

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)

II B. Tech I Semester MODEL QUESTION PAPER

NUMERICAL METHODS AND LINEAR ALGEBRA

(For AIML)

Time: 3 Hrs

Max. Marks: 70 M

Answer ONE Question from EACH UNIT

All questions carry equal marks

Assume suitable data if necessary

			CO	KL	M														
		UNIT-I																	
1	a).	Determine a real root of the equation $x \log_{10} x = 1.2$ by Regula-falsi method and correct to two decimal places	1	3	7														
	b).	Determine the cube root of 41 using Newton-Raphson method	1	3	7														
		OR																	
2	a).	Determine Newton's forward difference interpolation formula find Y(3), from the following table	1	3	7														
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">X</td> <td style="width: 10%;">0</td> <td style="width: 10%;">5</td> <td style="width: 10%;">10</td> <td style="width: 10%;">15</td> <td style="width: 10%;">20</td> <td style="width: 10%;">25</td> </tr> <tr> <td>Y</td> <td>7</td> <td>11</td> <td>14</td> <td>18</td> <td>24</td> <td>32</td> </tr> </table>	X	0	5	10	15	20	25	Y	7	11	14	18	24	32			
X	0	5	10	15	20	25													
Y	7	11	14	18	24	32													
	b).	Using Lagrange's interpolation formula find Y(10) from the following table	1	3	7														
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 10%;">X</td> <td style="width: 10%;">5</td> <td style="width: 10%;">6</td> <td style="width: 10%;">9</td> <td style="width: 10%;">11</td> </tr> <tr> <td>Y</td> <td>12</td> <td>13</td> <td>14</td> <td>16</td> </tr> </table>	X	5	6	9	11	Y	12	13	14	16							
X	5	6	9	11															
Y	12	13	14	16															
		UNIT-II																	
3	a).	Evaluate $\int_0^1 x^3 dx$ with five subintervals by trapezoidal rule	2	3	7														
	b).	Evaluate $\int_0^2 \frac{dx}{x^3 + x + 1}$ by using Simpson's 1/3 rd rule with $h=0.25$	2	3	7														
		OR																	
4	a).	Employ Taylor's method to obtain approximate value of y at $x=0.2$ for The differential equation $\frac{dy}{dx} = 2y + 3e^x, y(0)=0$	2	3	7														
	b).	Evaluate $y(0.2)$ using Runge-Kutta 4 th order method, given $\frac{dy}{dx} = \frac{y^2 - x^2}{y^2 + x^2}, (0)=1.$	2	3	7														
		UNIT-III																	
5	a).	Establish that the set $S = \{(1,2,1), (2, 1, 0), (1, -1, 2)\}$ forms a basis for $V_3(F)$	3	3	7														

	b).	Apply Gram-Schmidt orthogonalization to the following sequence of vectors in $\mathbb{R}^3 = \begin{bmatrix} 1 \\ 2 \\ 0 \end{bmatrix}; \begin{bmatrix} 8 \\ 1 \\ -6 \end{bmatrix}; \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}$ and determine orthogonal basis and orthonormal basis	3	3	7
		OR			
6		Determine the QR decomposition of A, where $A = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 0 \\ -1 & 0 & 1 \\ 0 & 0 & 1 \end{bmatrix}$	4	3	14
		UNIT-IV			
7	a).	If $T: V_3(\mathbb{R}) \rightarrow V_2(\mathbb{R})$ defined by $T(a_1, a_2, a_3) = (a_1 - a_2, a_2 - a_1)$ Establish that T is Linear Transformation	5	3	7
	b).	Determine the Range, Rank, Null space of $T: \mathbb{R}^2 \rightarrow \mathbb{R}^3$ defined by $T(x_1, x_2) = (x_1 + x_2, x_1 - x_2, x_2)$.	5	3	7
		OR			
8	a).	If α and β are vectors in the inner product space $V(F)$ prove that $\langle a\alpha - b\beta, a\alpha - b\beta \rangle = a\bar{a}\langle \alpha, \alpha \rangle - a\bar{b}\langle \alpha, \beta \rangle - b\bar{a}\langle \beta, \alpha \rangle + b\bar{b}\langle \beta, \beta \rangle$	5	3	7
	b).	State and Prove Cauchy Schwarz's inequality	5	3	7
		UNIT-V			
9		Determine the singular values of A: $A = \begin{bmatrix} 0 & 1 & 1 \\ \sqrt{2} & 2 & 0 \\ 0 & 1 & 1 \end{bmatrix}$ and Determine the SVD decomposition of A.	6	3	14
		OR			
10	a).	If these flags have rank 2, establish A and B in any way as $u_1v_1^T + u_2v_2^T$. $A_{\text{Sweden}} = A_{\text{Finland}} = \begin{bmatrix} 1 & 2 & 1 & 1 \\ 2 & 2 & 2 & 2 \\ 1 & 2 & 1 & 1 \end{bmatrix}; B_{\text{Benin}} = \begin{bmatrix} 1 & 2 & 2 \\ 1 & 3 & 3 \end{bmatrix}$	6	3	7
	b).	Singular Value Decomposition of matrix A is given by the following : $A = \begin{bmatrix} -1/\sqrt{2} & 1/\sqrt{2} \\ 1/\sqrt{2} & 1/\sqrt{2} \end{bmatrix} \begin{bmatrix} 4 & 0 \\ 0 & 2 \end{bmatrix} \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}^T$. Determine the inverse of A without explicitly materializing A.	6	3	7

CO-COURSE OUTCOME

KL-KNOWLEDGE LEVEL

M-MARKS

NOTE: Questions can be given as A,B splits or as a single Question for 14 marks

II B. Tech I Semester MODEL QUESTION PAPER

MATHEMATICAL FOUNDATIONS FOR MACHINE LEARNING

(For AIML)

Time: 3 Hrs.

Max. Marks: 70 M

Answer **ONE Question** from **EACH UNIT**

All questions carry equal marks

Assume suitable data if necessary

			CO	KL	M
UNIT-I					
1.	a).	Prove that $\{(p \vee q) \rightarrow r\} \wedge (\neg p) \rightarrow (q \rightarrow r)$ is a tautology	1	3	7
	b).	Verify that the following argument is valid by using the rules of inference If Clifton does not live in France, then he does not speak French. Clifton does not drive a Datsun If Clifton lives in France, then he rides a bicycle Either Clifton speaks French, or he drives a Datsun Hence, Clifton rides a bicycle	1	3	7
OR					
2.	a).	Verify that the following argument is valid by using the rules of inference, quantifiers. Babies are illogical. Nobody is despised who can manage a crocodile. Illogical people are despised. Hence, babies cannot manage crocodiles.	1	3	7
	b).	Find the PDNF and PCNF of $p \vee \neg q$	1	3	7
UNIT-II					
3.	a).	Find the number of ways of arranging 6 boys and 6 girls in a row. In how many of these arrangements i) All girls together ii) No two girls together iii) Boys and girls come alternatively.	2	3	7
	b).	i) Find the term independent of x in the expansion of $(x^2 + \frac{1}{x})^{12}$ ii) Find the coefficient of $x^5 y^{10} z^5 w^5$ in the expansion $(x + 7y + 3z + w)^5$	2	3	7
OR					
4.	a).	A cricket team of 11 is to be selected out of 14 players of whom 5 are bowlers. Find the number of ways in which this can be done so as to include atleast 3 bowlers.	2	3	7

	b).	Find the number of integers between 1 and 500 which are not divisible by any one of the integers 2,3 &5.	2	3	7
UNIT-III					
5.	a).	Let R denote a relation on the set of ordered pairs of positive integers by $(x,y)R(u,v)$ iff $xv = yu$. Then show that 'R' is an equivalence relation.	3	3	7
	b).	If $R = \{(1,1), (1,3), (2,1), (2,3), (3,1), (3,2), (3,3), (4,2), (4,4)\}$ defined on $A = \{1,2,3,4\}$ then draw the diagraph and give its relation matrix.	3	3	7
OR					
6.	a).	Define Semigroup, Monoid and Group with examples.	4	3	7
	b).	Show that the fourth roots of unity forms a group with respect to multiplication of complex numbers.	4	3	7
UNIT-IV					
7.	a).	How many integral solutions are there to $x_1 + x_2 + x_3 + x_4 + x_5 = 20$ where $x_1 \geq 3, x_2 \geq 2, x_3 \geq 4, x_4 \geq 6$ and $x_5 \geq 0$.	5	3	7
	b).	Solve the recurrence relation $S_n - 7S_{n-1} + 10S_{n-2} = 7 \cdot 3^n$ for $n \geq 2$.	5	3	7
OR					
8.	a).	Find the coefficient of x^{14} in $(1+x+x^2+x^3)^{10}$	5	3	7
	b).	Solve the recurrence relation $a_n - 5a_{n-1} + 6a_{n-2} = 0, n \geq 2$ by using generating functions	5	3	7
UNIT-V					
9.	a).	Describe the geometrical & physical interpretation of product of two vectors.	6	3	7
	b).	Find the directional derivative of $2x^2y^2 + 5z$ at $(-1,1,2)$ in the direction $3\bar{i} - 2\bar{j} - \bar{k}$	6	3	7
OR					
10.	a).	Show that $grad(1/r) = \frac{-\bar{r}}{r^3}$	6	3	7
	b).	Show that $Curl(f\bar{G}) = f curl\bar{G} + \nabla f \times \bar{G}$	6	3	7

CO-COURSE OUTCOME

KL-KNOWLEDGE LEVEL

M-MARKS

NOTE: Questions can be given as A,B splits or as a single Question for 14 marks

II B. Tech I Semester Regular Examinations

OBJECT ORIENTED PROGRAMMING WITH JAVA

(Common to AIML & CSG)

Time: 3 Hrs

Max. Marks:70

Answer ONE Question from EACH UNIT

All questions carry equal marks

Assume suitable data if necessary

			CO	KL	M
UNIT-I					
1.	a).	Discuss about the Features of Java.	1	2	7
	b).	Explain about Method Overloading with an example.	1	2	7
OR					
2.	a).	Explain Constructor Overloading with suitable example.	1	2	8
	b).	Discuss about Nested class with an example.	1	2	6
UNIT-II					
3.	a).	Explain the differences between Arrays and ArrayList.	2	2	7
	b).	Why Java String object is immutable? Explain by using a suitable example.	2	2	7
OR					
4.	a).	Explain the differences between String class and StringBuffer class.	2	2	7
	b).	Write a Java Program to implement various methods of HashMap class.	2	2	7
UNIT-III					
5.	a).	Why multiple inheritance is not possible through classes in Java? Explain it with an example.	3	3	8
	b).	Differentiate Abstract class and Interface.	3	2	6
OR					
6.	a).	Discuss about Byte Oriented IO and Character Oriented IO.	3	2	6
	b).	Discuss about procedure for creating packages with an example.	3	3	8
UNIT-IV					
7.	a).	Explain about the mechanism of Exception handling in Java.	4	2	7
	b).	Write a Java Program to create Custom Exception.	4	3	7
OR					
8.	a).	Explain about the life cycle of thread with a neat sketch.	4	2	7
	b).	Write a Java program to implement thread synchronization using multiplication tables.	4	3	7

UNIT-V					
9.	a).		5	2	7
	b).		5	3	7
OR					
10.	a).		5	2	8
	b).		5	2	6
CO-COURSE OUTCOME		KL-KNOWLEDGE LEVEL	M-MARKS		

NOTE: Questions can be given as A,B splits or as a single Question for 14 marks



Course Code: B20AM2103					
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)				R 20	
II B. Tech I Semester MODEL PAPER					
DATA BASE MANAGEMENT SYSTEMS					
(Common to AIML & CSG)					
Time: 3 Hrs			Max. Marks:70		
Answer ONE Question from EACH UNIT					
All questions carry equal marks					
Assume suitable data if necessary					
			CO	KL	M
UNIT-I					
1	a).	Compare Database Management Systems with File Processing Systems.	1	2	8
	b).	Explain the duties of DBA	1	2	6
OR					
2	a).	Explain Three-Tier architecture for data independence.	1	2	7
	b).	Describe the structure of a Database Management System.	1	2	7
UNIT-II					
3		Give syntax and apply the DDL and DML commands for defining and constructing two tables of your choice with appropriate data.	2	3	14
OR					
4		Illustrate different Integrity constraints in relational model with appropriate examples	2	3	14
UNIT-III					
5	a).	Illustrate E-R diagram with different mapping cardinalities	3	3	8
	b).	Illustrate aggregation in ER model with example.	3	3	6
OR					
6	a).	Apply different kinds of joins in SQL on example tables	3	3	8
	b).	Demonstrate how set operations are performed in SQL with examples.	3	3	6
UNIT-IV					
7	a).	Illustrate BCNF and 3NF	4	3	7
	b).	Given Relation R(A,B,C,D,E) and FD(A->B,B->C,C->D,D->E). Find closure of each column and then determine candidate keys.	4	3	7
OR					
8	a).	How do you use multivalued dependencies to determine whether a table is in 4NF or not?	4	3	7
	b).	A relation R(A,B,C,D) with FD's {A->B, B->C, C->D} is decomposed into R1(A,B,C) and R2(C,D). Find whether it is lossless join decomposition or not and why?	4	3	7

		UNIT-V			
9	a).	Explain ARIES Recovery Algorithm	5	2	6
	b).	Describe procedure to insert a new element in B+ tree	5	2	8
		OR			
10		Explain 2PL and time stamp ordering protocols	5	2	14
		CO-COURSE OUTCOME	KL-KNOWLEDGE LEVEL	M-MARKS	

NOTE: Questions can be given as A,B splits or as a single Question for 14 marks



		Course Code: B20AM2104			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)	R 20		
II B. Tech I Semester MODEL PAPER					
INTRODUCTION TO ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING					
(For AIML)					
Time: 3 Hrs		Max. Marks:70			
Answer ONE Question from EACH UNIT					
All questions carry equal marks					
Assume suitable data if necessary					
			CO	KL	M
UNIT-I					
1	a).	Explain about different problem characteristics of AI problem.	1	2	7
	b).	Differentiate intelligent agent and rational agent	1	2	7
OR					
2	a).	Explain about water jug problem and suggest a suitable solution to waterjug problem.	1	2	7
	b).	Explain how to perform Turing test.	1	2	7
UNIT-II					
3	a).	Explain A* algorithm with an example.	2	2	7
	b).	Apply nearest neighbor heuristic algorithm to solve TSP.	2	3	7
OR					
4	a).	Explain about Means ends analysis.	2	2	7
	b).	Apply simple hill climbing to solve 8-puzzle problem.	2	3	7
UNIT-III					
5	a).	Apply unification algorithm to the following : a. Like(john, x) Hate (john, x) b. Like (Marcus, Caesar, john) and Like(x, y) c. Like (john, kate) and Like (x, kate)	3	3	7
	b).	Construct Partitioned semantic net for the following facts: (i) All batters hit the bowler (ii) Every batter hit every bowler	3	3	7
OR					
6	a).	Apply the Resolution algorithm to Prove that: John likes peanuts. From the following facts: a. John likes all kind of food. b. Apple and vegetable are food. c. Anything anyone eats and not killed is food. d. Anil eats peanuts and still alive. e. Harry eats everything that Anil eats.	3	3	7
	b).	Explain about Clause conversion algorithm.	3	2	7

		UNIT-IV			
7	a).	Explain Perspectives and Issues in Machine Learning	4	2	7
	b).	Differentiate Supervised vs unsupervised	4	2	7
		OR			
8	a).	Describe Well-Posed Learning Problem	4	2	7
	b).	Differentiate Classification vs Regression	4	2	7
		UNIT-V			
9	a).	How to find a Maximally Specific Hypothesis? Explain	5	2	7
	b).	Explain about Concept Learning Task	5	2	7
		OR			
10	a).	Explain about Inductive Bias	5	2	7
	b).	Illustrate Candidate-Elimination algorithm	5	3	7
		CO-COURSE OUTCOME	KL-KNOWLEDGE LEVEL	M-MARKS	

NOTE: Questions can be given as A,B splits or as a single Question for 14 marks



Course Code: B20BS2201													
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					R20								
II B. Tech II Semester MODEL QUESTION PAPER													
PROBABILITY AND STATISTICS													
(Common to AIDS, AIML & CSE)													
Time: 3 Hrs.			Max. Marks: 70 M										
Answer ONE Question from EACH UNIT													
All questions carry equal marks													
Assume suitable data if necessary													
			CO	KL	M								
UNIT-I													
1.	a).	What are the different methods in collecting Primary and Secondary data.	1	2	7								
	b).	Define i)Skewness ii)Kurtosis iii)Moments	1	2	7								
OR													
2.	a).	The diameter of an electric cable is assumed to be a continuous random variable with p.d.f $f(x) = 6x(1 - x), 1 \leq x \leq 1$, verify that the above is p.d.f. also find mean and variance.	1	3	7								
	b).	Define Random variable and explain about types of random variables with examples. Also discuss discrete and continuous probability functions of random variables.	1	2	7								
UNIT-II													
3.	a).	A two-dimensional r.v. (X, Y) has a bivariate distribution given by $P(X, Y) = \frac{x^2+y}{32}$, for $x = 0,1,2,3$ and $y = 0,1$. Calculate marginal distributions of X and Y	2	3	7								
	b).	If X is a continuous random variable and $y=ax+b$, prove that $E(Y)=aE(X)+b$ and $V(Y)=a^2 V(X)$, where V stands for variance and a, b are constants.	2	3	7								
OR													
4.	a).	Let X be a random variable with the following distribution <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>X</td> <td>6</td> <td>9</td> <td>12</td> </tr> <tr> <td>P(X=x)</td> <td>1/6</td> <td>1/2</td> <td>1/3</td> </tr> </table> Find $E(x)$, $E(x^2)$ and using the laws of expectation calculate $E(2X+1)^2$	X	6	9	12	P(X=x)	1/6	1/2	1/3	2	3	7
X	6	9	12										
P(X=x)	1/6	1/2	1/3										
	b).	A random variable X has the probability density function is given by $f(x) = \begin{cases} x & \text{if } 0 \leq x < 1 \\ 2 - x & \text{if } 1 \leq x < 2 \\ 0 & \text{elsewhere} \end{cases}$	2	3	7								

		Find its moment generating function.																							
UNIT-III																									
5.	a).	Explain fitting of a parabola and obtain normal equations.	3	3	7																				
	b).	Fit a straight line to the following data by method of least squares <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>x</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>y</td> <td>1</td> <td>1.8</td> <td>1.3</td> <td>2.5</td> <td>6.3</td> </tr> </table>	x	0	1	2	3	4	y	1	1.8	1.3	2.5	6.3	3	3	7								
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y	1	1.8	1.3	2.5	6.3																				
OR																									
6.	a).	Define types of correlation and regression. Write the properties of correlation and regression coefficients.	4	2	7																				
	b).	Find the regression lines for the following data <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>x</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> </tr> <tr> <td>f(x)</td> <td>5</td> <td>18</td> <td>28</td> <td>12</td> <td>7</td> <td>6</td> <td>4</td> </tr> </table>	x	0	1	2	3	4	5	6	f(x)	5	18	28	12	7	6	4	4	3	7				
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UNIT-IV																									
7.	a).	Fit a Binomial distribution for the following data <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>x</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td>6</td> <td>7</td> <td>8</td> </tr> <tr> <td>f(x)</td> <td>56</td> <td>156</td> <td>132</td> <td>92</td> <td>37</td> <td>22</td> <td>4</td> <td>0</td> <td>1</td> </tr> </table>	x	0	1	2	3	4	5	6	7	8	f(x)	56	156	132	92	37	22	4	0	1	4	3	7
x	0	1	2	3	4	5	6	7	8																
f(x)	56	156	132	92	37	22	4	0	1																
	b).	Show that mean and variance are equal for Poisson distribution.	5	3	7																				
OR																									
8.	a).	In a normal distribution 31% of the items are under 45 and 8% are over 64. Find mean and standard deviation.	5	3	7																				
	b).	Define Uniform distribution and calculate its mean and Variance.	5	3	7																				
UNIT-V																									
9.	a).	Explain the following concepts (i) Large and small samples (ii) Type I and Type II errors (iii) Critical region and level of significance.	6	2	7																				
	b).	A coin is tossed 400 times and head turned up 216 times. Test the hypothesis is the coin unbiased?	6	3	7																				
OR																									
10.	a).	The marks obtained by 15 students in an examination have a mean 60 and variance 30. Find 99% confidence interval for the mean of the population marks, assuming it to be normal.	6	3	7																				
	b).	Fit a Poisson distribution and test for goodness of fit for the following data <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>X</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>f(x)</td> <td>17</td> <td>52</td> <td>54</td> <td>31</td> <td>6</td> </tr> </table>	X	0	1	2	3	4	f(x)	17	52	54	31	6	6	3	7								
X	0	1	2	3	4																				
f(x)	17	52	54	31	6																				

CO-COURSE OUTCOME

KL-KNOWLEDGE LEVEL

M-MARKS

NOTE: Questions can be given as A,B splits or as a single Question for 14 marks

II B. Tech II Semester MODEL QUESTION PAPER

COMPUTER ORGANIZATION

(Common to AIML & CSG)

Time: 3 Hrs.

Max. Marks:70

Answer ONE Question from EACH UNIT

All questions carry equal marks

Assume suitable data if necessary

			CO	KL	M
UNIT-I					
1	a.	Differentiate between Von Neumann and Harvard Architecture	1	2	7
	b.	Explain different arithmetic operations on floating point numbers	1	2	7
OR					
2	a.	Discuss three representations of Signed integers with suitable examples.	1	2	7
	b.	Describe the different types of computers.	1	2	7
UNIT-II					
3	a.	Construct an instruction cycle and describe it with suitable example	2	3	7
	b.	Explain various types of interrupts in detail.	2	2	7
OR					
4	a.	Explain in detail about timing and control	2	2	7
	b.	Illustrate the micro-programmed control unit.	2	2	7
UNIT-III					
5	a.	Write a program to evaluate the arithmetic statement using different instruction formats $Y=(e + f) * (g - h)$	3	2	7
	b.	What do you mean by addressing mode? Explain the following addressing modes with examples. i) Index addressing mode ii) Relative addressing mode	3	2	7
OR					
6	a.	Explain general register organization	3	2	7
	b.	Explain RISC with an example	3	2	7
UNIT-IV					
7	a.	What is the need of cache memory? Discuss any two mapping techniques used in cache memory.	4	2	7
	b.	Describe memory hierarchy with a neat block diagram in a computer system. Compare the parameters size, speed and cost per bit in the hierarchy.	4	2	7

		OR			
8	a.	With a neat sketch explain the working principle of DMA	4	2	7
	b.	Discuss about handshaking technique in asynchronous data transfer	4	2	7
		UNIT-V			
9	a.	What is multiprocessor system? Explain the advantages of multi processors over uniprocessors	5	2	7
	b.	What is parallel processing? Explain any parallel processing mechanism.	5	2	7
		OR			
10	a.	Explain the interconnection structure for multiprocessor systems	5	2	7
	b.	Explain the instruction pipeline processing in RISC architecture.	5	2	7

CO-COURSE OUTCOME

KL-KNOWLEDGE LEVEL

M-MARKS

NOTE: Questions can be given as A,B splits or as a single Question for 14 marks



Course Code: B20AM2202																	
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					R20												
II B. Tech. II Semester MODEL QUESTION PAPER																	
DATA WAREHOUSING AND DATA MINING																	
(For AIML)																	
Time: 3 Hrs.			Max. Marks: 70 M														
Answer ONE Question from EACH UNIT																	
All questions carry equal marks																	
Assume suitable data if necessary																	
			CO	KL	M												
UNIT-I																	
1.	a).	Compare OLAP and OLTP systems	1	2	7												
	b).	Illustrate the multitier data warehouse architecture	1	2	7												
OR																	
2.	a).	Explain multidimensional data model	1	2	8												
	b).	Demonstrate the different OLAP operations with examples	1	2	6												
UNIT-II																	
3.	a).	Summarize the process of Knowledge Discovery in Databases	2	2	6												
	b).	Classify the types of attributes that are used to describe data objects	2	2	8												
OR																	
4.	a).	Illustrate the different measurement and data collection issues	2	2	8												
	b).	Given two objects represented by the tuples (22,1,42,10) and (20,0,36,8) a) Compute Euclidean distance between the objects b) Compute Manhattan distance between objects c) Compute the Supremum distance between the two objects	2	3	6												
UNIT-III																	
5.	a).	A database has five transactions. Let min_sup D 60% and min_conf 80%. Apply Apriori algorithm to find all frequent itemsets. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>TID</th> <th>Items_bought</th> </tr> </thead> <tbody> <tr> <td>T100</td> <td>{M,O,N,K,E,Y}</td> </tr> <tr> <td>T200</td> <td>{D,O,N,K,E,Y}</td> </tr> <tr> <td>T300</td> <td>{M,A,K,E}</td> </tr> <tr> <td>T400</td> <td>{M,U,C,K,Y}</td> </tr> <tr> <td>T500</td> <td>{C,O,O,K,I,E}</td> </tr> </tbody> </table>	TID	Items_bought	T100	{M,O,N,K,E,Y}	T200	{D,O,N,K,E,Y}	T300	{M,A,K,E}	T400	{M,U,C,K,Y}	T500	{C,O,O,K,I,E}	3	3	7
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T500	{C,O,O,K,I,E}																
	b).	Outline about the compact representation of frequent itemsets	3	2	7												
OR																	
6.	a).	Demonstrate FP Growth algorithm with an example.	3	2	8												
	b).	Explain the significance of association analysis in the context of	3	2	6												

		market basket analysis																																																																																																							
		UNIT-IV																																																																																																							
7.	a).	<p>Apply decision tree algorithm on the following dataset</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th rowspan="3"></th> <th colspan="4">Predictors</th> <th>Response</th> </tr> <tr> <th>Outlook</th> <th>Temperature</th> <th>Humidity</th> <th>Wind</th> <th>Class</th> </tr> <tr> <th colspan="4"></th> <th>Play=Yes Play=No</th> </tr> </thead> <tbody> <tr><td>Day1</td><td>Sunny</td><td>Hot</td><td>High</td><td>Weak</td><td>No</td></tr> <tr><td>Day2</td><td>Sunny</td><td>Hot</td><td>High</td><td>Strong</td><td>No</td></tr> <tr><td>Day3</td><td>Overcast</td><td>Hot</td><td>High</td><td>Weak</td><td>Yes</td></tr> <tr><td>Day4</td><td>Rain</td><td>Mild</td><td>High</td><td>Weak</td><td>Yes</td></tr> <tr><td>Day5</td><td>Rain</td><td>Cool</td><td>Normal</td><td>Weak</td><td>Yes</td></tr> <tr><td>Day6</td><td>Rain</td><td>Cool</td><td>Normal</td><td>Strong</td><td>No</td></tr> <tr><td>Day7</td><td>Overcast</td><td>Cool</td><td>Normal</td><td>Strong</td><td>Yes</td></tr> <tr><td>Day8</td><td>Sunny</td><td>Mild</td><td>High</td><td>Weak</td><td>No</td></tr> <tr><td>Day9</td><td>Sunny</td><td>Cool</td><td>Normal</td><td>Weak</td><td>Yes</td></tr> <tr><td>Day10</td><td>Rain</td><td>Mild</td><td>Normal</td><td>Weak</td><td>Yes</td></tr> <tr><td>Day11</td><td>Sunny</td><td>Mild</td><td>Normal</td><td>Strong</td><td>Yes</td></tr> <tr><td>Day12</td><td>Overcast</td><td>Mild</td><td>High</td><td>Strong</td><td>Yes</td></tr> <tr><td>Day13</td><td>Overcast</td><td>Hot</td><td>Normal</td><td>Weak</td><td>Yes</td></tr> <tr><td>Day14</td><td>Rain</td><td>Mild</td><td>High</td><td>Strong</td><td>No</td></tr> </tbody> </table>		Predictors				Response	Outlook	Temperature	Humidity	Wind	Class					Play=Yes Play=No	Day1	Sunny	Hot	High	Weak	No	Day2	Sunny	Hot	High	Strong	No	Day3	Overcast	Hot	High	Weak	Yes	Day4	Rain	Mild	High	Weak	Yes	Day5	Rain	Cool	Normal	Weak	Yes	Day6	Rain	Cool	Normal	Strong	No	Day7	Overcast	Cool	Normal	Strong	Yes	Day8	Sunny	Mild	High	Weak	No	Day9	Sunny	Cool	Normal	Weak	Yes	Day10	Rain	Mild	Normal	Weak	Yes	Day11	Sunny	Mild	Normal	Strong	Yes	Day12	Overcast	Mild	High	Strong	Yes	Day13	Overcast	Hot	Normal	Weak	Yes	Day14	Rain	Mild	High	Strong	No	4	3	8
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	b).	Demonstrate the different attribute selection measures	4	2	6																																																																																																				
		OR																																																																																																							
8.	a).	Explain the different methods used for evaluating the performance of classifier	4	2	7																																																																																																				
	b).	<p>Apply Naïve Bayes on the following binary classification problem</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Color</th> <th>Type</th> <th>Origin</th> <th>Stolen ?</th> </tr> </thead> <tbody> <tr><td>Red</td><td>Sports</td><td>Domestic</td><td>Yes</td></tr> <tr><td>Red</td><td>Sports</td><td>Domestic</td><td>No</td></tr> <tr><td>Red</td><td>Sports</td><td>Domestic</td><td>Yes</td></tr> <tr><td>Yellow</td><td>Sports</td><td>Domestic</td><td>No</td></tr> <tr><td>Yellow</td><td>Sports</td><td>Imported</td><td>Yes</td></tr> <tr><td>Yellow</td><td>SUV</td><td>Imported</td><td>No</td></tr> <tr><td>Yellow</td><td>SUV</td><td>Imported</td><td>Yes</td></tr> <tr><td>Yellow</td><td>SUV</td><td>Domestic</td><td>No</td></tr> <tr><td>Red</td><td>SUV</td><td>Imported</td><td>No</td></tr> <tr><td>Red</td><td>Sports</td><td>Imported</td><td>Yes</td></tr> </tbody> </table> <p>Classify whether the following automobile is stolen or not? (Color="Red", Type="SUV", Origin="Domestic", Stolen=?)</p>	Color	Type	Origin	Stolen ?	Red	Sports	Domestic	Yes	Red	Sports	Domestic	No	Red	Sports	Domestic	Yes	Yellow	Sports	Domestic	No	Yellow	Sports	Imported	Yes	Yellow	SUV	Imported	No	Yellow	SUV	Imported	Yes	Yellow	SUV	Domestic	No	Red	SUV	Imported	No	Red	Sports	Imported	Yes	4	3	7																																																								
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		UNIT-V																																																																																																							
9.	a).	Consider that the data mining task is to cluster the following seven	5	3	8																																																																																																				

		points P1, P2, P3, P4, P5, P6, P7 into two clusters. P1 (1,1), P2 (2,2), P3 (3,4), P4 (5,7), P5 (3,5), P6 (4,5) and P7(4,6). The distance function is Euclidean distance. Apply K-means algorithm with two iterations to form two clusters by taking the initial cluster centres as points P1 and P4.			
	b).	Classify Clustering algorithms	5	2	6
		OR			
10.	a).	Compare the strengths and weaknesses of K-Means, Agglomerative Hierarchical Clustering and DBSCAN	5	2	7
	b).	Demonstrate DBSCAN algorithm with an example	5	2	7
		CO-COURSE OUTCOME			
		KL-KNOWLEDGE LEVEL			
					M-MARKS

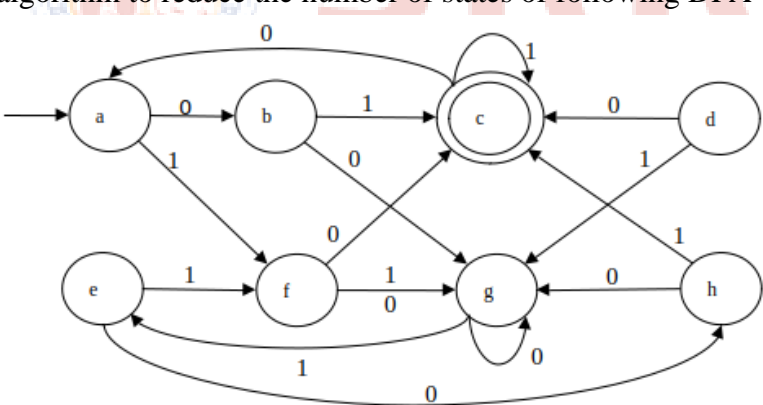
NOTE: Questions can be given as A,B splits or as a single Question for 14 marks



Answer ONE Question from EACH UNIT

All questions carry equal marks

Assume suitable data if necessary

			CO	KL	M
UNIT-I					
1.	a).	Construct DFA for the following languages i) $L = \{w/w \text{ begins with } 1 \text{ and ends with } 00, w \text{ in } \{0,1\}^*\}$ ii) $L = \{w/w \text{ contains Even number of zeros and Even number of ones, } w \text{ in } \{0,1\}^*\}$	1	3	7
	b).	Construct NFA for accepting the strings $\{ab, ba\}$ and then convert it to DFA.	1	3	7
OR					
2.	a).	Define Regular expression and construct NFA with ϵ moves equivalent to the Regular Expression $(ab + aab)^*$	1	3	7
	b).	Explain about minimization algorithms and apply minimization algorithm to reduce the number of states of following DFA 	1	3	7
UNIT-II					
3.	a).	Apply pumping lemma to show the set of all even length palindrome strings is not regular.	2	3	7
	b).	Construct Context free grammar for $L = \{WCWR / W \text{ in } (0+1)^*\}$	2	3	7
OR					
4.	a).	Sketch the relationship between different formal languages and corresponding finite automata.	2	2	7
	b).	Show that intersection of Regular language and context free languages is context free by taking an example.	2	2	7

UNIT-III					
5.	a).	Demonstrate different phases of a compiler and generate the output of each phase position := initial + rate * 45.	3	3	7
	b).	Explain about Recognition of tokens.	3	2	7
OR					
6.	a).	Demonstrate the working of Shift-Reduce parser for the string and then test whether the string id + id * id is accepted or not in the CFG $E \rightarrow E+E / E * E / id$	3	3	7
	b).	Construct FIRST and FOLLOW sets for the following CFG $S \rightarrow AB$ $A \rightarrow aA / b / \epsilon$ $B \rightarrow cB / d$	3	3	7
UNIT-IV					
7.	a).	Construct LR (0) sets of items and then SLR parsing table for the following CFG. $S \rightarrow AA$ $A \rightarrow aA / b$ And then test whether the string abb is accepted or not.	4	3	14
OR					
8.	a).	Explain about evaluation of SDD at nodes of a parse tree by taking an example.	4	2	7
	b).	Translate the expression $a = (b * -c) + (b * -c)$ into Quadruples, triples and indirect triples.	4	2	7
UNIT-V					
9.	a).	Explain about optimization of basic blocks.	5	2	7
	b).	Define Symbol table? Explain about the data structures used for Symbol table.	5	2	7
OR					
10.	a).	Generate target code from sequence of three address statements using simple code generator algorithm.	5	3	7
	b).	Discuss about peephole optimization techniques.	5	2	7

CO-COURSE OUTCOME

KL-KNOWLEDGE LEVEL

M-MARKS

NOTE: Questions can be given as A,B splits or as a single Question for 14 marks

Course Code: B20HS2201					
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					R20
II B.Tech. II Semester MODEL QUESTION PAPER					
MANAGERIAL ECONOMICS AND FINANCIAL ACCOUNTANCY					
(Common to AIML, CSE & IT)					
Time: 3 Hrs.			Max. Marks: 70 M		
Answer ONE Question from EACH UNIT					
All questions carry equal marks					
Assume suitable data if necessary					
			CO	KL	M
UNIT-I					
1.	a).	Define Managerial Economics and Explain its nature and scope	1	2	14
OR					
2.	a).	What do you mean by Elasticity of demand? Explain in detail about degrees of Price elasticity of Demand?	1	2	14
UNIT-II					
3.	a).	Define Cost & classify the Elements of Cost?	2	2	14
OR					
4.	a).	How do you calculate BEP? What are its Assumptions and Applications?	2	3	14
UNIT-III					
5.	a).	What are Market Structures and explain the features of Perfect Competition?	3	2	14
OR					
6.	a).	Why is pricing significant in the context of business? Describe any four pricing practices?	3	2	14
UNIT-IV					
7.	a).	Describe about the Importance of Accounting and types of accounts	4	2	14
OR					
8.	a).	From the following Trail Balance of Suresh as at December 31, 2013, prepare Trading, Profit and Loss Account for the year ended December 31, 2013 and a Balance Sheet as on that date:	4	3	14

		Dr. (Rs.)	Cr. (Rs.)		
		Purchases of materials	32,000		
		Productive wages	13,000		
		Sales		60,000	
		Salaries	4,000		
		Travelling expenses	1,000		
		Carriage inwards	550		
		Insurance	300		
		Commission	650		
		Rent and rates	1,000		
		Cash in hand	350		
		Cash at bank	5,550		
		Repairs	600		
		Sundry expenses	110		
		Mortgage		6,100	
		Buildings	8,000		
		Machinery	3,000		
		Furniture	1,000		
		Stock on hand (1.1.2013)	11,500		
		Capital		21,310	
		Sundry debtors	9,000		
		Sundry creditors		4,200	
			91,610	91,610	
		Closing stock Rs. 12,000			
UNIT-V					
9.	a).	Explain about capital and the sources available for raising finance		5	2
OR					
10.	a).	Explain about the concept and causes of depreciation. Evaluate the straight- line method and diminishing balance methods		5	2
CO-COURSE OUTCOME		KL-KNOWLEDGE LEVEL		M-MARKS	

NOTE: Questions can be given as A,B splits or as a single Question for 14 marks