

~~MCA-I Semester Question papers~~

(AR20-2020)

ILT.No: 20191F0053

Course Code: 203MC1T02

ADITYA ENGINEERING COLLEGE (A)
MCA - I Semester End Examinations Regular (AR20) - AUG 2021

MATHEMATICAL AND STATISTICAL FOUNDATIONS

Time: 3 hours

Max. Marks: 70

Answer ONE question from each unit

All Questions Carry Equal Marks ($5 \times 14 = 70$ M)

All parts of the questions must be answered at one place only

UNIT - I

- 1 a State Bayes theorem. A and B are two weak students of statistics and K2 CO1 [7M] their chance of solving a problem in statistics correctly are $\frac{1}{6}$ and $\frac{1}{8}$ respectively. If the probability of their making a common error is $\frac{1}{525}$ and they obtain same answer, find the probability that their answer is correct.
- b Describe Acceptable and Natural assignment probabilities. For any two events A and B , Prove that
- i) $P(\bar{A} \cap B) = P(B) - P(A \cap B)$ ii) $P(A \cap \bar{B}) = P(A) - P(A \cap B)$
- OR
- 2 a Explain what is meant by random variable. Compare discrete and K2 CO1 [6M] continuous random variables.
- b The diameter (x) of an electric cable, is assumed to be a continuous random variable with p.d.f.: $f(x) = 6x(1-x)$, $0 \leq x \leq 1$.
- i) Check that the given $f(x)$ is a p.d.f. ii) Obtain an expression for the c.d.f. of x iii) Compute $P\left(\frac{1}{3} \leq x \leq \frac{2}{3}\right)$ and iv) determine the number of k such that $P(x < k) = P(x > k)$

UNIT - II

- 3 a Briefly explain how to select random samples from the population using K3 CO2 [6M] simple random sampling with and without replacement.
- b For a frequency distribution of scores in mathematics of 50 candidates K3 CO2 [8M] selected at random from a certain examination. Compute mean and variance using the moments.

Scores	5-10	10-15	15-20	20-25	25-30	30-35	35-40
Frequency	6	8	17	21	15	11	2

(P.T.O)

Page 1 of 3

OR

- 4 a Explain briefly the criteria of good estimator. K3 CO2 [6M]
 b Define the likelihood function of a random sample of size n. Obtain the maximum likelihood estimate of the parameter α of a population having the density function: $f(x) = \frac{2}{\alpha^2}(\alpha - x)$, $0 < x < \alpha$ for a sample of unit size is 2x. K3 CO2 [8M]

UNIT - III

- 5 a Explain i) Null and Alternative hypothesis ii) One tailed and two tailed tests. K3 CO3 [6M]
 b The hourly wage of a sample of 150 workers in a plant 'A' was Rs. 2.56 with a standard deviation of Rs. 1.08. The hourly wage of a sample of 200 workers in a plant 'B' was Rs. 2.87 with a standard deviation of Rs. 1.28. Can an applicant safely assume that the hourly wages paid by plant 'B' are higher than those paid by plant 'A'. $\frac{x_1 - x_2}{\sqrt{\sigma_1^2 + \sigma_2^2}}$ K3 CO3 [8M]

OR

- 6 a Discuss how to construct i) \bar{X} chart ii) R chart K3 CO3 [7M]
 b A survey of 800 families with four children each revealed the following distribution:

No. of Boys	0	1	2	3	4
No. of Girls	4	3	2	1	0
No. of families	32	178	290	236	64

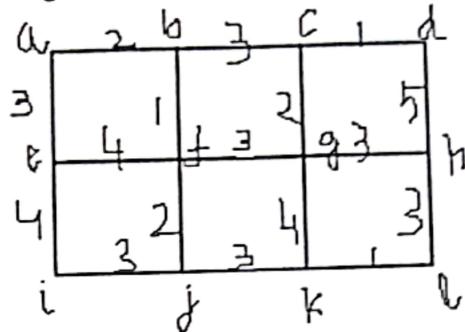
Is this result with the hypothesis that male and female births are equally probable?

UNIT - IV

- 7 a Let (A, \cdot) be a group i) show that $(ab)^{-1} = b^{-1}a^{-1}$ ii) Show that $(a_1, a_2, \dots, a_r)^{-1} = a_r^{-1}a_{r-1}^{-1} \dots a_2^{-1}, a_1^{-1}$ K2 CO4 [7M]
 b If p_1, p_2, \dots, p_n are relatively prime to q then their product is relatively prime to q. K2 CO4 [7M]
- OR**
- 8 a Write a division algorithm and find the quotient remainder when i) 777 is divisible by 21 ii) 1234567 is divisible by 1001 K2 CO4 [7M]
 b Express the gcd of each pair of integers as a linear combination of these integers i) 33, 44 ii) 101, 203 K2 CO4 [7M]

UNIT - V

- 9 a Describe different kinds of Graph models. K3 CO5 [6M]
b Write Prim's algorithm to find a minimum spanning tree and hence find K3 CO5 [8M]
the minimum spanning tree of the following graph.

**OR**

- 10 a Construct a precedence graph for the following program: K3 CO5 [7M]
 $S_1 : x := 0, S_2 : x := x + 1, S_3 : y := 2, S_4 : z := y, S_5 : x := x + 2$
 $S_6 : y := x + z, S_7 : z := 4$
b. Find the adjacency matrix for the following graphs i) K_n ii) $K_{m,n}$ K3 CO5 [7M]

ADITYA ENGINEERING COLLEGE (A)

MCA – I Semester End Examinations Regular (AR20) – AUG 2021

BUSINES COMMUNICATION

Time: 3 hours

Max. Marks: 70

Answer ONE question from each unit

All Questions Carry Equal Marks ($5 \times 14 = 70M$)

All parts of the questions must be answered at one place only

UNIT – I

- 1 a What are the essentials of good communication?
b Explain the channels of communication?

K1 CO1 [7M]
K2 CO1 [7M]

OR

- 2 a What is formal and informal communication?
b What role does communication play in business?

K1 CO2 [7M]
K1 CO2 [7M]

UNIT – II

- 3 a What are the factors affecting presentations?
b How can presentations be made effective?

K1 CO5 [7M]
K2 CO5 [7M]

OR

- 4 a Explain role of emotion in interpersonal communication
b Briefly explain effective interpersonal communication

K2 CO2 [7M]
K2 CO2 [7M]

UNIT – III

- 5 a What are the characteristics of non – verbal communication?
b Explain the difference between formal & informal communications?

K1 CO1 [7M]
K1 CO3 [7M]

OR

- 6 a What do you mean by etiquette? How they are important in business?
b Give suitable examples for some business etiquettes, which are essentials in business dealings?

K1 CO3 [7M]
K2 CO3 [7M]

UNIT – IV

- 7 a Discuss the different forms of internal correspondence?
b What role does a resume plays for a job applicant?

K2 CO4 [7M]
K1 CO4 [7M]

OR

- 8 a Discuss the important considerations in preparing a resume?
b What do you mean by a report? Discuss various types and structures of reports?

K2 CO4 [7M]
K1 CO4 [7M]

UNIT – V

- 9 a What is an interview? What aspects interviewers assess when they interview candidates?

K1 CO5 [7M]

- b What are the characteristics of a prerequisites of effective presentation?

K1 CO5 [7M]

OR

- 10 a Elaborate some of presentation skills and how they contribute to effective presentations?
b Briefly explain techniques involved in interviews?

K2 CO5 [7M]
K2 CO5 [7M]

ADITYA ENGINEERING COLLEGE (A)
MCA – I Semester End Examinations Regular (AR20) – AUG 2021

COMPUTER ORGANIZATION & OPERATING SYSTEMS

Time: 3 hours

Max. Marks: 70

Answer ONE question from each unit

All Questions Carry Equal Marks (5 x 14 = 70M)

All parts of the questions must be answered at one place only

UNIT – I

- | | | | | |
|-----|---|----|-----|------|
| 1 a | Explain How to measure the performance of a computer? | K2 | CO1 | [7M] |
| b | What are operational steps needed to execute any machine instruction? | K1 | CO1 | [7M] |

OR

- | | | | | |
|-----|--|----|-----|------|
| 2 a | Explain about stacks and Queues Basic Input/output Operations | K2 | CO1 | [7M] |
| b | List out the different addressing modes and discuss with examples. | K2 | CO1 | [7M] |

UNIT – II

- | | | | | |
|-----|---|----|-----|------|
| 3 a | Explain about the organization of a micro programmed control unit. | K2 | CO2 | [7M] |
| b | What are the steps involved in execution of a complete instruction? Write the control sequence for execution of the instruction MOV instruct. | K1 | CO2 | [7M] |

OR

- | | | | | |
|-----|---|----|-----|------|
| 4 a | Difference between RAM and ROM. | K4 | CO2 | [7M] |
| b | What are the differences between single bus organization and multiple bus organization? | K4 | CO2 | [7M] |

UNIT – III

- | | | | | |
|-----|---|----|-----|------|
| 5 a | Explain about operating system Services. | K2 | CO3 | [7M] |
| b | Explain about real-time operating system. | K2 | CO3 | [7M] |

OR

- | | | | | |
|-----|---|----|-----|------|
| 6 a | Define PCB. Explain about PCB with neat diagram | K1 | CO3 | [7M] |
| b | What is Thread? Explain about threading issues. | K1 | CO3 | [7M] |

UNIT – IV

- | | | | | |
|-----|---|----|-----|------|
| 7 a | Write short notes on Critical-Section. | K1 | CO4 | [7M] |
| b | Define Semaphores. Explain about different types of Semaphores. | K1 | CO4 | [7M] |

OR

- | | | | | |
|-----|--|----|-----|------|
| 8 a | Define Deadlock. Write about Deadlock characteristics. | K1 | CO4 | [7M] |
| b | Explain about Deadlock prevention. | K2 | CO4 | [7M] |

UNIT – V

- | | | | | |
|-----|--|----|-----|------|
| 9 a | Explain about file access methods. | K2 | CO5 | [7M] |
| b | What is memory allocation? Explain about Contiguous Memory Allocation. | K1 | CO5 | [7M] |

OR

- | | | | | |
|------|--|----|-----|------|
| 10 a | What is file mounting? Explain about File-mounting with example. | K1 | CO5 | [7M] |
| b | Define Seek Time. Explain about FCFS disk Scheduling Algorithm. | K1 | CO5 | [7M] |

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Course Code: 203MCIT04

ADITYA ENGINEERING COLLEGE (A)

MCA - I Semester End Examinations Regular (AR20) - AUG 2021

DATA STRUCTURES

Time: 3 hours

Max. Marks: 70

Answer ONE question from each unit

All Questions Carry Equal Marks ($5 \times 14 = 70M$)

All parts of the questions must be answered at one place only

UNIT - I

- 1 a Explain arithmetic, logical and bitwise operators with examples. K2 CO1 [6M]
b Write a C program to illustrate switch and if-else statements. K2 CO1 [8M]

OR

- 2 a What is the need of do-while and while loops? Discuss about their usage. K2 CO1 [6M]
Distinguish between them.
b Write a program to demonstrate passing an array argument to a function. K2 CO1 [8M]
Consider the problem of finding largest of N numbers defined in an array.

UNIT - II

- 3 a Explain function prototype and explain different methods to call the functions. K3 CO2 [7M]
b Define a structure. Describe how to declare and initialize structure and its members with an example. K3 CO2 [7M]

OR

- 4 a What is a user defined function? When these functions are useful? How a function is declared and what are the rules followed to call a function. K3 CO2 [6M]
b Explain about the fopen, fclose, feof, sprintf, and fscanf, functions. K3 CO2 [8M]

UNIT - III

- 5 a List various operations of linked list and explain how to insert a node anywhere in the single linked list. K3 CO3 [8M]
b Write an algorithm to delete an element anywhere from doubly linked list. K3 CO3 [6M]

OR

- 6 a Explain the advantages and disadvantages of the recursive algorithms compared to non-recursive algorithms. K3 CO3 [6M]
b What is the difference between Circular linked list and doubly linked list. K3 CO3 [8M]
Mention the applications of each type of list.

UNIT - IV

- 7 a Convert given Infix expression: $(a + b * c ^ d) * (e + f / g)$ to Postfix expression using Stack and show the details of Stack at each step of conversion. (Note: $^$ indicates exponent operator) K3 CO4 [7M]
b Discuss various collision resolution techniques with suitable examples. K3 CO4 [7M]

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Course Code: 203MC1T05

ADITYA ENGINEERING COLLEGE (A)
MCA - I Semester End Examinations Regular (AR20) - AUG 2021
OBJECT ORIENTED PROGRAMMING WITH JAVA

Time: 3 hours

Max. Marks: 70

Answer ONE question from each unit

All Questions Carry Equal Marks (5 x 14 = 70M)

All parts of the questions must be answered at one place only

UNIT - I

- 1 a Explain the different parts of a Java program with an appropriate example. K2 CO1 [7M]
b What is meant by byte code? Briefly explain how Java is platform independent. K1 CO1 [7M]

OR

- 2 a List the primitive data types available in Java and explain. K1 CO1 [7M]
b Discuss about precedence of operators and associativity. K6 CO1 [7M]

UNIT - II

- 3 a What is inheritance and how does it help to create new classes quickly. K1 CO2 [7M]
b Explain the polymorphism and overloading with an example. K2 CO2 [7M]

OR

- 4 a Write the benefits of packages and interfaces. K1 CO2 [6M]
b How can we add a class to a package? Write about relative and absolute paths. K1 CO2 [8M]

UNIT - III

- 5 a Differentiate between multiprocessing and multithreading. What is to be done to implement these in a program? K4 CO3 [7M]
b What is an Exception? How is an Exception handled in JAVA? K1 CO3 [7M]

OR

- 6 a Write a java program that illustrates the application of multiple catch statements. K1 CO3 [8M]
b Write about some Java's built-in exceptions. K1 CO3 [6M]

UNIT - IV

- 7 a Explain user interface components in AWT. K2 CO4 [6M]
b Write a program to create a frame window that responds to key strokes. K1 CO4 [8M]

OR

- 8 a What is a Layout manager? Explain different types of Layout managers. K1 CO4 [6M]
b Explain different mouse and keyboard events with syntax. K2 CO4 [8M]

UNIT - V

- 9 a Discuss about different applet display methods in brief. K4 CO5 [7M]
b What are the various components of Swing? Explain. K1 CO5 [7M]

OR

- 10 a What is an applet? Explain the life cycle of Applet with a neat sketch. K1 CO5 [7M]
b What are the subclasses of JButton class of swing package? K1 CO5 [7M]

ADITYA ENGINEERING COLLEGE (A)

MCA - I Semester End Examinations Regular & Supplementary (AR20) - MAY 2022

2022

BUSINESS COMMUNICATION
(Master of Computer Applications)

Time: 3 hours

Max. Marks: 70

Answer ONE question from each unit

All Questions Carry Equal Marks

All parts of the questions must be answered at one place only

UNIT - I

- 1 a List three situations in your experience, where you would prefer to use written communication? With reasons K2 CO1 [7M]
- b What do you mean by "NOISE" in communication process? K2 CO1 [7M]
- OR
- 2 a What speakers can do to ensure better listening? K1 CO1 [7M]
- b Define Communication? What are the purposes of it? K1 CO1 [7M]

UNIT - II

- 3 a Difference between formal and informal communication K2 CO2 [7M]
- b What is meant by status-consciousness? How does it impede the smooth flow of communication? K3 CO2 [7M]
- OR
- 4 a Define Emotion explain the role of emotions in communication K3 CO2 [7M]
- b What is Grapevine? Discuss its advantages and disadvantages K2 CO2 [7M]

UNIT - III

- 5 a What is Paralanguage? How does silence affect the quality of non-verbal communication? K2 CO3 [7M]
- b Write explanatory notes on body posture and gestures K3 CO3 [7M]
- OR
- 6 a Explain the importance of Haptics handshakes, with examples K3 CO3 [7M]
- b Explain the importance of non-verbal communication in business communication K3 CO3 [7M]

UNIT - IV

- 7 a Distinguish between Minutes and proceedings of a meeting K2 CO4 [7M]
- b Draft a circular addressing to your customers and dealers announcing the opening of a new branch K3 CO4 [7M]
- OR
- 8 a What is the difference between CV and Resume? What are the points that should be kept in mind while preparing Resume? K3 CO4 [7M]
- b Draft a Circular letter of credit in favor of the sales manager of your firm M.D.K Ravi Chandra ,who is going out on a tour to Northern India K3 CO4 [7M]

UNIT - V

- 9 a Write an exploratory note on appearance and body posture of a speaker? K3 CO5 [7M]
- b Write the opening paragraph of a formal presentation on the topic " How Extra Circular activities contribute to your personality development" K2 CO5 [7M]
- OR
- 10 a What are the Guidelines for success of an interview? K1 CO5 [7M]
- b A Group Discussion is the creative approach to knowledge-Explain K3 CO5 [7M]

ADITYA ENGINEERING COLLEGE (A)

MCA – I Semester End Examinations Regular (AR20) – MAY 2022

MATHEMATICAL AND STATISTICAL FOUNDATIONS (Master of Computer Applications)

Time: 3 hours

Max. Marks: 70

Answer ONE question from each unit

All Questions Carry Equal Marks

All parts of the questions must be answered at one place only

UNIT – I

- 1 a If the probability density of a random variable is given by.

K3 CO1 [7M]

$$f(x) = \begin{cases} kx^2 & \text{if } x > 0 \\ 0 & \text{if } x < 0 \end{cases}$$

Find the value of k and the probability that the random variable takes on a value between (i) between $\frac{1}{4}$ and $\frac{3}{4}$ (ii) greater than $\frac{2}{3}$. Also, find its mean and variance.

- b For the continuous random variable X whose probability density function

K3 CO1 [7M]

$$\text{is given by } f(x) = \begin{cases} cx(2-x), & \text{for } 0 \leq x \leq 2 \\ 0, & \text{otherwise} \end{cases}$$

Find c and mean and variance of X.

OR

- 2 a Two marbles are drawn in succession from a box containing 10 red, 30 white and 15 orange marbles, with replacement being made after each draw. Find the probability that (i) both are white (ii) first is red second is white.

K3 CO1 [7M]

- b If the probability density of a random variable is given by

K3 CO1 [7M]

$$f(x) = \begin{cases} k(1-x^2) & \text{if } 0 < x < 1 \\ 0 & \text{otherwise} \end{cases}$$

Find the value of k and the probability

that the random variable takes on a value between i) between $\frac{1}{10}$ and $\frac{2}{10}$ ii) greater than $\frac{1}{2}$.**UNIT – II**

- 3 A population consists of five numbers 2,3,6,8 and 11. Consider all possible samples of size two which can be drawn with replacement from this population. Find

K3 CO2 [14M]

- i) The mean of the population
- ii) The standard deviation of the population
- iii) The mean of the sampling distribution of means
- iv) The standard deviation of the sampling distribution of means.

OR

- 4 a The tensile strength (1000 psi) of a new composite can be modeled as a normal distribution. A random sample of size 25 specimens has mean 45.3 and standard deviation 7.9. Does this information tend to support or refute the claim that the mean of the population is 40.5.

K3 CO2 [7M]

- 4 b A research worker wants to determine the average time it takes a mechanic to rotate the tires of a car, and she wants to be able to assert with 95% confidence that the mean of her sample is off by at most 0.50 minute. If she can presume from past experience that $\sigma = 1.6$ minutes, how large a sample will she have to take.

K3 CO2 [7M]

UNIT - III

- 5 a The dynamic modulus of concrete is obtained for two different concrete mixes. For the first mix, $n_1 = 33$, $\bar{x} = 115.1$ and $s_1 = 0.47$ psi. For the second mix, $n_2 = 31$, $\bar{y} = 114.6$ and $s_2 = 0.38$. Test with $\alpha = 0.05$, the null hypothesis of equality of mean dynamic modulus versus the two-sided alternative. Also construct a 95% confidence interval of the difference in mean dynamic modulus.
- b The following random samples are measurements of the heat-producing capacity (in millions of calories per ton) of specimens of coal from two mines:

K3 CO3 [7M]

Mine - 1	8260	8130	8350	8070	8340	
Mine - 2	7950	7890	7900	8140	7920	7840

Construct a 99% confidence interval for the difference between means.

OR

- 6 a To compare two kinds of bumper guards, 6 of each kind, were mounted on a certain kind of compact car. Then each car was run into a concrete wall at 5 miles per hour and the following are the costs of the repairs (in rupees)

K3 CO3 [7M]

Bumper Guard 1	407	448	423	465	402	419
Bumper Guard 2	434	415	412	451	433	429

Use the 0.01 level of significance to test whether the difference between two sample means is significant.

- b Measuring specimens of nylon yarn taken from two spinning machines, it was found that 8 specimens from the first machine had a mean denier of 9.67 with a standard deviation of 1.81 while 10 specimens from the second machine had a mean denier of 7.43 with a standard deviation of 1.48. Assuming that the populations sampled are normal and have the same variance, test the null hypothesis $\mu_1 - \mu_2 = 1.5$ against the alternative hypothesis $\mu_1 - \mu_2 > 1.5$ at the 0.05 level of significance.

K3 CO3 [7M]

UNIT - IV

- 7 a Prove that a group G is abelian iff $(a * b)^2 = a^2 * b^2$.
- b Determine whether $H_1 = \{0, 5, 10\}$ and $H_2 = \{0, 4, 8, 12\}$ are subgroups of $(Z_{15}, +_{15})$

K3 CO4 [7M]

K3 CO4 [7M]

OR

- 8 a Find $G.C.D(615, 1080)$, and find integers u and v such that $G.C.D(615, 1080) = 615u + 1080v$
- b Use the definition of addition and multiplication in Z_m to find $7 +_{11} 9$ and $7 \cdot_{11} 9$.

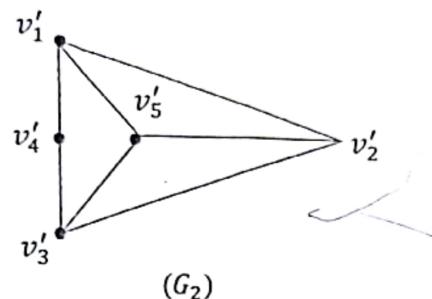
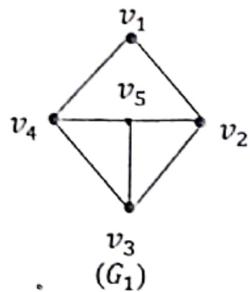
K3 CO4 [8M]

K3 CO4 [6M]

UNIT - V

9 a Verify whether the following graphs are isomorphic or not.

K3 CO5 [7M]



b Define subgraph, vertex deleted subgraph, edge deleted subgraph and cut vertex. K3 CO5 [7M]

10 State and prove 5-color theorem.

K3 CO5 [14M]

OR

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H.T.No: 21A91F0075

Course Code: 203MC1T03

ADITYA ENGINEERING COLLEGE (A)

MCA - I Semester End Examinations Regular & Supplementary (AR20) - May 2022

COMPUTER ORGANIZATION AND OPERATING SYSTEMS

(Master of Computer Applications)

Time: 3 hours

Max. Marks: 70

Answer ONE question from each unit

All Questions Carry Equal Marks

All parts of the questions must be answered at one place only

UNIT - I

- 1 a What are the operational steps needed to execute any machine instruction? Explain with an example and neat diagram. K2 CO1 [7M]
b Explain about multiprocessor and multi computers. K2 CO1 [7M]
- OR
- 2 a Explain about Memory locations and addresses in detail. K2 CO1 [7M]
b Explain about Instructions and Instruction sequencing in detail. K2 CO1 [7M]

UNIT - II

- 3 a Explain about Performing an Arithmetic or Logic Operation. K2 CO2 [7M]
b Explain about Micro Programmed Control. K2 CO2 [7M]
- OR
- 4 a How do you fetch a word from memory? Explain in detail with an example. K2 CO2 [7M]
b Explain Micro program sequencing. K2 CO2 [7M]

UNIT - III

- 5 a Explain about types of system calls in Operating Systems. K2 CO3 [7M]
b Explain about FCFS CPU Scheduling Algorithm in detail. K2 CO3 [7M]
- OR
- 6 a Explain about Operating Systems Structures. K2 CO3 [7M]
b Explain about Process Scheduling in detail. K2 CO3 [7M]

UNIT - IV

- 7 a Explain about the critical-section problem with an example. K2 CO4 [7M]
b Explain about Recovery Starvation in detail. K2 CO4 [7M]
- OR
- 8 a Explain about Peterson's Solution with an example. K2 CO4 [7M]
b Explain about Detection and Avoidance. K2 CO4 [7M]

UNIT - V

- 9 a Explain about LRU and MFU Page-Replacement Algorithms in detail. K2 CO5 [7M]
b Explain about Disk Scheduling in detail. K2 CO5 [7M]
- OR
- 10 a Explain about Paging concept in detail with an example. K2 CO5 [7M]
b Explain in detail about File-System implementation K2 CO5 [7M]

ADITYA ENGINEERING COLLEGE (A)
 MCA – I Semester End Examinations Regular & Supple (AR20) – MAY 2022

DATA STRUCTURES

(Master of Computer Applications)

Time: 3 hours**Max. Marks: 70****Answer ONE question from each unit****All Questions Carry Equal Marks****All parts of the questions must be answered at one place only****UNIT – I**

- 1 a What is a variable? What are the rules for declaring variables? Give examples for valid and invalid variables? K2 CO1 [8M]
 b Explain about different types of branching statements in C K2 CO1 [6M]
- OR
- 2 a Write a C program for to find a sum of series $1! + 2! + 3! + \dots + n!$ K2 CO1 [7M]
 b Describe while and do-while loop with example each. K2 CO1 [7M]

UNIT – II

- 3 a Summarize the declaration and initialization of structure with an example K2 CO2 [6M]
 b What is pointer? What are the features of pointers? Write a C program to print address of variable and data with pointer. K2 CO2 [8M]
- OR
- 4 Explain different types of file handling functions in C with example K2 CO2 [14M]

UNIT – III

- 5 a Discuss single linked list and doubly linked list K2 CO3 [7M]
 b How circular linked list is organized. Discuss its operations K2 CO3 [7M]
- OR
- 6 a Explain the types of data structures in detail K2 CO3 [9M]
 b What is recursion discuss types recursion with an example. K2 CO3 [5M]

UNIT – IV

- 7 What is hash function? Explain collision resolution methods of the hashing K2 CO5 [14M]
- OR
- 8 a Write the program to implement Push and Pop operation in the stack K2 CO5 [7M]
 b Discuss array and linked list representation of queue. K2 CO5 [7M]

UNIT – V

- 9 Write a program to implement selection sort and calculate its complexity with example K2 CO4 [14M]
- OR
- 10 a What is BST? Explain the operations of BST K2 CO4 [4M]
 b Construct Binary Search Tree for following elements 47, 12, 75, 88, 90, 73, 57, 1, 85, 50, 62 apply inorder, preorder, postorder traversal. K2 CO5 [10M]

H.T.No: 21A91F0075

Course Code: 203MC1T05

ADITYA ENGINEERING COLLEGE (A)
MCA - I Semester End Examinations Regular & Supple (AR20) - MAY 2022

OBJECT ORIENTED PROGRAMMING WITH JAVA**Time: 3 hours****Max. Marks: 70****Answer ONE question from each unit****All Questions Carry Equal Marks (5 x 14 = 70M)****All parts of the questions must be answered at one place only****UNIT - I**

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|---|-------------|
| 1 a Explain the significance of public, protected and private access specifiers in inheritance. | K2 CO1 [7M] |
| b What is the purpose of constructor in Java programming? | K2 CO1 [7M] |
| OR | |
| 2 a Describe the structure of a typical Java program with an example. | K3 CO1 [7M] |
| b What is an array? How do you declare the array in java? Give examples. | K2 CO1 [7M] |

UNIT - II

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|--|-------------|
| 3 a Define inheritance. What are the benefits of inheritance? How to prevent a class from inheritance? | K2 CO2 [7M] |
| b What is polymorphism? Explain different types of polymorphisms with examples. | K2 CO2 [7M] |
| OR | |
| 4 a Write a programme to demonstrate all the uses of keyword super. | K3 CO2 [7M] |
| b Give an example where interface can be used to support multiple inheritance. | K3 CO2 [7M] |

UNIT - III

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| 5 a Write a program with nested try statements for handling exception. | K3 CO3 [7M] |
| b Write a program to create four threads using Runnable interface. | K3 CO3 [7M] |
| OR | |
| 6 a Explain different blocks associated with exception handling. | K2 CO3 [7M] |
| b With an example, demonstrate the concept of user defined packages. | K3 CO3 [7M] |

UNIT - IV

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| 7 a List and explain different types of Layout managers with suitable examples. | K2 CO4 [7M] |
| b Explain in detail Adapter classes, inner classes with appropriate example. | K2 CO4 [7M] |
| OR | |
| 8 a Explain AWT class hierarchy. | K2 CO4 [7M] |
| b Illustrate the use of Grid Bag layout. | K3 CO4 [7M] |

UNIT - V

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| 9 a What is the difference between init() and start () methods in an Applet?
When will each be executed? | K2 CO5 [7M] |
| b Write the applets to draw the Cube and Circle shapes. | K3 CO5 [7M] |
| OR | |
| 10 a How to move/drag a component placed in Swing Container? Explain. | K2 CO5 [7M] |
| b Write the applets to draw the Cube and Cylinder shapes. | K3 CO5 [7M] |
