Reg. No. | 2 | 3 | M | C | A | R | D | 0 | 9 | 5 | [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. **4×5=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. **2×9=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. **1x12=12**

a. **i.** Explain Data Manipulation Instructions with example. **06**

ii. Appraise associative mapping in cache memory. **06**

Reg. No. | 2 | 3 | M | C | A | R | 0 | 0 | 9 | 5 |

[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. **4×5=20**

a. Explain the difference between investing and gambling in the context of the stock market.

b. Introduce the concept of derivatives.

c. Explain the concept of Indian Commodity Exchanges.

d. Evaluate the advantages and disadvantages of using technical analysis versus fundamental analysis in making investment decisions.

e. Explain the use of charts and oscillators in technical analysis.

SECTION – B

2. Answer any TWO of the following questions. **2×9=18**

a. Outline the trading settlement procedure in the stock market. Also, elaborate on the role of SEBI.

b. Provide an introduction to mutual funds. Describe the operation flow chart, structure, and benefits of investing in mutual funds.

c. Identify and describe the participants in the foreign exchange market. How do their roles differ?

SECTION – C

3. Answer the following question. **12**

a. 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.

Reg. No. | 2 | 3 | m | c | A | R | 0 | 0 | 9 | 5 |

[23MCAM12]

FIRST SEMESTER UNIVERSITY EXAMINATION, JANUARY 2024

FUNDAMENTALS OF CLOUD COMPUTING

Time: 03 HOURS **Maximum Marks:50**

SECTION – A

1. Answer any FOUR of the following questions. **4×5=20**

a. List out various characteristics of Parallel Computing.

b. Summarize the primary responsibilities and obligations of a cloud provider in delivering cloud services to customers.

c. Discuss about digital signature and its role in ensuring data integrity.

d. Explain pay-per-use monitor, and the importance of cloud billing.

e. Describe the role of load balancing in Dynamic Scalability Architecture.

SECTION – B

2. Answer any TWO of the following questions. **2×9=18**

a. State the essential components of a distributed computing system. And explain how they interact to perform tasks efficiently.

b. List the key considerations when selecting a cloud service provider for an enterprise.

c. Describe the purpose of hashing in cloud security. How is hashing used to verify data integrity?

SECTION – C

3. Answer the following question. **1x12=12**

a. **i.** Discuss on hardware and software load balancers in cloud computing with the help of examples. **06**

ii. Illustrate the various dynamic scaling methods with examples. **06**

Reg. No. | 2 | 3 | MC | A | R | D | 0 | 9 | 5 |

[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. **4×5=20**

a. Draw the Hasse diagram for divisibility on the set

i. {1, 2, 3, 4, 5, 6, 7, 8}

ii. {1, 2, 3, 5, 7, 11, 13}

iii. {1, 2, 3, 6, 12, 24, 36, 48}

iv. {1, 2, 4, 8, 16, 32, 64}

v. {1, 3, 9, 27, 81}

b. Show that $(p \wedge q) \rightarrow (p \vee q)$ is a tautology.

c. Prove that for every positive integer n, $1 \cdot 2 + 2 \cdot 3 + \ldots + n(n+1) = n(n+1)(n+2) / 3$ using mathematical induction.

d. Find the inverse of following given matrix A.

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

e. Two unbiased coins are tossed simultaneously. Find the probability of getting

(i) Exactly one head

(ii) No tail

(iii) Two tails

(iv) Atleast one tail

(v) Atmost one tail

SECTION – B

2. Answer any TWO of the following questions. **2×9=18**

a. 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.

b. Show that $p \leftrightarrow q$ and $\neg p \leftrightarrow \neg q$ are logically equivalent.

c. Express the following system of equations in matrix form [A][X] = [B], and then solve for [X]:

2x - 3y + z = 7

x + 2y - z = 1

3x - y + 2z = 6

SECTION – C

3. Answer the following question. **1x12=12**

a. **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]

Reg. No. | 2 | 3 | M | C | A | R | 0 | 0 | 9 | 5 |

[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. **4×5=20**

a. Illustrate about Circular Linked List with an example. 1

b. Explain the procedure for Push and Pop in Stack using Array. 2

c. Distinguish between Binary Tree and Binary Search Tree with suitable examples. 3

d. List any two properties of Heap. Describe the types of Heaps with examples. 4

e. Differentiate 'Tree' from 'Graphs' data structures with examples. 5

SECTION - B

2. Answer any TWO of the following questions. **2×9=18**

a. Demonstrate Subtraction of two Polynomial Equations using Singly Linked List with suitable procedures. 1

b. Describe about the Linked List representation of Simple Queues. 2

c. Illustrate Hashing technique for the given inputs. 4

Hash Table size: 10

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

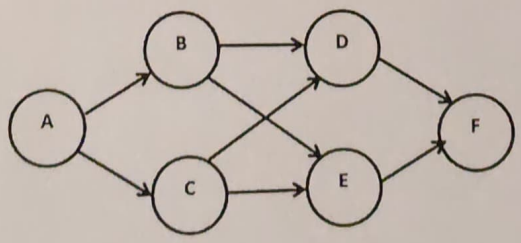
SECTION – C

3. Answer the following question. **1x12=12**

a. i. Create a Singly Linked List to store Movie details. 1 [6]

Movie data fields are: MID, MOVIE_NAME,REVIEW_RATE

ii. Draw the DFS traversal order for the given input graph. 5 [6]



Reg. No. | 2 | 3 | M | C | A | R | 0 | 0 | 9 | 5 | [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. **4×5=20**

a. Summarize the different types of System calls with examples.

b. Discuss about the basic Linux commands with examples.

c. Recall the various selection statements. Apply conditional statements to test if the variable NUM is between 90 and 100.

d. List out any five text editors available in Linux along with its features.

e. Discuss about the characteristics of deadlock.

SECTION – B

2. Answer any TWO of the following questions. **2×9=18**

a. Outline about the Scheduler and Context Switching in OS.

b. Elaborate about the significance of 'Man Pages' in Linux.

c. Recall about the concepts of ParaVirtualization and Emulation.

SECTION – C

3. Answer the following question. **1x12=12**

a. **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]

Reg. No. | 2 | 3 | M | C | A | R | 0 | 0 | 9 | 5 |

[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. **4×5=20**

a. Define Switching. Why do we need switching? List the advantages and disadvantages of switching. 1

b. Explain the IEEE 802.11 standard and its role in wireless LANs. 2

c. Illustrate the Border Gateway Protocol. 3

d. Write short notes on Multipurpose Internet Mail Extension. 4

e. Why do we use IP Security? Explain briefly. 5

SECTION – B

2. Answer any TWO of the following questions. **2×9=18**

a. Explain Star and Tree topologies with its advantages and disadvantages. 1

b. Describe the basic operation of Bluetooth technology and its applications in short-range wireless communication. 2

c. Explain the Routing Information Protocol with its packet format. 3

SECTION – C

3. Answer the following question. **1x12=12**

a. **i.** Compare the mail access protocols POP and IMAP. 4 (6)

ii. List and explain the types of HTTP connections. 4 (6)