distributed database systems integrate only one type of centralized DBMS over a network?
 - i) Homogeneous ii) Heterogeneous
 - iii) Fully heterogeneous iv) Combination
 - e) What happens in log based recovery, when a failure occurs?
 - i) All transactions should be redane
 - ii) All transactions should be redane
 - iii) A log is to be consulted to determine which transactions are undone and which transactions are redone.
 - iv) None of the above
 - f) Which of the following is a relationship if an entity appears in N relationships?
 - i) a 1 : 1 relationship ii) a 1 : N relationship iii) a N: 1 relationship
 - iv) a N : M relationship
 - q) Which of the following is a benefit of a parallel database system?
 - i) Improved performance ii) Greater flexibility iii) Better availability
 - iv) All of these
 - h) Which of the following is/are the central activity during the parsing phase in query processing?
 - i) Database statistics

iii) SOL query

- ii) Data sparsity
- iv) Ouery optimization
- i) What are required to prevent another transaction from reading inconsistent data?
 - i) Locks ii) Schedules iii) Stamps iv) Logs
- i) Which of the following is the recovery management technique in DDBMS?
 - i) 2PC (two Phase Commit) ii) Backup
 - iii) Immediate Update iv) All of the above 2x10

PART-A

Q.2 Construct an E-R diagram for a car insurance company whose customers own one or more cars each. Each car associated with it has zero to any number of recorded accidents.

[CO-5] [L-6] **20**

- 0.3 Explain the following database models:
 - a) Spatial Database c) Mobile Database
- b) Object Oriented Database
- [CO-2] [L-2] 20 c) Temporal Database

P.T.O.

Q.4 Generate with the help of suitable examples the following clauses as used in SQL: a) Where b) Order by c) Group by d) Like [CO-3] [L-3] **5x4**

<u>PART-B</u>

- Q.5 Differentiate between 'DBMS' and 'DDBMS'. Explain the query processing in DDBMS. [CO-2] [L-2] **20**
- Q.6 Assuming that you are in the role of a Database Security Administrator of a Multinational Hospital, propose the different security and privacy measures for all the stakeholder's data? [CO-4] [L-5] **20**
- Q.7 Explain deadlock handling. How a recovery from deadlock can be done. How is transaction recovered when a system failure occurs? Discuss the locking techniques for concurrency control with examples. [CO-1] [L-3] **20**

MCA – Third Semester

PROGRAMMING IN .NET (MCA-DS-503)

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)	C# is a programming language, deve	elop	ed by	[CO2] [L2]
		i) Oracle ii) Microsoft iii) GNU proj	ject	iv) Google	
	b)	Is C# a type safe programming lange	uag	е.	[CO2][L2]
		i) Yes	ii)	No	
	c)	Storage location used by compute	er r	nemory to store data for	usage by an
		application is?			[CO2][L2]
		i) Pointers	ii)	Constants	
		iii) Variable	iv)	None of the mentioned	
	d)	SOAP in C# stands for			[CO3][L2]
		i) Simple Object Access Protocol	ii)	Simple Object Access Progra	im
		iii) Standard Object Access Protocol	iv)	Standard Object Access Prog	gram
	e)	Which of the classes provides the	ope	ration of reading from and	writing to the
		console in C#.NET?			[CO2][L2]
		i) System.Array	ii)	System.Output	
		iii) System.ReadLine	iv)	System.Console	
	f)	Abstract class contains			[CO3][L2]
		i) Abstract methods	ii)	Non Abstract methods	
		iii) Both	iv)	None	
	g)	Choose the keyword which declares	the	indexer?	[CO3][L2]
		i) base	ii)	this	
		iii) super	iv)	extract	
	h)	What is the correct syntax to declare	e a v	variable in C#?	[CO3][L2]
		i) type variableName = value	ii)	type variableName	
		iii) variableName as type = value;	iv)	Both i) and ii)	
	i)	Can we obtain the array index using	fore	each loop in C#?	[CO3][L2]
		i) Yes	ii)	No	
	j)	Struct's data members are		by default.	[CO3][L2]
		i) Protected	ii)	Public	
		iii) Private	iv)	Default	2×10
<u>PART-A</u>					

- Q.2 a) Differentiate between client side and server-side programming. [CO2][L2] 5
 b) What are the benefits of using .NET architecture? Explain the .Net Architecture with a suitable example. [CO2] [L2] 15
- Q.3 a) Explain the different types of operations that can be performed on Arrays. Write a program to show the sum of elements of a 2-D matrix. [CO3][L2] 10
 b) Create a clean write alease has been attributed baseline and write a set of a set of the s
 - b) Create a class rectangle. The class has two attributes length and width, each of which defaults to 0. It has methods that calculate the perimeter and area of the

rectangle. It has set and gets methods for both length and width. The get method should take the input from the user. The set method should verify that length and width are floating point numbers larger than 0.0 and less than 20.0. [CO3][L3] **10**

- Q.4 a) How method overloading is performed in C#. Write a program to show the required functionality. [CO3][L2] **10**
 - b) How multiple inheritance is implemented through the interface? Demonstrate with the help of a program. [CO3][L4] **10**

<u>PART-B</u>

- Q.5What are the various AWT components? Design a student registration form using
various AWT components.[CO4] [L4] 20
- Q.6 a) Explain the architecture of ADO.NET with the help of a suitable diagram.
 - b) Differentiate between the datareader and dataadapter. [CO4] [L2] **10** [CO4] [L4] **10**
- Q.7 a) How restful web services are consumed in C#? [CO6] [L2] **10**
 - b) How the state of an object, page, and ASP.Net control are maintained in C#?

[CO6] [L2] 10

MCA – Third Semester

PROGRAMMING IN .NET (MCA-DS-503)

Time:	3 h	Irs.	Max Marks: 100
Note:		Attempt FIVE questions in all; Q.1 is compulsory . Attempt any from PART-A and TWO questions from PART-B . Marks are each question.	TWO questions indicated against
Q.1	An a)	swer the following questions: CLR is the .Net equivalent of i) Java Virtual machine. ii) Common Language Runtime. iii) Common Type System.	[CO1][L1]
	b)	 iv) Common Language Specification. Which statement is correct among the mentioned statements? i) The for loop works faster than a while loop ii) for(;;) implements an infinite loop a) Only i) is correct b) Only ii) is correct c) Both ii) and ii) are correct 	[CO2][L2]
	c)	 d) Both i) and ii) are incorrect Which of these method used to read strings from the console? i) get() ii) getline() iii) read() 	[CO2][L2]
	d)	 iv) readLine() Which among the following is the correct statement about the used in C#.NET? i) A C#.NET source code file consists of any number of using st ii) By using 'using' statement it's possible to create an alias for t not for the namespace element iii) It is permitted to define a member at namespace level using iv) Using statement can be placed anywhere in the C# NET source 	e using statement [C03][L2] atement he namespace but alias
	e)	"A mechanism that binds together code and data in manipulate safe from outside interference and misuse. In short it isolates and data from all other codes and data. A well-defined interface that particular code and data." i) Abstraction ii) Polymorphism iii) Inheritance iv) Encapsulation	s, and keeps both a particular code controls access to [CO3][L2]
	f)	Abstract class contains i) Abstract methods ii) Non Abstract methods iii) Both i) and ii) iv) None of the above	

g) Which among the following is the correct statement: Constructors are used to?

[CO3][L2]

i) initialize the objects

- ii) construct the data members
- iii) initialize the objects and construct the data members
- iv) None of the above
- h) Which of the following keywords is used to refer base class constructor to subclass constructor? [CO3][L2]
 - i) this
 - ii) static
 - iii) base
 - iv) extend
- i) Which of the following statements are correct about functions? [CO3][L2]i) C# allows a function to have arguments with default values
 - ii) Redefining a method parameter in the method's body causes an exception
 - iii) C# allows function to have arguments with default values
 - iv) Omitting the return type in method definition results into exception
- j) The 'ref' keyword can be used with which among the following: [CO3][L2]
 - i) Static function/subroutine
 - ii) Static data
 - iii) Instance function/subroutine
 - iv) All of the above

PART-A

Q.2 "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] **20**

2×10

- Q.3 a) Write a program to find the duplicate elements in the array. [CO-3][L-2] 10
 b) 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
- Q.4 a) Illustrate the concept of inheritance in C#. How a programmer can provide a specific implementation of the method which is already provided by its base class? Illustrate with the help of a suitable program.
 - b) Create a Demo class that is inherited from the IBank Customer interface, the Demo class will provide the implementation for both the methods (Withdraw Money() and Deposit Money()) that is inherited from the interface. Create a program to implement the concept.

<u>PART-B</u>

- Q.5 a) Write short notes on the following:
 - i) Dialog Box.
 - ii) Message Box.

[CO3][L3] **10**

b) Create a temperature conversion program that converts from Fahrenheit to Celsius. The Fahrenheit temperature should be entered from the keyboard (text field. A Message Box should be used to display the converted temperature.

[CO4][L4] **10**
Q.6 a) Differentiate between connected and disconnected Architecture in ADO.NET.

[CO3][L2] **10**

- b) Develop a program to match the username and password from controls in a login form and match them to a database record. (DB Table details and form fields are given below).
 Login Name field: txtName
 Password field: txtPassword
 Table Schema : CREATE TABLE [User Master](
 [UserId] int NOT NULL,
 [FName] varchar(30) NOT NULL,
 [LoginName] varchar(30) NOT NULL,
 [Email] varchar(30) NOT NULL,
 [Password] varchar(30) NOT NULL)
- Q.7 a) Write short notes on the following:
 - i) Web services.
 - ii) ASP.Net Component.

[CO5][L2] **10**

b) "The Microsoft ASP.NET framework includes several options to help you to preserve data on both a per-page basis and an application-wide basis". List out the different Session state management options available in ASP.NET.

[CO5][L2] **10**

MCA – Third Semester

SOFTWARE ENGINEERING AND TESTING (MCA-DS-504)

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 auestion.
- Q.1 Answer the following questions:
 - a) Which Model is most popular for student's small projects?
 - i) Waterfall Model ii) Spiral Model
 - i) waterfall Model iii) Quick and Fix Model iv) Prototyping Model
 - b) During software development, which factor is most crucial?
 - ii) Product i) People
 - iii) Process iv) Project
 - c) What are the characteristics of software?
 - i) Software is developed or engineered; it is not manufactured in the classical sense.
 - ii) Software doesn't "wear out".
 - iii) Software can be custom built or custom build.
 - iv) All of the above

d) RAD Software process model stands for
i) Rapid Application Development.
ii) Rapid Application Design.
iii) Relative Application Development.
iv) Recent Application Development.

e) Which of the following is not defined in a good Software Requirement Specification (SRS) document?

- i) Functional Requirement.ii) Nonfunctional Requirement.iii) Goals of implementation.iv) Algorithm for software
- implementation.
- f) Software is considered to be collection of _____.
 - i) programming code
 - iii) documentations

- ii) associated libraries iv) All of the above
- g) The process of developing a software product using software engineering principles and methods is referred to as_____
 - i) Software Engineering ii) software Evolution iii) System Models
 - iv) Software Models
- h) Software Engineering is required _____ ii) To reduce Cost i) For Large Software
 - iii) Software Quality Management iv) All of the above
- i) The reason for software bugs and failures is due to_____.
 - i) Software Developers
 - ii) Software companies
 - iii) Both A and B
 - iv) None of the above
- j) Efficiency in a software products does not include _____
 - i) licensing iii) responsiveness

ii) processing time iv) memory utilization

2x10

- Q.2 Write short note on the following:
 - a) Software crisis.
 - b) Software development v/s software engineering.
 - c) Requirement analysis.
 - d) Component based software engineering.
 - e) Process of requirement gathering.
- Q.3 a) Suppose a project was estimated to be 400 KLOC. Calculate the effort and development time for each of the three model i.e., organic, semi-detached and embedded.

Software Projects	а	b	С	d
Organic	2.4	1.05	2.5	0.38
Semi Detached	3.0	1.12	2.5	0.35
Embedded	3.6	1.20	2.5	0.32

[CO1][L2] **10**

b) What is waterfall model? Explain and also discuss the advantages of waterfall model over build and fix model. [CO1][L2] **10**

Q.4	a) Illustrate the major design principles used in software design. Also	create a DFD of
	a library management system.	[CO1][L3,6] 10

b) Differentiate between Coupling and Cohesion. [CO3][L4] **10**

<u>PART-B</u>

- Q.5 a) Illustrate the software testing Lifecycle along with testing objectives. [CO3][L3] 10
 b) Differentiate between 'verification' and 'validation'. [CO3][L4] 10
- Q.6 Explain the following functional testing techniques:
 - a) Equivalence partitioning.
 - b) BVA.
 - c) Cause-effect graphing.
 - d) Decision table testing.
- Q.7 Differentiate between:
 - a) Quality Assurance and Quality Control.
 - b) Product and Process.
 - c) Load and Stress Testing.
 - d) White box testing and Black Box Testing.

[CO4][L2,3] 5x4

[CO6][L4] **5x4**

[CO2][L2] **4x5**

End Semester Examination, Dec. 2022 MCA – Third Semester

BIG DATA ANALYTICS (MCA-DS-505)

Time:	3 h	rs			Max	Marks: 100
Note:	Аі Q.	ttempt FIVE questions in all; takin 1 is compulsory. Marks are indicate	g a ed ag	t least ONE ques gainst each questior	tion fi	rom each UNIT .
Q.1	Ch	oose the correct option:				
-	a)	How many V's of Big Data?				[CO-1][L-1]
		i) 2	ii)	3		
		iii) 4	iv)	5		
	b)	In Big data environment, veracity of	dat	a refers.		[CO-2][L-1]
		i) Quality or fidelity of data		_		
		ii) Large size of the data that canno	ot be	e processed		
		iii) Small size of the data that can be	e ea	sily processed		
		IV) All of the above	mod	al ar achoma and ia	ofton	stored in tabular
	C)	form	nou	ei ui scheina anu is	onteri	
		i) True	ii)	False		
	d)	Amongst which of the following is/a	re no	ot Big Data technolo	aies?	[CO-1][I -1]
	۵)	i) Apache Hadoop	ii)	Apache Spark	gies.	[00 1][1 1]
		iii) Apache Kafka	iv)	Apache Pytarch		
	e)	In contrast to relational databases	s, Ĥ	live is a query eng	jine th	at supports the
	-	elements of SQL that are specifically	des	signed for querying	data.	[CO-2][L-2]
		i) True	ii)	False		
	f)	Amongst which of the following is /	are	correct,		[CO-1][L-2]
		i) Hive is a relational database that	sup	ports SQL queries.		
		ii) Pig is a relational database that s	supp	orts SQL queries.		
		iii) bouil A dhu b. iv) None of the above				
	U)	general-purpose model	and	runtime framewor	k for	distributed data
	97	analytics.	unu			[CO-3][L-1]
		i) Mapreduce	ii)	Spark		
		iii) Hive	iv)	All of the above.		
	h)	is/are node serves as th	ie sl	ave and is responsi	ole for	carrying out the
		tasks that have been assigned to it I	oy th	ne job tracker.		[CO-3][L-1]
		i) Task reduce				
		ii) Mapreduce				
		III) lask tracker				
	i)	IV) JOD LFACKER		that stores	and or	appizos data for
	IJ	study and query				
		i) Ouerving tool	ii)	Mapper		
		iii) Map Reduce	iv)	All of the above.		
	j)	JSON is a for storing and	tran	sporting data		
		i) xml format	ji)	text format		
		iii) JavaScript	iv)	php format.		
		· ·			F.C.C. 2	

<u>PART-A</u>

- Q.2 Define 'data cleaning'. Compare Data mining tools and query tools. [CO13][L2] 20
- Q.3 Explain in detail about storage considerations in Big Data. [CO-3,4][L-1] **20**
- Q.4 What is CAP theorem? How it is applicable to NOSQL systems? [CO-4][L-3] **20**

<u>PART-B</u>

- Q.5 Explain a file in HDFS and represent the anatomy of file read and write. Demonstrate the techniques to optimize map reduce jobs. [CO-4][L-4] **20**
- Q.6 What are the three different modes in which hive can be run? Explain the architecture of Hive with different operations. [CO- 4,5][L-3] **20**
- Q.7 What is the key differences between Apache Spark and Map Reduce?

[CO-4][L-3] **20**

MCA - Third Semester

CLOUD COMPUTING (MCA-DS-506)

Time: 3 hrs

Max Marks: **100** *No. of pages: 2*

Note: Attempt FIVE questions in all; taking at least ONE question from each UNIT. Q.1 is compulsory. Marks are indicated against each question.

- Q.1 Choose the correct option: a) _____ is a paradigm of distributed computing to provide the customers on-demand, utility based computing service. i) Remote Sensingii) Remote Invocationiii) Cloud Computingiv) Private Computing b) These cloud services are of the form of utility computing i.e. the _____ uses these services pay-as-you-go model. i) Cloud providers iii) End users iv) Cloud u iii) End users iv) Cloud users c) In this type of cloud, an organization rents cloud services from cloud providers ondemand basis. i) Private ii) Public iii) Protected iv) Hybrid d) Most of the cloud architectures are built on this type of architecture. i) skeleton ii) grid iii) linear iv) template e) From the standpoint of a _____ it makes no sense to offer non-standard machine instances to customers. i) CaaS ii) AaaS iii) PaaS iv) IaaS f) Explain the full forms of: [CO1,2][L1] i) JPA ii) VPC g) _____ serves as a PaaS vendor within Google App Engine system. [CO5][L1] i) Google ii) Amazon iii) Microsoft h) An example of public cloud is [CO3][L1] i) Default URL for application deployed on Google App Engine. [CO2][L1] i) app-id.appspot.comii) appspot.comiii) appspot.comiv) google.appspot.com j) Which of the following benefit is provided by the PaaS service provider? i) A larger pool of qualified developers ii) More reliable operation iii) A logical design methodology 2x10 iv) All of the above. PART-A
- Q.2 Explain the following concepts of clouds:
 - a) Virtualization.
 - b) Deployment models of cloud.
 - c) Service Oriented Architecture (SOA).

d) Features of Cloud.

a) Traditional software development is different from cloud development. Explain Q.3 how? [CO2][L1] 10

10[CO2][L1]

	b) Explain cloud elasticity and load balancing technologies in cloud.	[CO3][L2] 10
Q.4	a) Compare and contrast different cloud service models.b) Explain the various ways of connecting to cloud.	[CO4][L3] 10 [CO3][L2] 10

PART-B

- Q.5 a) Security in cloud is difficult to manage. With this thought explain Homomorphic encryption and Crypt db in detail. [CO5][L2] 10
 - b) Explain the onion layer encryption security in cloud environment.[CO5][L2] 10
- a) What are security and compliance requirements in a public cloud? [CO5][L1] 10 Q.6 10
 - b) Explain the planning required in security of data on cloud. [CO5][L2]
- Q.7 Write short notes on below cloud applications:
 - a) AWS cloud Services.
 - b) Business Applications.
 - c) Consumer Applications.
 - d) Scientific Applications.

[CO4][L1] 5×4

MCA – Third Semester

NETWORK SECURITY AND CRYPTOGRAPHY (MCA-DS-507)

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) 'A' is an authentication method that requires two or more independent ways to identify a user. Examples include codes generated from the user's smartphone, Captcha tests, fingerprints, voice biometrics or facial recognition. Identify 'A' and list

its advantages.

- b) Define the two mechanisms for security on IP packets.
- c) A person is wearing contact lenses and has to authenticate his identity through his eyes. Identify the kind of authentication. What kind of issue he will face to authenticate his identity?
- d) Discuss the objectives of Digital Signature.
- e) Differentiate between 'Known-Plaintext Analysis' and 'Chosen-Plaintext Analysis'.
- f) Differentiate between 'Cookies' and 'Spyware'.
- g) Define Netmask. Evaluate how it achieves network security.
- h) Explain the advantages of OSPF protocol.
- i) Describe the concept of 'Location Spoofing' in Virtual Private Networks.
- j) Explain the concept of Firewall Configuration Management. [CO-1] [L-1] **2x10**

PART-A

- Q.2 a) Differentiate between Security and Protection. Illustrate with diagram the three objectives that are at the heart of a computer security. [CO-1] [L-3] **10**
 - b) Differentiate between Traffic Analysis and Denial of Service. [CO-2] [L-3] **10**
- Q.3 a) Define buffer overflow attacks. Explain the different types of buffer overflow attacks.

[CO-3] [L-1] **10**

b) 'X' is a network security device, either hardware or software-based, which monitors

all incoming and outgoing traffic and based on a defined set of security rules it accepts, rejects, or drops that specific traffic. Identify 'X' and outline the characteristics functioning of 'X' in network security. [CO-3] [L-3] **10**

Q.4 Discuss the types of risks in a network. Describe the types of risk analysis techniques. Differentiate between the types of Defense Models in response to risk analysis.

[CO-4] [L-3] **20**

<u>PART-B</u>

Q.5 a) Use the Caesar cipher with shift of 3 to encrypt the message: "We ride at noon". [CO-4] [L-5] **10** b) Decrypt the message CEE IAI MNL NOG LTR VMH NW using the method above with

a table with rows of five characters.

[CO-4] [L-5] **10**

- Q.6 a) Define 'digital signature'. Describe the objectives of digital signature. Illustrate with diagram the functioning of digital signature. [CO-5] [L-1] 10
 b) Differentiate between 'a public Key' and 'a private Key'. [CO-5] [L-3] 10
- Q.7 a) Differentiate between AES and DES ciphers.
 - b) Explain the application of Chinese Remainder Theorem in Cryptography.

[CO-6] [L-5] 10

[CO-5] [L-2] **10**

MCA - Third Semester

DATABASE ADMINISTRATION (MCA-DS-508)

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) What do you mean by OFA?
 - b) Which version of oracle database are available in the cloud?
 - c) Name the transactions done on shared lock.
 - d) If both data and database administration exist in an organization, the database administrator is responsible for which process?
 - e) List some duties of database administrator.
 - f) Write the command is used to restore the database to the last committed state?
 - g) What is a database schema?
 - h) Define normalization.
 - i) How clouds are used in reference to database?
 - j) What is SQL? Name the most common SQL queries.

[L2] [L3] [C01] [C02] [C03][C04] **2×10**

<u>PART-A</u>

Q.2 Taking example of student database, design internal, external and conceptual schemas with proper attributes, types, size of attributes and internal/conceptual mapping, external/conceptual mapping. Also explain how are these different schema layers related to the concepts of logical and physical data independence.

[CO-1][CO-2][L-6] **20**

Q.3 a) Describe import and export of data between oracle database. [CO-2, 3][L-3] 10b) Discuss any 10 Oracle functions with proper syntax and suitable examples.

[CO-1][CO-3][L-2] **10**

Q.4 Why do we use MySQL database? Explain any five data manipulation statements in MySQL. [CO-3][CO-4][L-3] **20**

<u>PART-B</u>

- Q.5 Discuss oracle virtual cloud network. Describe the various types of oracle services. [CO-4][CO-5][L-2] **20**
- Q.6 a) Mention the importance of security in database environment. Explain authorization and authentication with suitable examples. [CO-3][CO-5][L-2] **10**
 - b) You are working as DBA in Indian clearing house limited which handle 24/7 online system. Design security and backup procedure for the organization.

[CO-2][CO-5][L-6] **10**

Q.7What are the problems occurred through two-phase locking protocol? Discuss and
give possible solutions of these problems.[CO-4][CO-5][L-2] 20

MCA – Third Semester

E-COMMERCE TECHNOLOGIES (MCA-DS-509)

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) Match these different aspects of e-commerce:

Sell-side e-commerce	i)	Electronic	transactions	with	suppliers	to	an
		organization	า.				
Buy-side e-commerce	ii)	Electronic tr	ansactions wit	th cust	omers dow	nstre	eam
		of an organ	ization.				

- b) E-commerce is:
 - i) An organization using electronic media to sell direct to its customers.
 - ii) An organization using electronic media to purchase from its suppliers.
 - iii) Any electronically mediated communication between an organization and its stakeholders.
 - iv) The use of electronic communications for all business processes.
- c) E-business is:
 - i) Any electronically mediated communication between an organization and its stakeholders.
 - ii) An organization using electronic media to sell direct to its customers.
 - iii) An organization using electronic media to purchase from its suppliers.
 - iv) The use of electronic communications for all business processes.
- d) Which of the following are the benefits of E-marketing?
 - i) Speed
 - ii) Reach and Penetration
 - iii) Ease and Efficiency
 - iv) Low Cost
 - v) Targeted audience
 - i) i, ii, iii and iv only
 - ii) ii, iii, iv and v only
 - iii) i, iii, iv and v only
 - iv) All i, ii, iii, iv and v.
- e) Delivering e-mail based customer support is an example of:
 - i) Satisfying customer requirements.
 - ii) Anticipating customer requirements.
 - iii) Identifying customer requirements.
 - iv) None of the above.

f) _____ is an example of business-to-business services offered by Google which

gains advertising revenue through hosted videos?

- i) YouTube Brand Channel
- ii) Google Adwords pay per click sponsored link advertising
- iii) Google Search application providing online website services for website owners
- iv) Google Apps Business Application Suite
- g) One aim of e-procurement is to increase savings by bulk buying of items:

- i) At the right price.
- ii) Of the right quality.
- iii) Of the right quantity.
- iv) From the right source.
- h) A portal which is normally run by a consortium of buyers in order to establish an efficient purchasing environment is a:
 - i) Vertical and horizontal e-marketplace.
 - ii) Buyer-oriented marketplace.
- iii) Supplier-oriented marketplace. Paid Display ads, Google Adwords/PPC, Affiliate marketing. Owned Content shared through blogs, media sites and communities.

Earned Company blog, company social network site, company own community, company mobile apps.

- iv) B2B independent e-marketplace.
- v) None of the above.
- i) Domain registration is:
 - i) Ensuring page download speed is acceptable.
 - ii) Ensuring the website is running continuously.
 - iii) Ensuring e-mail response is acceptable.
 - iv) Registering and renewing web address names.
- j) An analyst would typically ask, "which types of content do you want to publish on the website?" before asking, "who are the potential audience of the website?" in a preliminary interview with the website owner. ii) False
 - i) True

PART-A

- a) What is the difference between traditional commerce and electronic commerce? 0.2 Depict three factors that would cause a company to continue doing business in the traditional way, avoiding electronic commerce. [CO-1,2] [L-3] **10**
 - b) Describe an e-commerce framework containing the various infrastructure components required for the electronic commerce. [CO-1,2] [L-3] **10**
- Q.3 a) Define 'web server'. How a web client contacts a web server to access a web page?

Write all steps that are required including DNS, protocol and Contents of message transmission. [CO-3] [L-3] **10**

- b) How a technical manager in an online music selling company will ensure the Vice President that the e-commerce website is performing well? Write down the report required to present before the Vice President. [CO-3] [L-3] 10
- Q.4 a) "Threat to communication channels practically has got impact on both the clients and the servers." Explain with reference to internet security. [CO-5] [L-3] 10
 - b) Write down the various categories of malware and the methods that attackers employ to destroy the components of an e-commerce system. [CO-5] [L-3] 10

PART-B

- a) Give the layered architecture of EDI. Explain how the purchase process from a Q.5 manufacturer to a supplier works, using the layered architecture. Write the detail steps in line with the layered architecture. [CO-4] [L-4] **10**
 - b) Differentiate between 'Intranet and extranet' with relevance to ecommerce technology. [CO-4] [L-4] **10**

2x10

- a) When did smart cards come into picture in the context of electronic payment Q.6 systems? Give an account of the various types of smart cards and its requirements from both the consumer's and merchant's point of view. [CO-5] [L-3] 10
 - b) What are electronic wallets and why are they useful? Explain in about 100 words.

[CO-5] [L-3]**10**

- Q.7 a) Mention the various Pros and Cons of Online shopping. CO-5] [L-3] 10
 - b) Write short notes on (any two):
 - i) Internet marketing techniques.
 - ii) Personalized E-Commerce.
 - iii) E-Cycle of Internet Marketing.

[CO-5] [L-3] **5×2**

B. Sc. (Information Technology) – Third Semester **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	Cl a)	<i>Choose the correct option:</i> a) Which of the following option leads to the portability and security of Java?								
		i) Byte code is executed by JVMii) The applet makes the Java code secure and po	ortable	2						
		iii) Use of exception handling								
		iv) Dynamic binding between objects								
	b)	Which keyword is used for accessing the features of a package?								
		i) package	ij) import						
		iii) extends	iv	export						
	c)	What is the initial quantity of the ArrayList list?								
		i) 5	ii) 10						
		iii) O	iv	·) 100						
	d)	A Java constructor is like a method without								
		i) statements	ii) return type						
		iii) argument list	iv) None						
	e)	The purpose of a Java constructor is		-						
		ii) Writing custom code								
		iii) Accepting other objects as inputs								
		iv) All the above								
	f)	The term refers to a way of organizir	na clas	ses that share pr	operties.					
	,	i) Object-oriented	5	· · · · · · · · ·	-					
		ii) Encapsulation								
		iii) Polymorphism								
		iv) Inheritance								
	a)	In Java, a library of classes is called:								
	97	i) A folder ii) A package	iii)	A directory	iv)					
		An application	,	/ an eccory	,					
	St	State whether the following statements are TRUE or FALSE:								
	h)	The Java compiler translates Java programs into r	machir	ne language progr	ams					
	i)	An unper-case letter is considered to be the same	o char	acter as a lower-	case letter					
	<i>י</i> י	in Java.								

j) There is no official limit on the length of variable names in Java.

2x10

<u>PART-A</u>

Q.2 a) Define Variable. Discuss the various rules for writing a variable in Java Program. **5**

- b) What do you understand by Constants? Explain various types of Constants available in Java with a suitable examples.
 10
- c) Write Short note on JVM.
- Q.3 a) Define Constructor. How do we invoke constructor in JAVA?

10

b) What is the meaning of the static keyword? What are the restrictions with static methods?

10

Q.4 a) Discuss any two string handling functions available in Java with a suitable example.

10

b) Differentiate Method overloading and overriding.

5

c) What do you understand by Interface? Compare Class and Interfaces. **5**

<u>PART-B</u>

Q.5	a) Explain about the Dynamic Method Dispatch in Java with example.	10
	b) Give the difference between checked and unchecked exceptions.	10
Q.6	 a) Write short notes on following components: i) Label ii) Text Field iii) Text Area iv) List v) Choice 	10
	b) Explain Applet life cycle in detail.	10

Q.7 Compare Applet and applications. Explain the various stages available in Applet Life Cycle with a suitable diagram and example.

20

5

B. Sc. (Information Technology) – Fifth Semester **MOBILE APPLICATIONS DEVELOPMENT (SOFT708)**

Time:	3 hr	S.	Ma	x Marks: 100
Note:	Atte froi que	empt FIVE questions in all. Q.1 is comp m PART-A and TWO questions from PAR estion.	N Dulsory. Attempt any TL T-B. Marks are indicated	o. or pages: 2 NO questions ' against each
Q.1	Mul a)	tiple choice questions: Which of these does not refer to a nickname i) Muffin	e of the Android version? ii) Honeycomb	[CO-1][L-1]
	b) ⁻	iii) Gingerbread The .apk extension stands for which of thes i) Application Program Kit iii) Application Package	ii) Android Package iv) Android Package	[CO-2][L-2] t
	c)	Name the file which specifies our screen's la i) Manifest file iii) R file	ayout. ii) Layout file iv) Strings XML	[CO-3][L-3]
	d) '	Which phase does not refer to a part in a se i) Paused iii) Running	ervices' lifecycle. ii) Destroyed iv) Starting	[CO-1][L-2]
	e) .	Android is shipped with which of these built i) Oracle iii) Apache	-in databases? ii) MySQL iv) SQLite	[CO-5][L-3]
	f)	While making a network call, if the UI begin most likely because of: i) Network Latency ii) Too many activities on the Activity Manag iii) Hardware malfunctions iv) Virus on the available server	s to crash or behave slugg ger	gishly, it is [CO-5][L-2]
	g) '	What is the difference between margin and i) Margin is specifying the extra space left o ii) Padding is used to offset the content of a iii) Both i) and ii) are correct iv) None of these	padding in android layout n all four sides in layout view by specific px or dp	? [CO-2][L-2]
	h)	Is it possible to have activity without UI in a i) No iii) We can't sav	indroid? ii) Yes iv) None of the above	[CO-5][L-3]
	i) j)	What is the life cycle of foreground activity i) onCreate()-> onStart()->onResume()->or ii) onCreate()-> onStart()->onResume()->o iii) onCreate()-> onStart()->onResume() iv) None of the above What is android view group?	in android? nStop->onRestart nStop	[CO-3][L-3]
		i) Collection of views and other child views iii) Layouts	ii) Base class of building b iv) None of the above	olocks
			[[[[]]	211L-21 2x10

<u>PART-A</u>

- Q.2 Android is an operating system and programming platform developed for mobile phones and other mobile devices. Which features of Android make it highly popular in market? Why do people and developers use it worldwide? Write different genres of Android applications. [CO-1][L-3] **20**
- Q.3 An Android activity goes through a life cycle during its life inside the Android app. Name the activity life-cycle phases and describe in detail. Explain the concept with the help of a diagram. [CO-4][L-2] **20**
- Q.4 Write short notes on the following:
 - a) Dalvik Virtual Machine.
 - b) Directory structure of an Android Project.

[CO-3][L-4] 10×2

<u>PART-B</u>

- Q.5 Android UI design involves the use of prebuilt Android UI components to build the graphical user interface for our applications. Pen down your views about UI in Android studio. Why do you think UI is important? [CO-4][L-2] **20**
- Q.6 SQLite Database is an open-source database provided in Android and used to store data inside the user's device in the form of a Text file. Explain in detail the operations which can be performed on this data. [CO-5][L-2] **20**
- Q.7 Android location APIs make it easy for us to build location-aware applications, without needing to focus on the details of the underlying location technology. Name and explain the methods used to get location specific information. In addition to that, pen down the methods available for getting the Updated Location and Location Quality of service. [CO-5][L-2,4] 20