Shri Shankaracharya Institute of Professional Management & Technology
Department of Computer Science & Engineering

Class Test – II Session- July – Dec, 2022 Month-February Sem- CSE 3rd -A

Subject- **Mathematics-III**

Code- B000311(014)

Time Allowed: 2 hrs

Max Marks: 40

Note: - 1) Attempt any TWO from unit IV

2) Attempt any THREE from unit V

Unit – IV

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.A	Using Lagrange's interpolation formula find f (9) <table><tr><td>x</td><td>5</td><td>7</td><td>11</td><td>13</td><td>17</td></tr><tr><td>f(x)</td><td>150</td><td>392</td><td>1452</td><td>2366</td><td>5202</td></tr></table>	8	Applying	CO4
1.B	Using Stirling's formula estimate tan 16 <table><tr><td>θ</td><td>0</td><td>5</td><td>10</td><td>15</td><td>20</td><td>25</td><td>30</td></tr><tr><td>tan θ</td><td>0</td><td>0.0875</td><td>0.1763</td><td>0.2679</td><td>0.3640</td><td>0.4663</td><td>0.5774</td></tr></table>	8	Applying	CO4
1.C	Using Newton's divided difference formula ,evaluate f(9) & f(15) <table><tr><td>x</td><td>4</td><td>5</td><td>7</td><td>10</td><td>11</td><td>13</td></tr><tr><td>f(x)</td><td>48</td><td>100</td><td>294</td><td>900</td><td>1210</td><td>2028</td></tr></table>	8	Applying	CO4

Unit – V

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
2.A	Solve dy/dx =x+y ,y(0) = 1 by Taylors series method. Hence find the value of y at x = 0.1 and x = 0.2	8	Evaluating	CO5
2.B	Solve the following differential equation by using modified Eulers method $\frac{dy}{dx}=x+\lvert\sqrt{y}\rvert$,y(0) = 1 at $0 \leq x \leq 0.4$ with h = 0.2	8	Evaluating	CO5
2.C	Apply Runge – Kutta method of fourth order to approximate the value of y at x = 0.2 in steps of 0.1 if $\frac{dy}{dx}=x+y^2$ given that y = 1 when x = 0	8	Applying	CO5
2.D	Find the Laplace transform of a) $(e^{-t}\sin t)t$ b) $(\sqrt{t} - \frac{1}{\sqrt{t}})^3$	8	Applying	CO5

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Department of Computer Science & Engineering
Class Test – II   Session – July – Dec 2022 Month - February

Semester – CSE III (B & C)   Subject – Mathematics III Code – B000311(014)

Time Allowed: 2 Hours   Maximum Marks: 40

Note: Solve Any 5 Questions

Q. N.	Questions	Marks	Level of Bloom's Taxonomy	COs
1	(i) Find $L\left\{e^{-t}\int_0^t \frac{\sin t}{t}dt\right\}$ (ii) Show that $\int_0^\infty t\,e^{-3t}\sin t\,dt = \frac{3}{50}$.	[4+4]	Applying	CO1
2	(i) Find inverse Laplace transform of $\frac{3s}{s^2+2s-8}$. (ii) Find inverse Laplace transform of $\cot^{-1}(s+1)$	[4+4]	Applying	CO1
3	Solve the following initial value problem $\frac{d^2y}{dt^2}+y=\sin 3t,\quad y(0)=y'(0)=0.$	[8]	Applying	CO1
4	(i) The probability density function of a continuous random variable $f(x)=\begin{cases}\frac{k}{x^3}, & 5\le x\le 10 \\ 0, & Otherwise\end{cases}$ Find value of k. (ii) Find the standard deviation for the following discrete probability distribution: x: 8 12 16 20 24 $p(x)$: 1/8 1/6 3/8 1/4 1/12 Do all the calculation for 2 decimal places.	[8]	Applying	CO3
5	The frequency of the accidents per shift in a factory is as shown below: Accidents per shift : 0 1 2 3 4 Frequency : 180 92 24 3 1 Calculate mean number of accidents and fit Poisson's distribution. Do Calculations for 2 places of decimals.	[8]	Applying	CO3
6	Articles are classified in three categories, 60% are less than 50, 35% are in the range 50-60, and only 5% are greater than 60. If this classification follows normal distribution, then find mean and standard deviation.	[8]	Applying	CO3

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Class Test – IISession- July – Dec, 2022Month-February

Sem-CSE 3rd [A&C]Subject-**PrinciplesofProgrammingLanguages, Code-B022313(022)**

TimeAllowed:2 hrs   Max Marks: 40

Note: -All questions are compulsory.

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
A.	Explain the concept of object oriented programming language.	[8]	Understanding	CO4
B.	Describe inheritance with its types.	[8]	Analyzing	CO4
C.	Enumerate the overloading. Explain operator overloading.	[8]	Analyzing	CO4
D.	Discuss the role exceptional handling in C++.	[8]	Applying	CO5
E.	Explain basic structure of C++. With example.	[8]	Understanding	CO5

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C : – IISession- July – Dec, 2022Month-February

Sem-CSE 3ʳᵈ[B]Subject-**PrinciplesofProgrammingLanguages, Code-B022313(022)**

TimeAllowed:2 hrs

MaxMarks: 40

Note: -*All questions are compulsory.*

Q.N.	Questions	Marks	Levelsof Bloom'stax onomy	COs
A.	Explain Pseudo Code and Flow Chart With Example.	[8]	Understanding	CO1
B.	Describe Modules And Modularization Criteria.	[8]	Analyzing	CO1
C.	Explain The Programming Structure Of LISP.	[8]	Understanding	CO3
D.	Differentiate Between Functional and Imperative Programming Language.	[8]	Analyzing	CO3
E.	Describe the various Characteristics of Programming Language	[8]	Understanding	CO2

Shri Shankaracharya Institute of Professional Management & Technology
Department of Computer Science & Engineering
Class Test – II   Session- July-Dec, 2022 Month- February
Sem- CSE 3rd[A, B & C] Subject- Data Structure & Algorithms   Code- B022312(022)
Time Allowed: 2 hrs   Max Marks: 40

Note: - All questions are compulsory.

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	Cos
Q1	Develop a Binary Tree from the given Inorder and Postorder Sequence. Inorder : D, B, F, E, A, G, C, L, J, K, H Postorder: D, E, F, B, G, L, J, K, H, C, A	[8]	Applying	CO3
Q2	Design prim's algorithm to find the minimum spanning tree of a graph. Explain it with suitable example.	[8]	Creating	CO4
Q3	Explain BFS and DFS(graph traversal algorithms) with suitable Example.	[8]	Applying	CO4
Q4	Create an AVL tree from the following data: 25, 20, 36, 10, 22, 30, 40, 12, 28, 38, 48	[8]	Creating	CO5
Q5	Create a B+ tree of order=5 from the following data: 48, 53, 60, 69, 57, 74, 110, 119, 78, 83, 120, 129, 154, 190, 88, 108, 195	[8]	Creating	CO5

Shri Shankaracharya Institute of Professional Management & Technology
Department of Electronics and Telecommunication Engineering
Class Test – II   Session-July-Dec, 2022 Month- February
Sem- CSE 3ʳᵈ Subject- Digital Electronics : B022314 (022) – A+B +C
Time Allowed: 2 hrs   Max Marks: 40

*Note: -   **Attempt 1 question from each part. All questions carry equal marks**.*

Q. NO.	Questions	Marks	Levels of Bloom's taxonomy	COs
Part-A				
1.	Implement Full Adder Circuit using two **4:1** Multiplexer	[8]	Apply	CO3
2.	Design **4 bit** Priority Encoder	[8]	Create	CO3
Part-B				
1.	Implement logic diagram for **T flip flop to D flip flop** Converter.	[8]	Apply	CO4
2.	Explain the working **of 4 bit Johnson counter** using Timing Diagram	[8]	Remember	CO4
Part-C				
1.	Design **MOD-6** Synchronous Counter using T flip flop	[8]	Create	CO4
2.	Design two input **TTL NAND** gate.	[8]	Apply	CO2
Part-D				
1.	With neat diagram explain operation of 2 input **CMOS NOR** gate.	[8]	Apply	CO2
2.	Implement 3 bit binary to Gray code converter using **PLA**.	[8]	Apply	CO2
Part-E				
1.	Explain **Mealy machine** with Example	[8]	Remember	CO5
2.	Explain **Moore Machine** with Example	[8]	Remember	CO5

"The day you **take complete responsibility for yourself**, the day you **stop making any excuse, that's** the day you start to the top."

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Department of Computer Science & Engineering

Class Test – II Session - July – Dec, 2022 **Month** - February

Sem- CSE 3rd [A & B] Subject-Name- Operating System **Subject-Code-** B022315(22)

Time Allowed: 2 hrs   Max Marks: 40

Note: - All Questions are compulsory.

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	COs
1.	a) Explain the Virtual Machine Operating System. b) Briefly explain the indexed allocation method.	[8]	Understanding	CO5
2.	What is paging? How it can be implemented? Discuss its advantages	[8]	Understanding	CO4
3.	A disk drive has 200 cylinders, numbered 0 to 199. The drive is currently serving a request at cylinder 53. The queue of pending requests, in FIFO order, is 98, 183, 37, 122, 14, 124, 65, 67. Starting from the current head position, what is the total distance (in cylinders) that the disk arm moves to satisfy all the pending requests for each of the following disk-scheduling algorithms? i) FCFS ii) SSTF iii) SCAN iv) LOOK v) C-SCAN vi) C-LOOK.	[8]	Applying	CO5
4.	Given free memory partitions of 100 K, 500 K, 200 K, 300 K, and 600 K (in order), how would each of the First-fit, Best-fit, and Worst-fit algorithms place processes of 212 K, 417 K, 112 K, and 426 K (in order)?	[8]	Applying	CO4
5.	Consider the following page reference string 1, 2,3,4,5,2,6,7,3,2,4,1,7,1,4,3,2,3,4,7,1. Compare the number of page faults with frame sizes 3,4 and 5 with LRU Page replacement algorithm.	[8]	Applying	CO4

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Class Test – II   Session- July-Dec, 2022   Month-February

Sem- CSE 3rd "C" Subject- Operating System **Code-** B022315(022)

Time Allowed: 2 hrs   Max Marks: 40

Note: - ***All questions carries 8 marks. Attempt any 5 questions.***

Q.N.	Questions	Marks	Levels of Bloom's taxonomy	Cos
Q1	Explain Bankers algorithm and Safty Algorithm with Pseudo Code.	[8]	Understanding	CO4
Q2	If the contents of refrence using is: 7,0,1,2,0,3,0,4,2,3,0,3 and there are three frames available in the memory , then compare the performance of given algorithm in terms of page fault : 1) FCFS 2) Optimal page replacement 3) LRU	[8]	Applying	CO3
Q3	Illustrate the concept of address translation from logical to physical address.	[8]	Understanding	CO3
Q4	Suppose that the head of a moving head disk with 200 track,0 to 199, is currently serving a request at 150 and has just finished request at 155. The queue of request is kept in FIFO order 86,147,91,177,94,150,102,156,145. What is the total number of head movement needed to specify these request for the following disk scheduling algorithms? 1) SSTF Scheduling 2) SCAN Scheduling	[8]	Applying	CO5
Q5	Describe virtual memory and explain the concept of demand paging?	[8]	Understanding	CO3
Q6	Describe Various file Accessing Methods with its advantags and disadvantages.	[8]	Analyzing	CO5