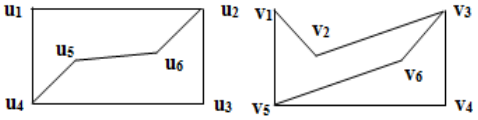
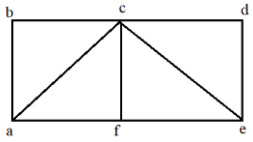
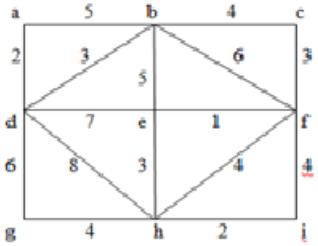
				Course Code: B23BS2101	
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		II B.Tech. I Semester MODEL QUESTION PAPER			
		DISCRETE MATHEMATICS AND GRAPH THEORY			
		(Common to CSE, AIML, CSBS, IT, AIDS, CSG, CIC, CSIT)			
Time: 3 Hrs.				**Max. Marks: 70 M**	
		Answer Question No.1 compulsorily			
		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. Nobody is despised who can manage a crocodile.	**1**	**3**	**5**

		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 $\left(x^2 + \frac{1}{x}\right)^{12}$ ii) Determine the coefficient of $x^5y^{10}z^5w^5$ 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	**4**	**3**	**5**

		Hamiltonian graph in the following graph.  			
		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 14 marks

			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			
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 14 marks

					Course Code:B23CS2101
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		II B.Tech. I Semester MODEL QUESTION PAPER			
		DIGITAL LOGIC & COMPUTER ORGANIZATION			
		Common to CSE, CSD, 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).**	Solve the following Boolean function to a minimum number of literals: xy + x′z + yz	**1**	**3**	**2**
	b).	Develop a 2X4 line Decoder.	**1**	**3**	**2**
	c).	Explain various types of buses?	**2**	**2**	**2**
	d).	Differentiate multi computers and multi processors.	**2**	**2**	**2**
	e).	Explain Instruction Format.	**3**	**2**	**2**
	f).	Describe zero address instruction Format with example.	**3**	**2**	**2**
	g).	Explain memory hierarchy.	**4**	**2**	**2**
	h).	Compare static RAM and dynamic RAM	**4**	**2**	**2**
	i).	Explain the need of I/O interface module.	**5**	**2**	**2**
	j).	Summarize various types of output peripheral devices.	**5**	**2**	**2**
					5 x 10 = 50 Marks
		UNIT-1			
2.		Solve the Boolean Function F (w, x, y, z) = ∑ (1, 3, 7, 11, 15) into SOP and POS using K-Map.	**1**	**3**	**10**
		OR			
3.		Develop a Combinational Circuit for 8X1 line Multiplexer.	**1**	**3**	**10**
		UNIT-2			
4.		Construct an Arithmetic Logic Shift Unit.	**2**	**3**	**10**
		OR			
5.		Determine Booth Multiplication algorithm with example.	**2**	**3**	**10**
		UNIT-3			
6.	**a).**	Explain the organization of registers.	**3**	**2**	**5**
	b).	Describe about the Address Sequencing.	**3**	**2**	**5**
		OR			
7.		Illustrate different addressing modes with example.	**3**	**2**	**10**

		UNIT-4			
8.	**a).**	Explain the hardware organization of associative memory with a neat block diagram.	**4**	**2**	**5**
	b).	Compare the relation between address and memory space in a virtual memory systems.	**4**	**2**	**5**
		OR			
9.		Explain about the mapping procedures of cache memory.	**4**	**2**	**10**
		UNIT-5			
10.	**a).**	Explain the functions of typical input-output interface.	**5**	**2**	**5**
	b).	Explain about DMA.	**5**	**2**	**5**
		OR			
11.		Describe the following with respect to asynchronous data transfer. a) Strobe control b) Handshaking c) Asynchronous serial transfer d) Asynchronous communication Interface.	**5**	**2**	**10**

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: B23CS2102	
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					**R23**
II B.Tech. I Semester MODEL QUESTION PAPER					
DATABASE MANAGEMENT SYSTEMS					
Common to CSE, CSG, CSIT & AIML					
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)**	Compare DBMS and database.	**1**	**2**	**2**
	b)	Describe briefly two applications of DBMS	**1**	**2**	**2**
	c)	Describe an Entity set in ER model	**2**	**2**	**2**
	d)	Apply relational algebra selection operation for an example query	**2**	**3**	**2**
	e)	Illustrate a nested query in SQL	**3**	**2**	**2**
	f)	Use natural join in SQL to display data in two tables: t1 and t2	**3**	**3**	**2**
	g)	Explain normalization in RDBMS	**4**	**2**	**2**
	h)	Find whether the "E" attribute is key or not for relation R with F = {A->B, B->C, C->D, E->A}?	**4**	**3**	**2**
	i)	Describe Atomicity in brief	**5**	**2**	**2**
	j)	Discuss in brief about the log	**5**	**2**	**2**
				5 x 10 = 50 Marks	
		UNIT-1			
2.		Summarize the differences between Database Management System and FPS	**1**	**2**	**10**
		OR			
3.		Illustrate Database system structure	**1**	**2**	**10**
		UNIT-2			
4.		Find different types of keys for the following tables Student(sid, sname, status), Catalog(sid,pid,cost) and Parts (pid, pname, color)	**2**	**3**	**10**
		OR			
5.		Apply conceptual DB design and draw ER diagrams for each situation for the University database containing information about departments (identified by DEPTNO), instructors (identified by SSN) and courses(identified by COURSEID). i. Each department can offer any number of courses	**2**	**3**	**10**

		ii. Many instructors can work in a department iii. An instructor can work only in one department iv. Each instructor can take any number of courses v. A course can be taken by only one instructor			
		UNIT-3			
6.		How do you use the different types of SQL statements (DDL and DML) on tables?	**3**	**3**	**10**
		OR			
7.		Apply different kinds of joins on your own example tables	**3**	**3**	**10**
		UNIT-4			
8.		How do you use functional dependencies to determine whether a table is in 2NF or 3NF?	**4**	**3**	**10**
		OR			
9.		Apply the steps to convert a table into BCNF using one example.	**4**	**3**	**10**
		UNIT-5			
10.		Illustrate the ARIES recovery algorithm with examples.	**5**	**2**	**10**
		OR			
11.		Describe different versions of 2PL protocols	**5**	**2**	**10**

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: B23CS2103	
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					**R23**
II B.Tech. I Semester MODEL QUESTION PAPER					
OBJECT ORIENTED PROGRAMMING THROUGH JAVA					
Common to CSE, CSG, CIC, CSIT & AIML					
Time: 3 Hrs.					**Max. Marks: 70 M**
First Question is compulsory					
Answer **ONE Question** from **EACH UNIT**					
Assume suitable data if necessary					
					10 x 2 = 20 Marks
			CO	**KL**	**M**
1.	**a).**	Compare POP and OOP?	**1**	**2**	**2**
	b).	Describe a scenario where using this keyword is necessary in a Java class.	**1**	**2**	**2**
	c).	What is type conversion in Java, and why is it necessary?	**2**	**1**	**2**
	d).	Explain String Constant Pool	**2**	**2**	**2**
	e).	What is Adapter class?	**3**	**1**	**2**
	f).	What are the uses of Super Keyword?	**3**	**1**	**2**
	g).	Explain about throw and throws keyword?	**4**	**2**	**2**
	h).	What are thread priorities in Java, and how do they affect the execution of threads?	**4**	**1**	**2**
	i).	What is File IO in Java?	**5**	**1**	**2**
	j).	List the steps to establish a database connection using JDBC	**5**	**1**	**2**
					5 x 10 = 50 Marks
		UNIT-1	**CO**	**KL**	**M**
2.	**a).**	Explain Features of JAVA.	**1**	**2**	**5**
	b).	Develop a program to accept two integers as command line arguments and print the sum of the two numbers.	**1**	**3**	**5**
		OR			
3.	**a).**	Explain Method Overloading with an example.	**1**	**2**	**5**
	b).	Explain different types of Constructors with suitable examples.	**1**	**2**	**5**
		UNIT-2			
4.	**a).**	Illustrate ArrayList and its methods.	**2**	**2**	**5**
	b).	Develop a program to reverse the elements of a given 2*2 array. Four integer numbers need to be passed as Command Line arguments.	**2**	**3**	**5**
		OR			
5.	**a).**	Illustrate HashMap and its methods.	**2**	**2**	**5**

	b).	Differentiate String and StringBuffer class.	**2**	**3**	**5**
		UNIT-3			
6.	**a).**	Create a package called test package. Define a class called foundation inside the test package. Inside the class, you need to define 4 integer variables: var1 with private access modifier, var2 with default access modifier, var3 with protected access modifier and var4 with public access modifier. Import this class and packages in another class. Try to access all 4 variables of the foundation class and see what variables are accessible and what are not accessible.	**3**	**3**	**5**
	b).	Differentiate Interface and Abstract class.	**3**	**3**	**5**
		OR			
7.	**a).**	Explain different types of inheritance with an example.	**3**	**2**	**5**
	b).	Create an interface Vehicle with a default method message () that returns nothing and prints "Inside Vehicle". Create an interface FourWheeler with a default method message () that returns nothing and prints "Inside FourWheeler". Create a class Car implementing these two interfaces. In this class, Override the message () method and call the message () method of the Vehicle interface using super keyword. Instantiate the class, call the message method and print the output.	**3**	**3**	**5**
		UNIT-4			
8.	**a).**	Explain Multiple Catch Statements with an example.	**4**	**2**	**5**
	b).	Develop a java program to implement Thread Synchronization.	**4**	**3**	**5**
		OR			
9.	**a).**	Explain Thread Life Cycle with a neat diagram.	**4**	**2**	**5**
	b).	Develop a program that take an input String from user and parse it to integer, if it is not a number it will throw number format exception Catch it and print "Entered input is not a valid format for an integer." or else print the square of that number.	**4**	**3**	**5**
		UNIT-5			
10.	**a).**	Develop a program to copy contents of one file to another file.	**5**	**3**	**5**
	b).	Explain different types of JDBC drivers with neat diagrams.	**5**	**2**	**5**
		OR			
11.	**a).**	Develop a JDBC program to retrieve data from the database.	**5**	**3**	**5**
	b).	Explain the purpose of the Reader and Writer classes in Java. How do they differ from InputStream and OutputStream?	**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 14 marks

				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**
					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 14 marks

Course Code: B23BS2201

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A) **R23**

II B.Tech. II SEMESTER MODEL QUESTION PAPER

PROBABILITY AND STATISTICS

Common to AIML, CSE, CSBS, CSIT and IT

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 = 20Marks

			CO	KL	M
1.	**a)**	Explain briefly the types of variables.	**1**	**2**	**2**
	b)	List out the measures of central tendency.	**1**	**1**	**2**
	c)	State the properties of distribution function.	**2**	**1**	**2**
	d)	If A and B be two events with $P(A) = \frac{1}{2}$, $P(B) = \frac{1}{3}$ and $P(A \cap B) = \frac{1}{4}$. Find (i) $P\left(\frac{A}{B}\right)$ and (ii) $P\left(\frac{B}{A}\right)$	**2**	**3**	**2**
	e)	Write the formula, to find the angle between two regression lines.	**3**	**1**	**2**
	f)	Write the normal equations to fit a curve $y = ae^{bx}$.	**3**	**1**	**2**
	g)	Write confidence limits for the population variance of a small sample?	**4**	**2**	**2**
	h)	State Central limit theorem.	**4**	**1**	**2**
	i)	Define Type I and Type II errors.	**5**	**1**	**2**
	j)	State the properties of χ^2- distribution.	**5**	**1**	**2**

5*10=50 Marks

		UNIT-1			
2.	**a)**	Explain the methods of collecting primary and secondary data.	**1**	**2**	**5**
	b)	From the prices X and Y of shares A and B respectively given below, Compute which share is more stable in price.	**1**	**3**	**5**

X	55	54	52	53	56	58	52	50	51	49
Y	108	107	105	105	106	107	104	103	104	101

		OR			
3.	**a)**	The first four moments of the random variable about origin are: -1.5, 17, -30 and 108. Find the moments about mean, β_1 and β_2.	**1**	**3**	**5**
	b)	Find the mean, median and mode for the following data.	**1**	**3**	**5**

Mid value	15	20	25	30	35	40	45	50
Frequency	2	22	19	14	3	4	6	1

		UNIT-2			
4.	**a)**	State and prove Bayes theorem.	**2**	**3**	**5**

	b)	Let X be a random variable with the following probability distribution X: 6, 9, 12 P(X=x): 1/6, ½, 1/3 Find E(x) and V(x) using the laws of expectations.	**2**	**3**	**5**
		OR			
5.	**a)**	A manufacturer of blades knows that 5% of his product is defective. If he sells blades in boxes of 100 and guarantees that not more than 10 blades will be defective. Find the probability that a box will fail to meet the guaranteed quality?	**2**	**3**	**5**
	b)	In a distribution exactly normal, 11.03% of the items are under 25-kilogram weight and 89.97% of the items are under 70-kilogram weight.What are the mean and standard deviation the distribution.	**2**	**3**	**5**
		UNIT-3			
6.	**a)**	If the regression lines are $2y - x = 50$ and $3y - 2x = 10$, then find the mean values of x, y and the correlation coefficient between x and y.	**3**	**3**	**5**
	b)	The marks obtained by 10 students in Mathematics(X) and Statistics(Y) are given below. X: 68, 64, 75, 50, 64, 80, 75, 40, 55, 64 Y: 62, 58, 68, 45, 81, 60, 68, 48, 50, 70 Find the rank correlation coefficient between the subjects.	**3**	**3**	**5**
		OR			
7.		Obtain a second-degree polynomial from the following data. X: 0, 1, 2, 3, 4, 5, 6, 7, 8 Y: 12, 10.5, 10, 8, 7, 8, 7.5, 8.5, 9	**3**	**3**	**10**
		UNIT-4			
8.	**a)**	A random sample of 10 ball bearings produced by a company have a mean diameter of 0.5060 cm with s.d. 0.004 cm. Find the maximum error estimate E and 95% confidence interval for the actual mean of ball bearings produced by this company assuming sampling from normal population.	**4**	**3**	**5**
	b)	Determine a 95% confidence interval for the variance of a normal population with the sample: 145.3, 145.1, 145.4 and 146.2.	**4**	**3**	**5**
		OR			
9.		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 for the population, Calculate (a) The mean of the population (b) The standard deviation of the population (c) The mean of the sampling distribution of means (d) The standard deviation of the sampling distribution of means.	**4**	**3**	**10**

<table>
<tr><td></td><td></td><td>UNIT-5</td><td></td><td></td><td></td></tr>
<tr><td>10.</td><td>a)</td><td>In a large city A, 20 percent of a random sample of 900 school children had defective eye-sight. In other large city B, 15 percent of random sample of 1600 children had the same defect. Is this difference between the two proportions significant?</td><td>5</td><td>3</td><td>5</td></tr>
<tr><td></td><td>b)</td><td>A group of 10 boys fed on a diet A and another group of 8 boys fed on a different diet B recorded the following increase in weights.
Diet A (in Kg.) : 5 6 8 1 12 4 3 9 6 10
Diet B (in Kg.): 2 3 6 8 10 1 2 8
Test whether the variance of weights differ significantly?</td><td>5</td><td>3</td><td>5</td></tr>
<tr><td></td><td></td><td>OR</td><td></td><td></td><td></td></tr>
<tr><td>11.</td><td></td><td>Fit a Poisson distribution to the given data and test the goodness of fit.
<table>
<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</td><td>275</td><td>72</td><td>30</td><td>7</td><td>5</td><td>2</td><td>1</td></tr>
</table></td><td>5</td><td>3</td><td>10</td></tr>
</table>

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: B23CS2201

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A) **R23**

II B.Tech. II Semester MODEL QUESTION PAPER

OPERATING SYSTEMS

Common to CSE, CSG, CSIT & CIC

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 the services of Operating system?	**1**	**1**	**2**
	b).	Differentiate fork() and vfork()	**1**	**2**	**2**
	c).	What does PCB contain?	**2**	**1**	**2**
	d).	Differentiate long term and short term scheduler?	**2**	**2**	**2**
	e).	List the necessary conditions for a deadlock situation to arise?	**3**	**1**	**2**
	f).	Define race condition	**3**	**1**	**2**
	g).	List any two disadvantages of Thrashing?	**4**	**1**	**2**
	h).	Differentiate Internal and external fragmentation.	**4**	**2**	**2**
	i).	List different File Attributes	**5**	**1**	**2**
	j).	List the different types of directory in OS	**5**	**1**	**2**

5 x 10 = 50 Marks

		UNIT-1			
2.	**a).**	Explain Operating System Structures?	**1**	**2**	**5**
	b).	Explain briefly different types of System calls?	**1**	**2**	**5**
		OR			
3.		Explain the different functions of an operating system and discuss the various services provided by an operating system	**1**	**2**	**10**
		UNIT-2			
4.	**a).**	What is a thread? Discuss about thread scheduling.	**2**	**2**	**5**
	b).	Explain in detail Inter Process Communication?	**2**	**2**	**5**
		OR			
5.		Evaluate preemptive and non-preemptive SJF CPU Scheduling algorithm for given Problem	**2**	**3**	**10**

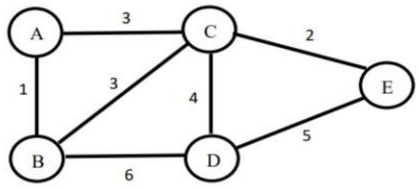
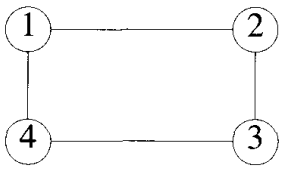
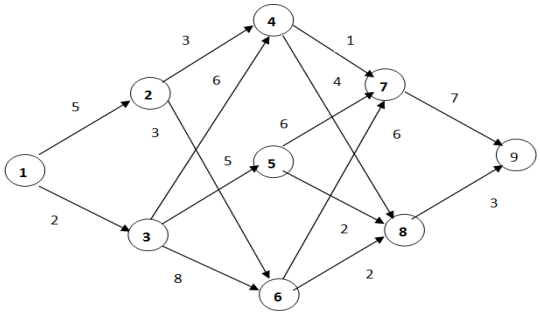
Process	P1	P2	P3	P4
Process Time	8	4	9	5
Arrival Time	0	1	2	3

		UNIT-3			
6.	**a).**	Explain about Deadlock Avoidance?	**3**	**2**	**5**
	b).	Explain how semaphores are useful while for solving Dining-Philosophers Problem	**3**	**2**	**5**
		OR			
7.		Explain Banker's Algorithm with an Example?	**3**	**3**	**10**
		UNIT-4			
8.	**a).**	What is virtual memory? Discuss the benefits of virtual memory techniques.	**4**	**2**	**5**
	b)	Write a short notes on Disk management.	**4**	**2**	**5**
		OR			
9.	**a).**	Consider the following reference string 7,0,1,2,0,3,0,4,2,3,0,3,2,1,2,0,1,7,0,1. Assume there are three frames. Apply LRU replacement algorithm to the reference sting above and find out how many page faults are produced. Illustrate the LRU page replacement algorithm in detail and also two feasible implementation of the LRU algorithm.	**4**	**3**	**5**
	b).	Explain the following disk scheduling algorithm with proper diagram a) FCFS b) LOOK c) C-SCAN.	**4**	**2**	**5**
		UNIT-5			
10.	**a).**	Explain file allocation methods in detail.	**5**	**2**	**5**
	b).	Discuss the advantages of maintain directories.	**5**	**2**	**5**
		OR			
11.	**a).**	Explain about access matrix and implementation of aces matrix.	**5**	**2**	**5**
	b).	Write short notes on a)Directory Implementation b)File system Structure	**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 14 marks

				Course Code: B23CS2202	
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					**R23**
II B.Tech. II Semester MODEL QUESTION PAPER					
ADVANCED DATA STRUCTURES AND ALGORITHM ANALYSIS					
Common to CSE, CSG, AIML & 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).**	List out the properties of a Red-Black Tree	**1**	**2**	**2**
	b).	How to checkBi-connectivity in a graph?	**1**	**2**	**2**
	c).	Describe Asymptotic notations.	**2**	**2**	**2**
	d).	Explain the general method of divide and conquer.	**2**	**2**	**2**
	e).	How does the Greedy Method solve the Fractional Knapsack Problem?	**3**	**2**	**2**
	f).	Outline Backtracking strategy.	**3**	**2**	**2**
	g).	Why is Dynamic Programming more efficient than simple recursion for certain problems?	**4**	**2**	**2**
	h).	Explain the role of state and transition in dynamic programming with an example.	**4**	**2**	**2**
	i).	Discuss NP-Hard problems.	**5**	**2**	**2**
	j).	Describe Chromatic Number Decision Problem (CNDP).	**5**	**2**	**2**
				5 x 10 = 50 Marks	
		UNIT-1			
2.		Explain AVL Tree rotations with examples	**1**	**2**	**10**
		OR			
3.	**a).**	Compare and contrast adjacency matrix and adjacency list representations of graphs.	**1**	**2**	**5**
	b).	Describe the Breadth-First Search (BFS) algorithm.	**1**	**2**	**5**
		UNIT-2			
4.		Describe the Quick Sort algorithm and analyze its average-case time complexity.	**2**	**4**	**10**
		OR			
5.		Explain the Divide and Conquer approach for finding the Convex Hull of a set of points and analyze its time complexity.	**2**	**4**	**10**
		UNIT-3			

6.	**a).**	Solve the following job sequencing with deadlines using greedy method.n=6,(p1,p2..,p6)=(20,40,5,15,10,8)and(d1,d2...d6)=(5,2,4,3,3,1)	**3**	**3**	**5**
	b).	Find the Minimum Spanning for the following graph using Kruskal's algorithm. 	**3**	**3**	**5**
		OR			
7.	**a).**	Explain Graph Coloring problem and Construct State Space Tree when n=4 and m=3. 	**3**	**3**	**5**
	b).	Solve 0/1 knapsack problem for the following data using Back Tracking. n=5 ,(p1, p2, p3, p4, p5,) = (7,8,9,11,12) ,(w1, w2, w3, w4, w5) = (13,15,16,23,24) with knapsack capacity ,m=26.	**3**	**3**	**5**
		UNIT-4			
8.		BuildOBST for given data n=4, (a1, a2, a3, a4) = (do, if, int, while) and p (1:4) = (3,3,1,1) q (0:4) = (2,3,1,1,1).	**4**	**3**	**10**
		OR			
9.		Find a minimum cost path from S to T graph of following figure. Do this in forward Approach. 	**4**	**3**	**10**
		UNIT-5			
10.	**a).**	Consider the travelling sales person instance defined by the cost matrix. Find out minimum cost path using LC Branch-Bound.	**5**	**3**	**5**

		$\begin{bmatrix} \infty & 2 & 10 & 5 \\ 2 & \infty & 9 & \infty \\ 4 & 3 & \infty & 4 \\ 6 & 8 & 7 & \infty \end{bmatrix}$			
	b).	State and explain cook's theorem	**5**	**2**	**5**
		OR			
11.	**a).**	Draw the portion of the State Space Tree generated by LCBB for the instances:n=5,m=12,(p1……p5)=(10,15,6,8,4), (w1…..w5)=(4,6,3,4,2)	**5**	**3**	**5**
	b).	Explain Classes NP-hard and NP-complete	**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 14 marks

					Course Code: B23CD2201
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		II B.Tech. II Semester MODEL QUESTION PAPER			
		HUMAN COMPUTER INTERACTION			
		Common to CSG & 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).**	Discuss the key characteristics of good and poor design?	**1**	**2**	**2**
	b).	Identify the primary goals of usability in the context of user experience design?	**1**	**2**	**2**
	c).	Define cognition in the context of human-computer interaction?	**2**	**1**	**2**
	d).	Identify and describe major cognitive frameworks used in interaction design?	**2**	**2**	**2**
	e).	Describe the relationship between user emotions and the success of a digital product?	**3**	**2**	**2**
	f).	Identify common characteristics of annoying interfaces?	**3**	**2**	**2**
	g).	List the key differences between quantitative and qualitative data analysis?	**4**	**2**	**2**
	h).	List the key principles of effective data visualization?	**4**	**2**	**2**
	i).	Define the interactive design process and its key components?	**5**	**1**	**2**
	j).	Define usability studies and their role in interactive design?	**5**	**1**	**2**
					5 x 10 =50 Marks
		UNIT-1			
2.	**a).**	Discuss the key characteristics that differentiate good design from poor design in interaction design?	**1**	**2**	**5**
	b).	Explain the relationship between interaction design and user experience. How do design decisions influence the user experience?	**1**	**2**	**5**
		OR			
3.	**a).**	What are conceptual models in interaction design, and why are they important?	**1**	**2**	**5**
	b).	Compare and contrast different models and frameworks used in interaction design.	**1**	**2**	**5**
		UNIT-2			
4.	**a).**	How do cognitive processes such as perception, attention, memory, and learning affect the way users interact with digital systems?	**2**	**2**	**5**

	b).	Compare different cognitive frameworks and discuss their relevance in designing intuitive and user-friendly interfaces.	**2**	**3**	**5**
		OR			
5.	**a).**	What strategies can designers employ to enhance social engagement through digital interfaces?	**2**	**2**	**5**
	b).	Evaluate the effectiveness of current technologies in achieving co-presence and the potential future developments?	**2**	**3**	**5**
		UNIT-3			
6.	**a).**	Explain how emotional interaction impacts user experience in digital interfaces?	**3**	**2**	**5**
	b).	Explain how emotional AI can enhance user interactions with digital interfaces?	**3**	**2**	**5**
		OR			
7.	**a).**	Explain how persuasive technologies can influence user behaviour?	**3**	**2**	**5**
	b).	Explain how natural user interfaces differ from traditional graphical user interfaces (GUIs)?	**3**	**2**	**5**
		UNIT-4			
8.	**a).**	Discuss the difference between data analysis, interpretation, and presentation, and explain how they interrelate?	**4**	**2**	**5**
	b).	Explain the importance of selecting appropriate data collection methods for different research objectives?	**4**	**2**	**5**
		OR			
9.	**a).**	Explain how data visualization techniques can enhance the understanding and communication of complex data?	**4**	**2**	**5**
	b).	Discuss the importance of ethical practices in data analysis, particularly in ensuring privacy, consent, and data integrity?	**4**	**2**	**5**
		UNIT-5			
10.	**a).**	Create a low-fidelity prototype for a proposed digital product and explain the decisions made during its development?	**5**	**3**	**5**
	b).	Develop a conceptual design for a new user interface, outlining the key concepts and user interactions?	**5**	**3**	**5**
		OR			
11.	**a).**	Design and conduct a usability study for a digital product, then interpret the results to suggest design improvements?	**5**	**3**	**5**
	b).	Design an experiment to test a specific aspect of a user interface, outlining the variables, controls, and expected outcomes?	**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 14 marks