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The CPP Chairperson said that it took four days for the Prime Minister to speak about the issue and

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Ms. Gandhi also accused the government of "distorting history and twisting facts" to defame patriots such as Jawaharlal Nehru.

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She also targeted the

er on Wednesday with a mimicry of Vice-Premier Jagdeep Dhankhar and Rajya Sabha Chairman P. S. N. Iyuan Banerjee, which was perceived as an insult.

Reg. No.

[23MCAC105]

FIRST SEMESTER UNIVERSITY EXAMINATION, JANUARY 2024

ADVANCED COMPUTER ARCHITECTURE

Time: 03 HOURS

Maximum Marks: 50

SECTION - A

1. Answer any FOUR of the following questions.

$4 \times 5 = 20$

- a. Draw the sample General Register Organization with an example.
- b. Describe the rules of overflow and underflow conditions.
- c. Define plug-and-play. Describe USB architecture.
- d. Elaborate the challenges in ILP
- e. Describe the advantages of distributed-memory processor.

SECTION - B

2. Answer any TWO of the following questions.

$2 \times 9 = 18$

- a. Find the product of  $(00000100)_2$  and  $(00001011)_2$  using Booth's Algorithm.
- b. Articulate thread-level parallelism with examples.
- c. Explain the classes of cache coherence.

SECTION - C

3. Answer the following question.

$1 \times 12 = 12$

- a. i. Explain Data Manipulation Instructions with example.
- ii. Appraise associative mapping in cache memory.

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Reg. No.

[23MCAC102]

## FIRST SEMESTER UNIVERSITY EXAMINATION, JANUARY 2024

### ADVANCED COMPUTER NETWORKS

Time: 03 HOURS

Maximum Marks: 50

#### SECTION - A

1. Answer any FOUR of the following questions.

$4 \times 5 = 20$

- a. Define Switching. Why do we need switching? List the advantages and disadvantages of switching.
- b. Explain the IEEE 802.11 standard and its role in wireless LANs.
- c. Illustrate the Border Gateway Protocol.
- d. Write short notes on Multipurpose Internet Mail Extension.
- e. Why do we use IP Security? Explain briefly.

#### SECTION - B

2. Answer any TWO of the following questions.

$2 \times 9 = 18$

- a. Explain Star and Tree topologies with its advantages and disadvantages.
- b. Describe the basic operation of Bluetooth technology and its applications in short-range wireless communication.
- c. Explain the Routing Information Protocol with its packet format.

#### SECTION - C

3. Answer the following question.

$1 \times 12 = 12$

- a. i. Compare the mail access protocols POP and IMAP. (6)
- ii. List and explain the types of HTTP connections. (6)

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[23MCAC103]

## FIRST SEMESTER UNIVERSITY EXAMINATION, JANUARY 2024

### ADVANCED OPERATING SYSTEMS

Time: 03 HOURS

Maximum Marks: 50

#### SECTION - A

1. Answer any FOUR of the following questions.

$4 \times 5 = 20$

- Summarize the different types of System calls with examples.
- Discuss about the basic Linux commands with examples.
- Recall the various selection statements. Apply conditional statements to test if the variable NUM is between 90 and 100.
- List out any five text editors available in Linux along with its features.
- Discuss about the characteristics of deadlock.

#### SECTION - B

2. Answer any TWO of the following questions.

$2 \times 9 = 18$

- Outline about the Scheduler and Context Switching in OS.
- Elaborate about the significance of 'Man Pages' in Linux.
- Recall about the concepts of ParaVirtualization and Emulation.

#### SECTION - C

3. Answer the following question.

$1 \times 12 = 12$

- i. Outline the structure of while statements. Write a shell script to find whether a given number is prime using a while loop. [6]  
ii. Relate the capabilities of sed statements in pattern matching. [6]

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[23MCAM11]

## FIRST SEMESTER UNIVERSITY EXAMINATION, JANUARY 2024

### ADVANCED SOFTWARE ENGINEERING

Time: 03 HOURS

Maximum Marks: 50

#### SECTION - A

1. Answer any FOUR of the following questions.

$4 \times 5 = 20$

- Examine the Planning Principles under Framework Activity.
- Draw the Activity Diagram for Requirements of Home Security System.
- Explain the Architecture using Design Concept in Software Engineering.
- Explain the Reengineering using Software Maintenance.
- Describe the ISO 9126 Quality Factors needed for Software Quality.

#### SECTION - B

2. Answer any TWO of the following questions.

$2 \times 9 = 18$

- Examine the Scrum development model with suitable example along with its advantages and limitations.
- Explain Pattern, Separation of Concerns & Modularity using Design Concepts.
- Discuss the Strategies Issues in Testing.

#### SECTION - C

3. Answer the following question.

$1 \times 12 = 12$

- i. Describe all the steps involved in Eliciting the Requirements for simple software.
- ii. Explain Software Engineering Specification for SpaceX.

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Reg. No. [REDACTED]

[23MCAC101]

## FIRST SEMESTER UNIVERSITY EXAMINATION, JANUARY 2024

### DATA STRUCTURES

Time: 03 HOURS

Maximum Marks: 50

#### SECTION - A

1. Answer any FOUR of the following questions.

$4 \times 5 = 20$

- Illustrate about Circular Linked List with an example.
- Explain the procedure for Push and Pop in Stack using Array.
- Distinguish between Binary Tree and Binary Search Tree with suitable examples.
- List any two properties of Heap. Describe the types of Heaps with examples.
- Differentiate 'Tree' from 'Graphs' data structures with examples.

#### SECTION - B

2. Answer any TWO of the following questions.

$2 \times 9 = 18$

- Demonstrate Subtraction of two Polynomial Equations using Singly Linked List with suitable procedures.
- Describe about the Linked List representation of Simple Queues.
- Illustrate Hashing technique for the given inputs.

Hash Table size: 10

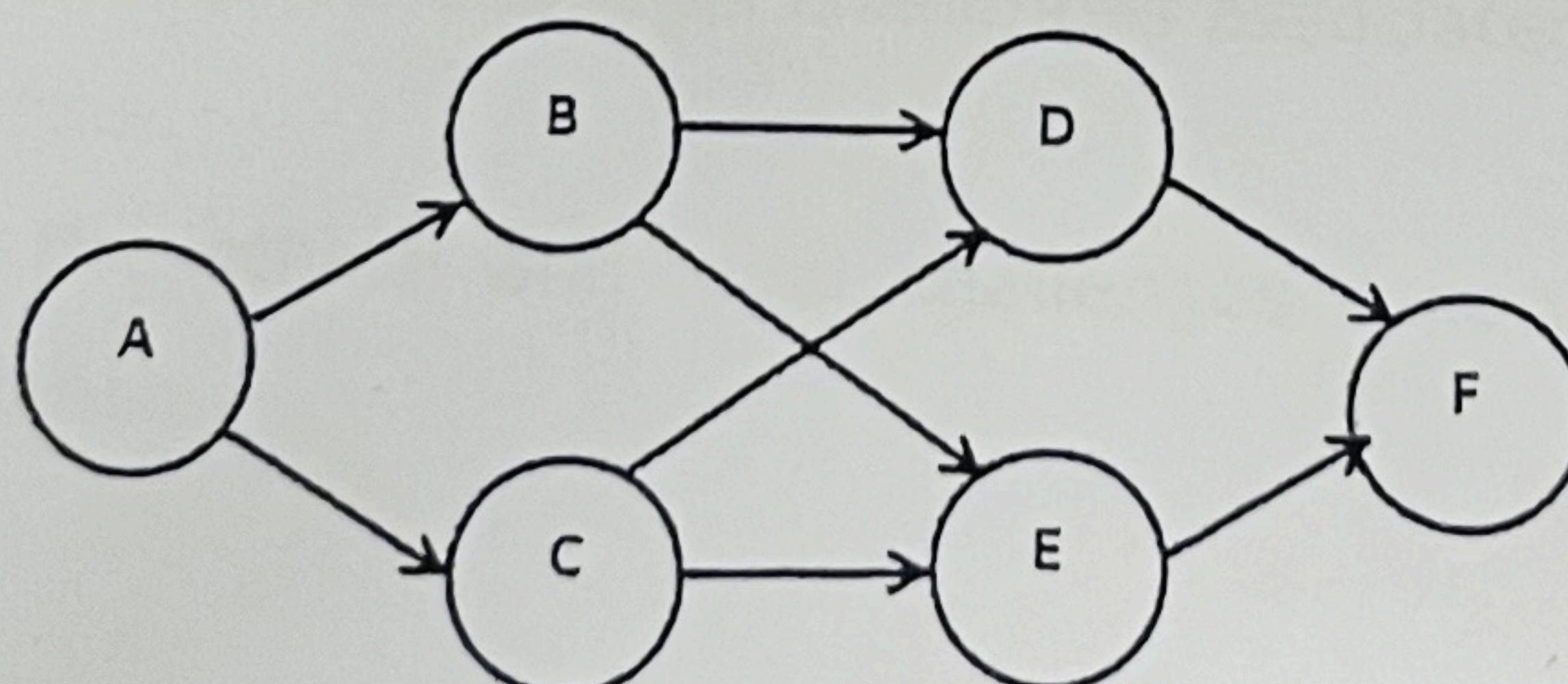
Input numbers: 10, 25, 33, 44, 12, 11, 36

#### SECTION - C

3. Answer the following question.

$1 \times 12 = 12$

- i. Create a Singly Linked List to store Movie details.  
Movie data fields are: MID, MOVIE\_NAME, REVIEW\_RATE  
[6]
- ii. Draw the DFS traversal order for the given input graph.  
[6]



Reg. No. [REDACTED]

[23MCAM13]

## FIRST SEMESTER UNIVERSITY EXAMINATION, JANUARY 2024

### ESSENTIALS TO CYBER SECURITY

Time: 03 HOURS

Maximum Marks: 50

#### SECTION - A

1. Answer any FOUR of the following questions.

$4 \times 5 = 20$

- a. Compare Active and passive sniffing.
- b. Describe fundamental security design principles that should be considered when developing secure systems.
- c. Explain various online scams and frauds related to email.
- d. Mention common types of cybercrimes, and the punishment that offenders face.
- e. Discuss about cyber security audit and its significance.

#### SECTION - B

2. Answer any TWO of the following questions.

$2 \times 9 = 18$

- a. Explain the concept of "exploit" in cyber security, and provide an example.
- b. Analyze the psychological manipulation tactics employed in online sextortion cases.
- c. Discuss the importance of employee training and awareness programs in cyber security management.

#### SECTION - C

3. Answer the following question.

$1 \times 12 = 12$

- a. i. Analyze the ethical and legal challenges associated with the use of AI in cyberattacks.  
ii. Examine the ethical and legal challenges associated with the use of AI in cyber defense.

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[23MCAC104]

## FIRST SEMESTER UNIVERSITY EXAMINATION, JANUARY 2024

### MATHEMATICAL FOUNDATION FOR COMPUTER APPLICATIONS

Time: 03 HOURS

Maximum Marks: 50

#### SECTION - A

1. Answer any FOUR of the following questions.

$4 \times 5 = 20$

- Draw the Hasse diagram for divisibility on the set
  - $\{1, 2, 3, 4, 5, 6, 7, 8\}$
  - $\{1, 2, 3, 5, 7, 11, 13\}$
  - $\{1, 2, 3, 6, 12, 24, 36, 48\}$
  - $\{1, 2, 4, 8, 16, 32, 64\}$
  - $\{1, 3, 9, 27, 81\}$
- Show that  $(p \wedge q) \rightarrow (p \vee q)$  is a tautology.
- Prove that for every positive integer  $n$ ,  $1 \cdot 2 + 2 \cdot 3 + \dots + n(n+1) = n(n+1)(n+2) / 3$  using mathematical induction.
- Find the inverse of following given matrix A.

$$A = \begin{pmatrix} 8 & 4 & -3 \\ 1 & 1 & 2 \\ 1 & 2 & 1 \end{pmatrix}$$

- Two unbiased coins are tossed simultaneously. Find the probability of getting
  - Exactly one head
  - No tail
  - Two tails
  - Atleast one tail
  - Atmost one tail

#### SECTION - B

2. Answer any TWO of the following questions.

$2 \times 9 = 18$

- Let R be the relation on the set of ordered pairs of positive integers such that  $((a, b), (c, d)) \in R$  if and only if  $a + d = b + c$ . Show that R is an equivalence relation.
- Show that  $p \leftrightarrow q$  and  $\neg p \leftrightarrow \neg q$  are logically equivalent.
- Express the following system of equations in matrix form  $[A][X] = [B]$ , and then solve for  $[X]$ :  

$$\begin{aligned} 2x - 3y + z &= 7 \\ x + 2y - z &= 1 \\ 3x - y + 2z &= 6 \end{aligned}$$

#### SECTION - C

3. Answer the following question.

$1 \times 12 = 12$

- i. Find the solution to the recurrence relation  $a_n = -3a_{n-1} - 3a_{n-2} - a_{n-3}$  with initial conditions  $a_0 = 1$ ,  $a_1 = -2$ , and  $a_2 = -1$ . [6]  
 ii. Of the students in a college, it is known that 60% reside in hostel and 40% are day scholars (not residing in hostel). Previous year results report that 30% of all students who reside in hostel attain A grade and 20% of day scholars attain A grade in their annual examination. At the end of the year, one student is chosen at random from the college and he has an A grade, what is the probability that the student is a hostler? [6]

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[21JUOE0905/22JUOE0905]

## FIRST SEMESTER UNIVERSITY EXAMINATION, JANUARY 2024

### STOCK MARKET OPERATIONS

Time: 03 HOURS

Maximum Marks: 50

#### SECTION - A

1. Answer any FOUR of the following questions.

$4 \times 5 = 20$

- Explain the difference between investing and gambling in the context of the stock market.
- Introduce the concept of derivatives.
- Explain the concept of Indian Commodity Exchanges.
- Evaluate the advantages and disadvantages of using technical analysis versus fundamental analysis in making investment decisions.
- Explain the use of charts and oscillators in technical analysis.

#### SECTION - B

2. Answer any TWO of the following questions.

$2 \times 9 = 18$

- Outline the trading settlement procedure in the stock market. Also, elaborate on the role of SEBI.
- Provide an introduction to mutual funds. Describe the operation flow chart, structure, and benefits of investing in mutual funds.
- Identify and describe the participants in the foreign exchange market. How do their roles differ?

#### SECTION - C

3. Answer the following question.

12

- i. Evaluate the advantages and disadvantages of using technical analysis versus fundamental analysis in making investment decisions.  
ii. Consider a scenario where an investor is deciding between investing in Forex and mutual funds. Evaluate the pros and cons of each option and recommend a suitable investment strategy based on the investor's risk profile.

[22MCAC102]

Maximum Marks: 50

## FIRST SEMESTER UNIVERSITY EXAMINATION, JANUARY 2023

### ADVANCED COMPUTER NETWORKS

Time: 03 HOURS

#### SECTION - A

Answer any FOUR of the following questions.

$4 \times 5 = 20$

- Discuss the functions of the physical layer.
- Describe go-back-n and selective repeat with example.
- Explain the features of IPv6 with its packet format.
- Define silly window syndrome. Explain briefly.
- Explain SMTP protocol with appropriate diagram.

#### SECTION - B

Answer any TWO of the following questions.

$2 \times 9 = 18$

- Describe the usage of radio waves in transmission of data. List its merits and demerits.
- How Cyclic Redundancy Check method is used for error detection? Explain with an appropriate example.
- Explain the routing information protocol with its packet format.

#### SECTION - C

3. Answer the following question.

12 Marks

- i. Why do we need FTP Protocol? Explain its types of connections.  
(06)
- ii. Compare and contrast POP and IMAP.  
(06)