AR19

CODE: 19MCS1007 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I M.Tech.I Semester Regular/Supplementary Examinations, April, 2022

DISTRIBUTED DATA BASES
(Computer Science and Engineering)

Time: 3 Hours **Max Marks:60**

Answer any FIVE questions
All questions carry EQUAL marks

1.	a)	Explain Principles of Distributed Databases	6M
	b)	Illustrate Types of Data Fragmentation	6M
2.	a)	Discuss Equivalence transformations for Queries	6M
	b)	Explain Parametric Queries	6M
3.	a)	Discuss Supporting Atomicity of Distributed Transactions	6M
	b)	Illustrate Architectural Aspects of Distributed Transactions	6M
4.	a)	Discuss Basic Concepts of reliability	6M
	b)	Explain Distributed Database Administration	6M
5.	a)	Explain Alternative Client/Server Architectures	6M
	b)	Illustrate Object Migration	6M
6.	a)	Discuss Multidata base Concurrency Control	6M
	b)	Explain Query Processing Layers in Distributed Multi-DBMSs	6M
7.	a)	Elaborate Integrity Constraints in Distributed Databases	6M
	b)	What are Join Queries	6M
8.	a)	Explain Optimistic Methods for Distributed Concurrency Control	6M
	b)	Discuss Non blocking Commitment Protocols	6M

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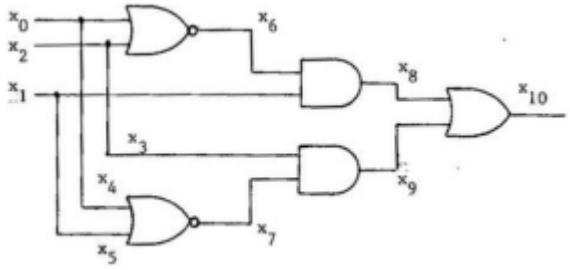
CODE: 19MVL1007 **SET-2**

ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I M.Tech I Semester Regular/Supplementary Examinations, April, 2022
DIGITAL SYSTEMDESIGN
(VLSI SystemDesign)

Time: 3 Hours **Max Marks:60**

Answer any FIVE questions
All questions carry EQUAL marks

1.	a)	Differentiate between state transition graph and ASM chart. Draw the ASM chart of a 3-bit up/down counter. How many ASM blocks are there in the ASM chart?	7M
	b)	Describe the rules for state assignment with an example.	5M
2.	a)	Give the procedural steps involved in the design of an iterative circuit.	4M
	b)	What are the differences between CPLD and FPGA? What are the advantages of FPGA?	8M
3.	a)	Using path sensitization method, find the test vectors for detecting stuck at faults at x6 and x9 for the below given circuit	8M



	b)	Draw the logic diagram for the expression f = a.b'.c + (d'.e'). Find the test vectors for detecting the faults at input line a and d using Boolean difference method.	4M
4.		Explain PLA minimization using multiple output prime implicant method with an example.	12M
5.	a)	Find the minimized PLA of the following output Boolean function by a PLA minimizer. f1 = (2,4,5,6,7,10,14,15): f2 = (4,5,7,11,15)	6M
	b)	Discuss about fault models of PLA testing.	6M
6.	a)	Examine the possibility of hazard in the OR-AND logic circuit whose Boolean function is given by = ∑(0,2, 6,7). Show how the hazard can be detected and eliminated.	7M
	b)	Discuss about state reduction in Asynchronous sequential machines.	5M
7.	a)	Discuss briefly about testable PLA design.	6M
	b)	Compare and contrast Races, Cycles and Hazards.	6M
8.		Explain the procedure involved in PODEM Algorithm with an example.	12M

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ADITYA INSTITUTE OF TECHNOLOGY AND MANAGEMENT, TEKKALI
(AUTONOMOUS)
I M.Tech I Semester Regular/Supplementary Examinations, April, 2022

ANALYTICAL AND NUMERICAL METHODS FOR STRUCTURAL ENGINEERING
(Structural Engineering)

Time: 3 Hours **Max Marks:60**

Answer any FIVE questions
All questions carry EQUAL marks

1 a) Find the positive root of the equation $x^3 - 5x + 1 = 0$. Using Bisection method correct upto 3 decimal places. 6M

b) Using N-R method find Square root of a number. Apply the methods to N = 24 to obtain the square root correct to 2 decimals. 6M

2 a) A function f(x) is given by the following table 6M

X	0	1	2	3	4	5	6
f(x)	176	185	194	203	212	220	229

Obtain the value of f(x) at x = 0.6

b) Use Gauss backward interpolation formula to find f(32), given that 6M
f(25) = 0.2707, f(30) = 0.3027, f(35) = 0.3386, f(40) = 0.3794.

3. a) From the following table values of x and $y = e^x$ interpolate values of y when x = 1.91 6M

x	1.7	1.8	1.9	2.0	2.1	2.2
y	5.4739	6.0496	6.6859	7.3891	8.1662	9.0250

b) The following table gives the values of $\log_{10} x$. Obtain the value of $\log_{10} 301$ 6M

x	300	304	305	307
$\log_{10} x$	2.4771	2.4829	2.4843	2.4871

4. a) The population of a certain town (as obtained from census data) is shown in the following table. Estimate the rate of growth of the population in the year 1981. 6M

Year(x)	1951	1961	1971	1981	1991
Population in thousands(y)	19.96	39.65	58.81	77.21	94.61

b) Obtain the first and second derivatives of the function given below at the point x = 1.2 using Stirling's central difference formula. 6M

x	1.0	1.1	1.2	1.3	1.4
f(x)	0.841	0.891	0.932	0.963	0.985

5. Evaluate the following integral $\int_0^2 e^{-x^2} dx$, by using Trapezoidal rule and Simpson's 3/8 rule 12M

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6.	a)	Given $\frac{dy}{dx} = -xy^2$, y(0) =2. Compute y(0.2) in steps of 0.1 using modified Euler's method.	6M
	b)	Solve: $\frac{dy}{dx} = xe^y$, y(0) = 0 by Picard's method and estimate y(0.1), y(0.3), and y(1).	6M
7.	a)	Given $\frac{dy}{dx} = x^2 + y^2$ with y(0) = 0. Estimate y(0.4) using Runga-Kutta fourth order method.	6M
	b)	Use Gauss Seidel method to perform three iterations for solving the equations -8x+y+z=1; x-5y+z=16; and x+y-4z=7.	6M
8.		Calculate seven iterations of the power method with scaling to approximate a dominant eigenvector of the matrix $A = \begin{bmatrix} 1 & 2 & 0 \\ -2 & 1 & 2 \\ 1 & 3 & 1 \end{bmatrix}$ Use $x_0 = (1,1,1)$ as the initial approximation	12M

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