

II B.Tech. I Semester MODEL QUESTION PAPER

DISCRETE MATHEMATICS AND GRAPH THEORY

(Common to CSE, AIML, CSBS, IT, AIDS, CSG, CIC, CSIT)

Time: 3 Hrs.

Max. Marks: 70 M

Answer Question No.1 compulsorily

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

Assume suitable data if necessary

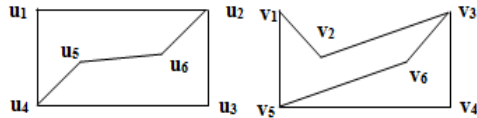
10 x 2 = 20 Marks

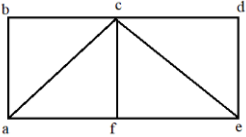
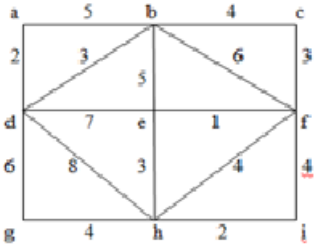
			CO	KL	M
1.	a).	Write the inverse, converse and contra positive of " If $\triangle ABC$ is a right angle triangle then $AC^2 = AB^2 + BC^2$ "	1	2	2
	b).	Translate the following statement into symbolic form. "Any integer is either positive or negative".	1	2	2
	c).	Define relation matrix and give an example.	2	1	2
	d).	Define Lattice and give an example.	2	1	2
	e).	How many 4 digit numbers divisible by 5 can be formed using the digits 3, 7, 1, 5, 6.	3	2	2
	f).	Solve the recurrence relation $a_n - 5a_{n-1} + 6a_{n-2} = 0, n \geq 2$.	3	3	2
	g).	Define adjacency matrix.	4	1	2
	h).	Define Eulerian graph.	4	1	2
	i).	Define tree and give an example.	5	1	2
	j).	Define Graph coloring.	5	1	2

5 x 10 =50Marks

UNIT-1

2.	a).	Prove that $\{[(p \vee q) \rightarrow r] \wedge \neg p\} \rightarrow (q \rightarrow r)$ is a tautology.	1	3	5
	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	5
		OR			
3.	a).	Verify that the following argument is valid by using the rules of inference, quantifiers. Babies are illogical.	1	3	5

		Nobody is despised who can manage a crocodile. Illogical people are despised. Hence, babies cannot manage crocodiles.			
	b).	Find the PDNF and PCNF of $p \vee \neg q$	1	3	5
UNIT-2					
4.	a).	Find the number of integers between 1 and 250 which are divisible by any of the integers 2, 3, 5 or 7.	2	3	5
	b).	Let R denote a relation on the set of ordered pairs of positive integers such that $(x, y)R(u, v)$ if and only if $xv = yu$. Then establish that 'R' is an equivalence relation.	2	3	5
OR					
5.	a).	Define Hasse diagram and draw Hasse diagram of $(P(A), \subseteq)$, where $A = \{1, 2, 3\}$.	2	3	5
	b).	Define bijective and inverse function. Find the inverse of the function $f(x) = 5x + 2$.	2	3	5
UNIT-3					
6.	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.	3	3	5
	b).	i) Determine the term independent of x in the expansion of $(x^2 + \frac{1}{x})^{12}$ ii) Determine the coefficient of $x^5 y^{10} z^5 w^5$ in the expansion $(x + 7y + 3z + w)^{25}$	3	3	5
OR					
7.	a).	How many integral solutions are there to $x_1 + x_2 + x_3 + x_4 + x_5 = 20$ where $x_1 \geq 3, x_2 \geq 2, x_3 \geq 4, x_4 \geq 6, x_5 \geq 0$.	3	3	5
	b).	Solve the recurrence relation $a_n - 5a_{n-1} + 6a_{n-2} = 0, n \geq 2$ using generating functions.	3	3	5
UNIT-4					
8.		Define isomorphism of graphs and determine the Isomorphism between the following graphs. 	4	3	10
OR					
9.	a).	Prove that in any graph, there is an even number of vertices of odd degree.	4	3	5

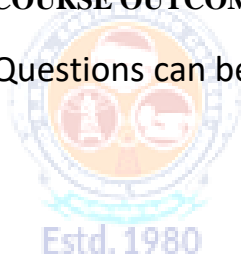
	b).	Define Hamiltonian graph and find the Hamiltonian path and Hamiltonian graph in the following graph. 	4	3	5
UNIT-5					
10.	a).	State and Prove Euler's formula for planar graphs.	5	3	5
	b).	Show that a tree with n vertices has exactly (n-1) vertices.	5	3	5
OR					
11.		Find the minimal spanning tree for the following weighted graph 	5	3	10

CO-COURSE OUTCOME

KL-KNOWLEDGE LEVEL

M-MARKS

NOTE: Questions can be given as A,B splits or as a single Question for 10 marks



SRKR

ENGINEERING COLLEGE

AUTONOMOUS

Course Code: B23HS2101					
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					R23
II B.Tech. I Semester MODEL QUESTION PAPER					
UNIVERSAL HUMAN VALUES-2: UNDERSTANDING HARMONY AND ETHICAL HUMAN CONDUCT					
(Common to all programmes of Engineering)					
Time: 3 Hrs.			Max. Marks: 70 M		
Answer Question No.1 compulsorily					
Answer ONE Question from EACH UNIT					
Assume suitable data if necessary					
10 x 2 = 20 Marks					
			CO	KL	M
1.	a).	What are the basic guidelines for value education?	1	2	2
	b).	What is MBTI personality test?	1	2	2
	c).	How can we differentiate between the needs of the Self and the needs of the Body?	2	2	2
	d).	What are the characteristics and activities of the Self (I)?	2	2	2
	e).	How is 'respect' defined in the context of human interaction?	3	2	2
	f).	How is society described in relation to the family?	3	2	2
	g).	How are the four orders of nature interconnected?	4	2	2
	h).	How does the idea of self-regulation in nature contribute to its harmony?	4	2	2
	i).	Define definitiveness of (ethical) human conduct.	5	2	2
	j).	Explain how humanistic education can influence professional ethics.	5	2	2
5 x 10 = 50 Marks					
		UNIT - I	CO	KL	M
2.	a).	Discuss natural acceptance	1	2	5
	b).	Differentiate prosperity and deprivation	1	2	5
		OR			
3.	a).	Deliberate the right understanding in perspective to self exploration.	1	2	5
	b).	What are the key functions of the MBTI? Explain.	1	2	5
UNIT - II					
4.	a).	Illustrate coexistence of "I" and "Body".	1	2	5
	b).	Distinguishing between the Needs of the Self and the Body	1	2	5
		OR			
5.	a).	Discuss Characteristic activities of Harmony with "I".	1	2	5
	b).	Explain Sanyam and Health.	1	2	5

UNIT - III					
6.	a).	Write a note on human-human relationship as regarding harmony.	2	2	5
	b).	Differentiate intention and competence.	2	2	5
OR					
7.	a).	Discuss salient values in relationship.	3	2	5
	b).	Illustrate universal Harmonious Society - an Undivided society.	3	2	5
UNIT - IV					
8.		Discuss orders of life in nature and its significance self regulation of individual	4	2	10
OR					
9.		Illustrate existence of human being as coexistence with universe in perspective of space	4	2	10
UNIT - V					
10.		Discuss importance of professional competence for augmenting universal human order.	5	2	10
OR					
11.	a).	Case study of typical holistic technologies.	5	2	5
	b).	Role of engineer in promoting harmony in society	5	2	5

CO-COURSE OUTCOME

KL-KNOWLEDGE LEVEL

M-MARKS

NOTE: Questions can be given as A,B splits or as a single Question for 10 marks

Course Code: B23IT2101

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)

R23

II B.Tech. I Semester MODEL QUESTION PAPER

DATABASE MANAGEMENT SYSTEMS

(Common to AIDS, IT, CSBS)

Time: 3 Hrs.

Max. Marks: 70 M

Answer Question No.1 compulsorily

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

Assume suitable data if necessary

10 x 2 = 20 Marks

			CO	KL	M
1.	a).	List any four advantages of Database Systems.	1	1	2
	b).	Describe unary and binary relationships in E-R diagram.	2	2	2
	c).	Explain the use of primary key with an example.	2	1	2
	d).	Describe select (σ) operator in relational algebra with an example.	3	2	2
	e).	Explain the use of "in" operator in SQL.	3	1	2
	f).	In what way, a view and a base table are different.	2	2	2
	g).	Explain the purpose of Normalization.	4	2	2
	h).	How dependency preservation is checked after decomposition?	4	1	2
	i).	Explain atomicity of a transaction with an example.	5	1	2
	j).	Draw state diagram of a Transaction	5	1	2

Estd. 1980

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5 x 10 = 50 Marks

UNIT-1					
2.	a).	Compare database system with file system.	1	2	5
	b).	Describe various mapping cardinalities in E-R diagrams with suitable examples.	2	2	5
OR					
3.	a).	Explain the function of each component in DBMS architecture.	1	2	5
	b).	Model an E-R diagram for Library Information System by considering the activities in the system.	2	3	5
UNIT-2					
4.	a).	Explain DDL and DML Commands with examples.	2	2	5
	b).	Make use of E-R model concepts to convert the following E-R diagram into a collection of relations.	2	3	5

		OR			
5.	a).	Describe foreign key constraint and unique constraint with suitable examples.	2	2	5
	b).	<p>Consider the following relational database: Emp(<u>ename</u>,street,city) , Works(<u>ename</u>,company-name,salary), company(<u>company-name</u>,city),manages(<u>ename</u>,manager-name) Use relational algebra operators to answer the following.</p> <p>i) Find the names and cities of all employees who work for First Bank Corporation</p> <p>ii) Find names, street, and cities of all employees who work for First Bank Corporation and earn more than 10,000</p> <p>iii) Find all employees in the database who earn more than every employee of Small Bank Corporation</p>	2	3	5
		UNIT-3			
6.	a).	What is the difference between a nested query and a correlated query?	3	2	4
	b).	<p>Consider the following database: Students (S_ID, Dept, CGPA) Courses(C_ID, Offered_By_Dept, Credits) Enrolled (S_ID, C_ID, Grade) Apply SQL concepts to answer the following queries.</p> <p>i) Find the best CGPA in each department.</p> <p>ii) Find the IDs of students who enrolled for some course offered by other department. Display student dept and course offering department along with S_ID.</p> <p>iii) Find the IDs of students who got at least two “A” grades.</p>	3	3	6
		OR			
7.	a).	Explain various types of joins in SQL	3	2	5
	b).	Explain the use of <i>group by</i> and <i>having</i> clauses with an example.	3	2	5
		UNIT-4			
8.	a).	Define lossless join decomposition. Suppose that we decompose the schema R(A,B,C,D,E) into R1(A,B,C) and R2(A,D,E). Determine whether this decomposition is a lossless decomposition under the following functional dependencies: F={A→BC,BD→E,B→D,E→A}	4	3	5
	b).	Determine that a relation in BCNF is also in 3NF and not vice-versa with a suitable example.	4	3	5
		OR			

9.	a).	Explain Fourth Normal form with an example	4	2	5
	b).	Let R (ABCDE) F={A→B, BC→D, D→E}. Find all candidate keys of R and also determine the highest normal of R.	4	3	5
UNIT-5					
10.	a).	Explain ARIES recovery algorithm.	5	2	5
	b).	Explain Primary Indexing	6	2	5
OR					
11.	a).	Explain 2-Phase Locking Protocol.	5	2	5
	b).	Demonstrate the construction of a B+ tree of order 3 for the following key values: 20,15,10,5,8,30,1,40,35,25	6	2	5

CO-COURSE OUTCOME

KL-KNOWLEDGE LEVEL

M-MARKS

NOTE: Questions can be given as A,B splits or as a single Question for 10 marks



II B.Tech. I Semester MODEL QUESTION PAPER

OBJECT-ORIENTED PROGRAMMING THROUGH JAVA

(Common to AIDS, IT, CSBS)

Time: 3 Hrs.

Max. Marks: 70 M

Answer Question No.1 compulsorily

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

Assume suitable data if necessary

10 x 2 = 20 Marks

			CO	KL	M
1.	a).	What is the purpose of the main method in a Java program?	1	1	2
	b).	Explain the difference between ++i and i++ in Java.	1	2	2
	c).	What is the significance of the this keyword in Java?	2	2	2
	d).	Explain method overloading with an example.	2	3	2
	e).	How do you declare a two-dimensional array in Java? Provide a code example.	3	3	2
	f).	What is the purpose of the super keyword in Java inheritance?	3	2	2
	g).	What is the role of the finally block in exception handling?	4	2	2
	h).	How do you import a class from a package in Java? Provide a code example.	4	3	2
	i).	What is the difference between String and String Buffer in Java?	5	2	2
	j).	Explain the purpose of the synchronized keyword in Java multithreading.	5	2	2

5 x 10 = 50 Marks

UNIT-1					
2.	a).	Describe the main principles of Object-Oriented Programming.	1	2	5
	b).	Write a simple Java program to display "Hello, World!" and explain each line of code.	1	3	5
OR					
3.	a).	List and explain the different data types available in Java.	1	2	5
	b).	What is type casting in Java? Write a program to demonstrate implicit and explicit type casting.	1	3	5
UNIT-2					
4.	a).	Explain the concept of constructors in Java. How do they differ from regular methods?	2	2	5
	b).	Write a Java program to create a class with overloaded constructors. Show how each constructor is called.	2	3	5

		OR			
5.	a).	Define method overriding. How is it different from method overloading?	2	2	5
	b).	Provide an example to demonstrate method overriding in Java.	2	3	5
		UNIT-3			
6.	a).	Describe the process of declaring and initializing a one-dimensional array in Java.	3	3	5
	b).	Write a Java program to find the maximum element in an array of integers.	3	3	5
		OR			
7.	a).	Explain the concept of inheritance in Java. What are the different types of inheritance supported by Java?	3	2	5
	b).	Write a Java program to demonstrate multilevel inheritance.	3	3	5
		UNIT-4			
8.	a).	What are packages in Java? Why are they used?	4	2	5
	b).	Create a package named com.example and a class named Hello within this package. Write a program to display "Hello, Package!".	4	3	5
		OR			
9.	a).	Describe the try-catch-finally mechanism in Java exception handling.	4	2	5
	b).	Write a Java program that demonstrates handling multiple exceptions using multiple catch blocks.	4	3	5
		UNIT-5			
10.	a).	Explain the differences between String, StringBuilder, and StringBuffer.	5	2	5
	b).	Write a Java program to reverse a string using StringBuilder.	5	3	5
		OR			
11.	a).	What is JDBC? Describe its architecture.	5	2	5
	b).	Write a Java program to establish a connection to a MySQL database and execute a simple query to retrieve data from a table.	5	3	5

CO-COURSE OUTCOME

KL-KNOWLEDGE LEVEL

M-MARKS

NOTE: Questions can be given as A,B splits or as a single Question for 10 marks

Course Code: B23AD2101

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)

R23

II B.Tech. I Semester MODEL QUESTION PAPER

ADVANCED DATA STRUCTURES & ALGORITHM ANALYSIS

For AIDS

Time: 3 Hrs.

Max. Marks: 70 M

Answer Question No.1 compulsorily

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

Assume suitable data if necessary

10 x 2 = 20 Marks

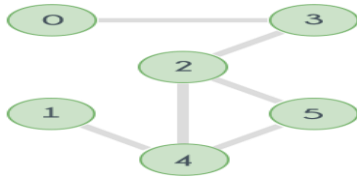
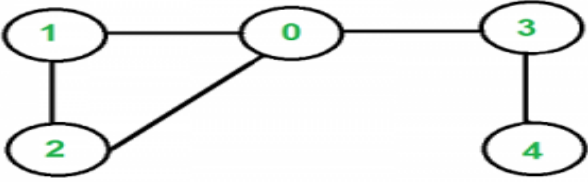
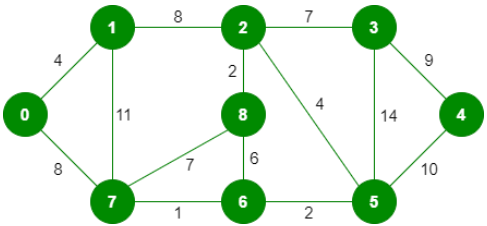
			CO	KL	M
1.	a).	Write any two applications of B-tree?	1	2	2
	b).	Define an articulation point?	1	1	2
	c).	Define Convex hull problem?	2	1	2
	d).	Explain the control abstraction of divide and conquer?	2	2	2
	e).	What is job sequencing with deadlines problem?	3	1	2
	f).	Define principle of optimality?	3	1	2
	g).	Define Sum of Subsets problem?	3	1	2
	h).	Explain about Least Cost Search?	3	2	2
	i).	Define P and NP classes	4	1	2
	j).	What is satisfiability Problem	4	1	2

Estd. 1980

AUTONOMOUS

5 x 10 = 50 Marks

UNIT-1					
2.	a).	What are the applications of AVL-tree?	1	1	3
	b).	Construct a B-Tree of order 4 for the following elements 5, 3, 21, 9, 13, 22, 7, 10, 11, 14, 8, 16	1	3	7
OR					
3.	a).	Construct a Max Heap for the following list of elements 23, 45, 65, 12, 43, 67, 73, 87, 34, 88.	1	3	3
	b).	Construct an AVL Tree for the following list of elements 45, 89, 95, 36, 29, 20, 28, 34.	1	3	7
UNIT-2					
4.	a).	Apply articulation algorithm to find the articulation points in the given graph	1	3	5

		 <p style="text-align: center;">Fig. 2</p>			
	b).	Apply quick sort algorithm to sort the following list of elements 5, 3, 1, 9, 8, 2, 4, 7	2	3	5
		OR			
5.	a).	Write an algorithm for BFS and apply BFS algorithm to traverse in the following graph.	1	3	5
					
	b).	Apply Divide and conquer technique, explain strassen's matrix multiplication?	2	3	5
		UNIT-3			
6.	a).	Apply the greedy method, to find the optimal solution for following of the knapsack problem $n = 3$, $m = 20$ $(P_1, P_2, P_3) = (25, 24, 15)$ and $(W_1, W_2, W_3) = (18, 15, 10)$.	3	3	5
	b).	Apply kruskal's algorithm, to find the minimum cost spanning tree for the given graph	3	3	5
					
		OR			
7.		Construct an OBST for $c(i, j) \ 0 \leq i \leq j \leq 4$ the identifier set $(a_1, a_2, a_3, a_4) = (\text{do}, \text{if}, \text{int}, \text{while})$ with $(p_1, p_2, p_3, p_4) = (3, 3, 1, 1)$ and $q(0:4) = (2, 3, 1, 1, 1)$	3	3	10
		UNIT-4			
8.		Solve the following sum of subsets problem $n=6$, $M=30$ and $W(1..6)=(5,10,12,13,15,18)$ using Backtracking	3	3	10
		OR			
9.		Solve the following 0/1 knapsack problem using LCBB. $n = 4$, $(P_1, P_2, P_3, P_4) = (10, 10, 12, 18)$ and $(W_1, W_2, W_3, W_4) = (2, 4, 6, 9)$ and $m = 15$.	3	3	10

UNIT-5					
10.	a).	Explain the classes of NP- Hard and NP-Complete	4	2	5
	b).	Prove that clique Decision Problem is NP-Complete	4	3	5
OR					
11.	a).	Explain about Job Shop Scheduling	4	2	5
	b).	Prove cook's theorem	4	3	5

CO-COURSE OUTCOME

KL-KNOWLEDGE LEVEL

M-MARKS

NOTE: Questions can be given as A,B splits or as a single Question for 10 marks



SRKR
ENGINEERING COLLEGE
AUTONOMOUS

Course Code: B23HS2201

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)

R23

II B.Tech. II Semester MODEL QUESTION PAPER

MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS

(Common to AIDS, CSE, CIC, CSG, CSIT, CE, ECE, EEE, ME)

Time: 3 Hrs.

Max. Marks: 70 M

Answer Question No.1 compulsorily

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

Assume suitable data if necessary

10 x 2 = 20 Marks

			CO	KL	M
1.	a)	Define Managerial Economics.	1	1	2
	b)	State the Importance of Demand forecasting.	1	1	2
	c)	Write about Fixed cost and Variable cost.	2	1	2
	d)	List out the Applications of Break-even analysis.	2	1	2
	e)	Define Double Entry System of Accounting.	3	1	2
	f)	List the items under Current assets and Current liabilities.	4	1	2
	g)	Name the types of Imperfect Competition.	5	1	2
	h)	Identify the methods of Internet Pricing.	5	1	2
	i)	Show the components of working capital cycle.	6	1	2
	j)	Write the importance of Depreciation.	6	1	2

Estd. 1980

AUTONOMOUS

5 x 10 =50Marks

UNIT-1			CO	KL	M
2.	a)	Compare the differences between Micro and Macro Economics.	1	2	5
	b)	Explain the Scope of Managerial Economics.	1	2	5
OR					
3.	a)	Explain the determinants of Demand.	1	2	5
	b)	Describe the types of Elasticity of Demand.	1	2	5
UNIT-2					
4.	a)	Illustrate the Elements of costs with suitable examples.	2	2	5
	b)	Define Cost. Explain the types of Costs.	2	2	5
OR					
5.	a)	Interpret the determination of Break-even point with graphical representation.	2	2	5
	b)	Identify the Assumptions and Limitations of Break-even analysis.	2	2	5
UNIT-3					

6.		Write the importance of Accounting and explain the types of accounts with rules governing each account.	3	2	10
		OR			
7.		Illustrate the proforma for Trading and Profit and loss account and Balance sheet including items in each account.	4	2	10
		UNIT-4			
8.	a)	Outline the salient features of Perfect competition.	5	2	5
	b)	Discuss the features of Oligopoly.	5	2	5
		OR			
9.	a)	Explain different methods of Cost Based Pricing.	5	2	5
	b)	Describe the Competition Based pricing methods.	5	2	5
		UNIT-5			
10.	a)	Discuss the factors influencing Working capital.	5	2	5
	b)	Explain the Sources of Raising finance in long term.	5	2	5
		OR			
11.	a)	Define Depreciation. Explain the causes of Depreciation in detail.	6	2	5
	b)	Explain the methods of Depreciation.	6	2	5

CO-COURSE OUTCOME

KL-KNOWLEDGE LEVEL

M-MARKS

NOTE: Questions can be given as A,B splits or as a single Question for 10 marks

Estd. 1980

SRKR
ENGINEERING COLLEGE
AUTONOMOUS

II B.Tech. II Semester MODEL QUESTION PAPER

STATISTICAL METHODS FOR DATA SCIENCE

For AIDS

Time: 3 Hrs.

Max. Marks: 70 M

Answer Question No.1 compulsorily

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

Assume suitable data if necessary

10 x 2 = 20 Marks

			CO	KL	M
1.	a)	What is a scatter plot? Explain	1	1	2
	b)	If the probability of a defective bolt is 1/8. Find mean for the distribution of defective bolts of 640.	1	3	2
	c)	Define Type I and Type II errors	2	1	2
	d)	A random sample of size 100 has a standard deviation of 5. What is the maximum error with 95% confidence?	2	3	2
	e)	Write the normal equations for a power curve	3	1	2
	f)	Define Regression and lines of regression	3	1	2
	g)	What is Time series analysis?	4	1	2
	h)	How autocorrelation differ from partial autocorrelation?	4	1	2
	i)	Define Logistic Regression?	5	1	2
	j)	What are the advantages of Logistic Regression	5	1	2

5 x 10 =50Marks

UNIT- I

2.	a)	Explain Principal Component Analysis	1	2	5												
	b)	Prepare pie-chart for the following data	1	3	5												
		<table border="1"> <thead> <tr> <th>Items</th> <th>Food</th> <th>Clothing</th> <th>Education</th> <th>Recreation</th> <th>Misc.</th> </tr> </thead> <tbody> <tr> <td>Expenditure(Rs.)</td> <td>5100</td> <td>1200</td> <td>750</td> <td>500</td> <td>75</td> </tr> </tbody> </table>	Items	Food	Clothing	Education	Recreation	Misc.	Expenditure(Rs.)	5100	1200	750	500	75			
Items	Food	Clothing	Education	Recreation	Misc.												
Expenditure(Rs.)	5100	1200	750	500	75												
		OR															
3.	a)	Assume that 50% of all engineering students are good in Mathematics, Determine the probabilities that among 18 engineering students (i) Exactly 10 (ii) at least 10 (iii) at most 8 are good in mathematics.	1	3	5												
	b)	Suppose the weights of 800 male students are normally distributed with mean 140 pounds and standard deviation 10 pounds. Find the number of students whose weights are (i) between 138 and 148 pounds (ii) more than 152 pounds.	1	3	5												

UNIT- II													
4.	a)	The mean and standard deviation of a population are 11,795 and 14,054 respectively. If $n = 50$, find 95% confidence interval for the mean.									2	3	5
	b)	Explain the procedure for testing of hypothesis									2	2	5
OR													
5	a)	The life time of electric bulbs for a random sample of 10 from a large consignment gave the following data.									2	3	5
		Item	1	2	3	4	5	6	7	8			
		Life in 1000 hrs	1.2	4.6	3.9	4.1	5.2	3.8	3.9	4.3	4.4	5.6	
		Can we accept the hypothesis that the average life time of bulbs is 4000 hrs.											
	b)	The Blood Pressure of 5 women before and after intake of a certain drug are given below:									2	3	5
		Before	110	120	125	132	125						
		After	120	118	125	136	121						
		Test whether there is significant change in Blood Pressure at 1% level of significance.											
UNIT- III													
6.		Determine the regression lines and estimate y when $x = 6.2$									3	3	10
		X	1	2	3	4	5	6	7	8			
		Y	9	8	10	12	11	13	14	16	15		
	a)	OR											
7.	b)	Fit a straight line to the following data									3	3	5
		X	1	2	3	4	5						
		Y	14	27	40	55	68						
		Fit a power curve to the following data									3	3	5
		X	2	3	4	5	6						
		Y	8.3	15.4	33.1	65.2	127.4						
	a)	UNIT- IV											
8.	b)	Write the procedure of Augmented Dickey-Fuller Test									4	2	5
		Explain the components of Time Series									4	2	5
	a)	OR											
9.	b)	Calculate four year moving averages for the following data									4	3	5
		Year	1988	1989	1990	1991	1992	1993	1994	1995			
		Value	16	20	14	22	26	30	26	32			
		The data below give the average quarterly prices of a commodity for years.									4	3	5

	Year\Quarter	I	II	III	IV				
	1980	40.3	44.8	46	48				
	1981	50.1	53.1	55.3	59.5				
	1982	47.2	50.1	52.1	55.2				
	1983	55.4	59	61.6	65.3				
Calculate the seasonal averages by simple average method.									
UNIT- V									
10.	Model a logistic regression setup						5	3	10
OR									
11.	Demonstrate classification of Logistic Regression						5	3	10
CO-COURSE OUTCOME			KL-KNOWLEDGE LEVEL			M-MARKS			

NOTE: Questions can be given as A,B splits or as a single Question for 10 marks



II B.Tech. II Semester MODEL QUESTION PAPER

INTRODUCTION TO DATA SCIENCE

For AIDS

Time: 3 Hrs.

Max. Marks:70 M

Answer Question No.1 compulsorily

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

Assume suitable data if necessary

10 x 2 = 20 Marks

			CO	KL	M
1.	a).	Outline the benefits of data science?	1	1	2
	b).	What are the applications of data science?	1	1	2
	c).	Identify the role of Machine Learning in Data Science?	2	1	2
	d).	Describe about the importance of sklearn?	2	1	2
	e).	Define ACID principle of relational databases?	3	1	2
	f).	Define distributing data storage?	3	2	2
	g).	Outline about graph query language?	3	1	2
	h).	Describe about the importance of nltk?	3	2	2
	i).	Differentiate between seaborn and matplotlib?	4	2	2
	j).	Define the term crossfilter?	4	1	2

Estd. 1980

AUTONOMOUS

5 x 10 = 50 Marks

UNIT-1					
2.	a).	Explain about the steps involved in data science?	1	2	5
	b).	Represent a DataFrame by using student data?	1	2	5
OR					
3.	a).	Define the terms i) cleansing ii) integrating iii) transforming	1	2	5
	b).	Explain about exploratory data analysis?	1	2	5
UNIT-2					
4.	a).	What are the types of Machine Learning?	2	2	5
	b).	Explain about the modelling process for feature engineering?	2	2	5
OR					
5.	a).	Describe about validation and prediction?	2	2	5
	b).	Define semi-supervised learning?	2	2	5

UNIT-3					
6.	a).	Explain base principle of NoSQL databases?	3	3	5
	b).	Define CAP theorem?	3	3	5
OR					
7.	a).	Explain about Hadoop framework?	3	3	5
	b).	List about the types of NoSQL databases?	3	3	5
UNIT-4					
8.	a).	Demonstrate the importance of nltk for classifying reddit post example?	3	3	10
OR					
9.	a).	Illustrate about the graph database applications?	3	3	5
	b).	Explain how SQLite is used for handling Text mining and analytics?	3	3	5
UNIT-5					
10.	a).	Explain Types of plots?	4	2	5
	b).	Importance of data visualization in data science?	4	3	5
OR					
11.	a).	Apply box plot to detect outliers on sample data?	4	3	5
	b.)	Differentiate between seaborn and matplotlib with examples?	4	2	5

CO-COURSE OUTCOME KL-KNOWLEDGE LEVEL M-MARKS

NOTE: Questions can be given as A,B splits or as a single Question for 10 marks

II B.Tech. II Semester MODEL QUESTION PAPER

ARTIFICIAL INTELLIGENCE

For AIDS

Time: 3 Hrs.

Max. Marks: 70 M

Answer Question No.1 compulsorily

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

Assume suitable data if necessary

10 x 2 = 20 Marks

			CO	KL	M
1.	a).	Define Artificial Intelligence (AI) and provide an example of its application in everyday life.	1	1	2
	b).	Define an intelligent agent and give an example.	1	1	2
	c).	What a heuristic search give an example of a heuristic searches?	2	2	2
	d).	What is a game tree in AI, and why is it important in game playing?	2	2	2
	e).	What is the concept of resolution refutation in propositional logic.	3	2	2
	f).	What are fuzzy membership functions?	3	2	2
	g).	Define frames in the context of knowledge representation and give an example of their use.	4	1	2
	h).	What is the conceptual dependency theory, and how does it represent knowledge?	4	2	2
	i).	Name and briefly describe two phases involved in building an expert system.	5	1	2
	j).	What are the main components of Planning system?	5	2	2
5 x 10 = 50 Marks					
UNIT-1					
2.	a).	List various categorizations of artificial intelligence systems. Explain each.	1	2	5
	b).	Explain various fields in foundations of AI.	1	2	5
OR					
3.	a).	Elaborate the implementation of Tic-Tac-Toe game with 3 approaches.	1	2	5
	b).	Categorize intelligent systems based on their working principle.	1	2	5
UNIT-2					
4.	a).	Write the productions involved in solving a Water-Jug Problem.	2	3	5
	b).	Explain Constraint Satisfaction Problem (CSP) and solve a Cryptarithmic puzzle (TWO+TWO=FOUR), show the steps involved in finding the solution	2	3	5

		OR			
5.	a).	Explain the procedure to implement Hill Climbing.	2	3	5
	b).	Describe the mini max algorithm with an example	2	3	5
		UNIT-3			
6.	a).	Consider the following problem. <ul style="list-style-type: none"> • John likes all kinds of food. • Apples are food. • Chicken is food. • Anything any one eats and isn't killed by is food. • Bill ate peanuts and still alive. • Sue eats everything Bill eats. i) Convert the formulas into clause form. ii) ii) Prove that "John likes peanuts" using resolution	3	3	10
		OR			
7.	a).	Prove the following theorem using deductive inference rules From $A \rightarrow B \wedge C$, A infer C , from $A \wedge B$, $A \rightarrow C$ infer C .	3	3	5
	b).	Explain the Fuzzy set operations using examples.	3	3	5
		UNIT-4			
8.	a).	Explain Dempster-Shafer Theory	4	3	5
	b).	How do you represent visiting a restaurant in the form of a Script? Explain	4	3	5
		OR			
9.	a).	Develop a frame-based system for university application?	4	3	5
	b).	Write about Conceptual Dependency theory. How it will be used for Knowledge Representation?	4	3	5
		UNIT-5			
10.	a).	Differentiate Expert Systems versus Traditional Systems.	5	2	5
	b).	Explain about MYCIN expert system in detail.	5	2	5
		OR			
11.	a).	List out and explain the characteristics features of expert system.	5	2	5
	b).	Explain about Goal stack planning and Hierarchical planning.	5	2	5

CO-COURSE OUTCOME

KL-KNOWLEDGE LEVEL

M-MARKS

NOTE: Questions can be given as A,B splits or as a single Question for 10 marks

II B.Tech. II Semester MODEL QUESTION PAPER

COMPUTER ORGANIZATION

For AIDS

Time: 3 Hrs.

Max. Marks: 70 M

Answer Question No.1 compulsorily

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

Assume suitable data if necessary

10 x 2 = 20 Marks

			CO	KL	M
1.	a).	Convert the function to another canonical form. $F(x,y,z)=\pi(0,3,6,7)$	1	3	2
	b).	What is RTL?	1	1	2
	c).	List out computer registers	2	1	2
	d).	Explain Subtraction of Signed Numbers with example	2	2	2
	e).	Represent $F=(A+B)*(C+D)$ in two-address instruction format	3	3	2
	f).	Explain CAR	3	1	2
	g).	Define memory read and write operation	4	1	2
	h).	What is hit ratio?	4	1	2
	i).	What is the need of Interface	5	1	2
	j).	Isolated I/O vs memory mapped I/O	5	2	2

Estd. 1980

AUTONOMOUS

5 x 10 = 50 Marks

UNIT-1					
2.	a).	Simplify $F(A,B,C,D)=\sum(1,2,3,6,7,10,12,13)$	1	3	5
	b).	Design Arithmetic and Logic shift unit	1	2	5
OR					
3.	a).	Design and explain about JK Flip flop	1	3	5
	b).	Explain about Bus and Memory Transfer	1	2	5
UNIT-2					
4.	a).	Design Binary Adder and Subtractor and explain	2	3	5
	b).	Describe Instruction cycle in computer system	2	2	5
OR					
5.	a).	Explain about Computer instructions	2	2	5
	b).	Describe Signed-operand Multiplication with example	2	2	5
UNIT-3					
6.	a).	Explain about General register organization with seven registers	3	2	5

	b).	Discuss about functionality of of Micro programmed Control unit?	3	2	5
		OR			
7.	a).	Describe the Addressing Modes	3	2	5
	b).	Hardwired control Vs Micro programmed control	3	2	5
		UNIT-4			
8.	a).	Explain Associative Memory	4	2	5
	b).	Explain Memory Mapping Techniques of Cache Memory	4	2	5
		OR			
9.	a).	Illustrate Virtual Memory	4	2	5
	b).	(a). A. How many 128×8 RAM chips are needed to provide a memory capacity of 2048 bytes? B. How many lines of the address bus must be used to access 2048 byte of memory? How many of these lines will be common to all chips? C. How many lines must be decoded for chip select? Specify the size of the decoders?	4	3	5
		UNIT-5			
10.	a).	Explain about Asynchronous Communication interface with neat diagram	5	2	5
	b).	Explain about priority interrupts and interrupts cycle	5	2	5
		OR			
11.	a).	Demonstrate Direct Memory Access	5	2	5
	b).	Explain daisy chain priority interrupt	5	2	5

CO-COURSE OUTCOME

KL-KNOWLEDGE LEVEL

M-MARKS

NOTE: Questions can be given as A,B splits or as a single Question for 10 marks