

Con: 232-15.

(3 Hours)

[Total Marks : 100

Note :All questions are compulsory.

- Q.1 Attempt the following [10 M]
a) Explain SDLC Model [5M]
b) What are the Attributes of software [5M]
- Q.2 Attempt any 3 from the following [15 M]
a) Differentiate between customized and generic system [5 M]
b) Explain Classes of software [5 M]
c) Explain component system [5 M]
d) What is socio-technical system ,what are its essential characteristics [5M]
- Q.3 Attempt any 3 from the following [15 M]
a) Explain different types of risk. ? Explain about project and product risk. [5 M]
b) What are the system and user requirement [5 M]
c) What are the benefits of Incremental model [5 M]
d) Explain the term CBSE [5M]
- Q.4 Attempt any 3 from the following [15 M]
a) Explain Requirement engineering and its task [5 M]
b) Explain object model and its advantages [5 M]
c) Explain Client-Server model [5 M]
d) Explain feasibility study [5M]
- Q.5 Attempt any 3 from the following [15 M]
a) Explain in detail the UI design process. [5 M]
b) Explain Prototyping model with the help of diagram. [5 M]
c) Explain architectural design [5 M]
d) Explain agile methodology? [5M]
- Q.6 Attempt any 3 from the following [15 M]
a) Explain White-Box Testing [5 M]
b) What are goals and types of software testing [5 M]
c) Explain V & V model [5 M]
d) Write a short note on Integration Testing. [5M]
- Q.7 Attempt any 3 from the following [15 M]
a) Write a note on product metrics. [5 M]
b) Explain Inspection process [5 M]
c) What is quality assurance [5 M]
d) What are the characteristics of a process? [5 M]

Multimedia

(3 Hours)

[Total Marks : 100]

Note:-

- All Questions are compulsory (Q1.- to Q.7)
- Attempt any 3 sub question out of 4 from Q2. To Q7

Q 1.	A]	Describe the scope of multimedia?	5
	B]	What is multimedia?	5
Q 2.	A]	Describe the multimedia in public place?	5
	B]	List and describe approaches the of multimedia database?	5
	C]	Give the list of file and give full form it?	5
	D]	Use different type of software used in multimedia system?	5
Q 3.	A]	What are analog signals and their essential properties?	5
	B]	Explain digital signals?	5
	C]	How can analog signals be represented as waves?	5
	D]	Distinguish between periodic and periodic waves?	5
Q 4.	A]	Describe bitmap type font?	5
	B]	Explain Real image?	5
	C]	What is image? List different type of images?	5
	D]	Explain the application of scanner?	5
Q 5.	A]	How sound Flow from one place to another place?	5
	B]	What is Raster?	5
	C]	What is color? List different types if colors?	5
	D]	What the basic components of the audio system describe?	5
Q 6.	A]	List and describe simple compression techniques?	5
	B]	State the necessity of compression techniques?	5
	C]	List the different encoding technique?	5
	D]	Describe the Huffman encoding technique with example?	5
Q 7.	A]	List and describe type of multimedia users?	5
	B]	Write short note on multimedia presentations?	5
	C]	Describe Feature of Adobe Premier?	5
	D]	Describe features of Dream Weaver?	5

Con: 230-15.

Total Marks : 100

Duration : 3 Hrs

Note: All Questions are compulsory

Q. 1

- A Define class. Explain the format of designing a java class. 5M
- B Define inheritance. Describe the different types of inheritance supported by java programming language. 5M

Q. 2 Attempt any three

- A Write a short note on JVM. Explain the various features and advantages of JVM 5M
- B Define Constructor. Explain different types of constructors in java 5M
- C Write a java program for finding the reverse of a number and a string using the concept of method overloading. 5M
- D Write a java program to add two complex numbers. 5M

Q. 3 Attempt any three

- A Define multithreaded programming. Explain the life cycle of a thread. 5M
- B What is meant by packages? Explain how a package can be created and imported in java program. 5M
- C 'A class can implement multiple interfaces' – comment and justify the answer with an appropriate example program. 5M
- D Explain the concept of exception handling mechanism using try-catch statement. 5M

Q. 4 Attempt any three

- A Define File class and list its constructors. List and explain any four methods of File class. 5M
- B Define InputStream and OutputStream classes in java language. List and explain any four methods of each. 5M
- C Explain the classes and methods required for random access file handling in java language 5M
- D Write a java program to accept the name and rollno of a student from the user and store the information into a file using PrintWriter 5M

Q. 5 Attempt any three

- A Define sequential search. Write an algorithm for sequential search method and explain its analysis. 5M
- B Write a short note on stack data structure and list various operations performed on stack. Explain the various applications of stack. 5M
- C Write the algorithm for push, search and empty operations on stack data structure by listing all the variables. 5M
- D Write a short note on recursion. Explain the iterative and recursive functions for the finding the factorial of a given number. 5M

Q. 6 Attempt any three

A Write a java program to implement the concept of single-linked list with the following operations:-

- i) Create()
- ii) insertBeg()
- iii) empty()
- iv) display()

5M

B Explain the concept of hashing as an efficient searching technique

5M

C List and explain various collision handling techniques associated with the hashing methods

5M

D What is mean by tree traversal? Write an algorithm for inorder tree traversal.

5M

Q. 7 Attempt any three

A Write an algorithm for selection sort. Explain the selection sort method by considering a set of 8 natural numbers.

5M

B Define Graph. List and explain any four properties of a graph

5M

C Describe the concept of graph representation using adjacency matrix.

5M

D Write a java program for implementing the Depth First Search (DFS) graph traversal method.

5M

(REVISED COURSE)
(3 Hours)

[Total Marks: 100

- Note:-
- 1) All questions are compulsory.
 - 2) For Q.2 to Q.7, Part (a) is compulsory and attempt any one part from (b) and (c).
 - 3) All questions carry equal marks.
 - 4) Figures to right indicates full marks.
 - 5) Use of **Non-Programmable** Scientific Calculator is allowed.

Q.1 Attempt any one. [10]

(a) Evaluate : (i) $\left(\frac{\Delta^2}{E}\right)e^x \left(\frac{Ee^x}{\Delta^2 e^x}\right)$ (ii) $\Delta^2(x)$ using relation between E and Δ , where $E =$ shift operator and $\Delta =$ forward difference operator [10]

(b) Using Euler's method to estimate $y(1)$ of the d.e $\frac{dy}{dx} = x+y$ $y(0)=1$ with $h=0.25$ [10]

Q.2 (a) An approximate value of π is given by 3.1428571 and its true value is 3.1415926. Find absolute relative and percentage errors. [8]

(b) Find $\sqrt{30}$ approximately using false position method performing two iteration. [7]

(c) Given the following table : [7]

x	1	2	5	9
$y = f(x)$	1	3	6	10

Find $f(6)$ using Lagrange's Interpolation formula.

Q.3 (a) Using Runge-Kutta Second order method find numerical solution at $x=0.2$ for [8]

$$\frac{dy}{dx} = y - x \quad \text{where } y(0) = 2 \quad \text{take } h = 0.1.$$

(b) Solve the given system by Gauss Seidel method upto 3 iterations . [7]

$$10x + y + z = 12$$

$$2x + 10y + z = 13$$

$$2x + 2y + 10z = 14$$

(c) Evaluate $\int_0^{\pi} (4 + 2 \sin x) dx$ Simpson's 1/3 rd rule by taking 6 sub intervals. [7]

[TURN OVER

Q.4 (a) A fair die is rolled six times. Find probability of getting even number (i) at least once [8]
 (ii) two or less number of times.

(b) The probability mass function of random variable X is given by: [7]

$$P(X = x) = \frac{1}{8}, \text{ if } x = 0$$

$$= \frac{1}{4}, \text{ if } x = 1, 2, 3$$

$$= \frac{1}{8}, \text{ if } x = 4$$

$$= 0, \text{ otherwise}$$

Find (i) $P(X \leq 1)$ (ii) $P(X > 3)$ (iii) $P(1 < X \leq 3)$

(c) A random variable X follow a exponential distribution with mean=5. Find (i) Median [7]
 (ii) Variance of distribution. (iii) $P(X \geq 2)$.

Q.5 (a) The two regression lines $x + 2y = 5$ and $2x + 3y = 8$. Find \bar{x}, \bar{y}, r and σ_y^2 if $\sigma_x^2 = 2$. [8]

(b) Find Rank correlation coefficient between x and y . [7]

x	52	53	42	60	45	41	37
y	65	68	43	38	77	48	35

(c) Fit a straight line for the following data. [7]

x	1	2	4	4	6	8	9
y	2	5	7	10	12	15	19

Q.6 (a) In a large sample of 800 men from the population of a certain large city 600 are found [8]
 to have dark hairs . In a large sample of 1000 men from other city with large population
 ,700 are found to have dark hairs . Can we say on the basis of above data , that the
 proportion of dark hair men in two cities is same?

(b) A candidate at an election claims that in a locality 90% voters support him. Verify this [7]
 claim if in a random sample of 400 voters from a locality, 320 supported him.

(c) Following are two samples from two different populations .Can we say that the two [7]
 population have same mean.

Sample I: 25, 32, 30, 34, 24, 14, 32, 24, 30, 31, 35, 25

Sample II : 44, 34, 22, 10, 47, 31, 40, 30, 32, 35, 18, 21, 35, 29, 22.

Q.7 (a) A farmer wants to make sure that his herd gets the minimum daily requirement of three [8]
 basic nutrients A, B and C. Daily requirements are 15 units of A, 20 units of B and 30
 units of C. One gram of product P has 2 units of A, 1 unit of B and 1 unit of C. One
 gram of product Q has 1 unit of A, 1 unit of B and 3 units of C. The cost of P is Rs.
 12 per gram and the cost of Q is Rs. 18 per gram. Formulate and solve this problem as a
 linear programming problem graphically to determine the units of P and Q should the
 farmer buy so that the cost is minimum

(b) Solve using Simplex method: [7]

$$\text{Maximize } Z = 3x_1 + 5x_2$$

$$\text{Subject to } x_1 + 2x_2 \leq 5, 2x_1 + x_2 \leq 7, x_1 + x_2 \leq 9, x_1 \geq 0, x_2 \geq 0.$$

(c) Convert the following L.P.P in Canonical and Standard form. [7]

$$\text{Max } Z = -2x - 4y - z$$

$$\text{Subject to } x + 2y - z \leq 5, 2x - y + 2z = 2, -x + 2y + 3z \geq 1,$$

$$x, y, z \geq 0$$

Con: 233-15.

Time: 3hrs.

Marks : 100 marks

Q.1 Attempt any two of the following.

1. Differentiate between RISC and CISC. (5)
2. Write a short note on watchdog timer. (5)

Q.2 Attempt any three of the following.

1. Explain classification of embedded systems on the basis of generation. (5)
2. Explain I2C bus in embedded systems. (5)
3. Write a short note on digital signal processor. (5)
4. Differentiate between Harvard and Von-Neumann architecture. (5)

Q.3 Attempt any three of the following.

1. Explain following characteristics of embedded system
 - a. Operates in harsh environment
 - b. Small size and weight(5)
2. Explain following operational quality attributes of embedded system
 - a. Reliability
 - b. Maintainability(5)
3. Explain following non-operational quality attributes of embedded system
 - a. Testability and debug-ability
 - b. Per unit cost and revenue(5)
4. Explain different automotive communication buses (5)

Q.4 Attempt any three of the following.

1. Explain linking process in embedded system. (5)
2. Write short note on remote debugger. (5)
3. Explain following terms -
 - a. cross compiler
 - b. device programmer(5)
4. Write short note on host and target platform in embedded system. (5)

TURN OVER

Q.5 Attempt any three of the following.

- 1. Differentiate between SRAM and DRAM. (5)
- 2. What do you mean by memory testing? Explain data bus test in detail. (5)
- 3. Write short note on checksum in embedded system. (5)
- 4. Explain the concept of direct memory access. (5)

Q.6 Attempt any three of the following.

- 1. Explain real-time characteristics of embedded operating system. (5)
- 2. Explain different task states in embedded operating system. (5)
- 3. Explain following scheduling algorithms
 - a. shortest job first
 - b. round robin -priority based
 (5)
- 4. Write short note on mutex in embedded operating systems. (5)

Q.7 Attempt any three of the following.

- 1. Explain advantages of simulator based debugging. (5)
- 2. Write a short note on emulator. (5)
- 3. Describe testing phase of EDLC. (5)
- 4. Define the following phases of EDLC. (5)
 - 1. Need
 - 2. Conceptualization