	SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)				**R20**
	II B. Tech I Semester MODEL QUESTION PAPER				
	NUMERICAL METHODS & VECTOR CALCULUS				
	(Common to CE, CSE, CSG, EEE & IT)				

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)**	Determine a real root of the equation $x \log_{10} x = 1.2$ by Regular- 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 	X	0	5	10	15	20	25	 	Y	7	11	14	18	24	32		1	3	7
	b)	Using Lagrange's interpolation formula find Y (10) from the following table 	X	5	6	9	11	 	Y	12	13	14	16		1	3	7
		UNIT-II			
3.	**a)**	Evaluate $\int_0^1 x^3 \, dx$ with five subintervals by trapezoidal rule	2	3	7
	b)	Evaluate $\int_0^2 \dfrac{dx}{x^3+x+1}$ by using Simpsons $1/3^{rd}$ 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 $\dfrac{dy}{dx} = 2y + 3e^x$, $y(0) = 0$	2	3	7
	b)	Evaluate $y(0.2)$ using Runge-Kutta 4th order method, given $\dfrac{dy}{dx} = \dfrac{y^2 - x^2}{y^2 + x^2}$, $y(0) = 1$.	2	3	7

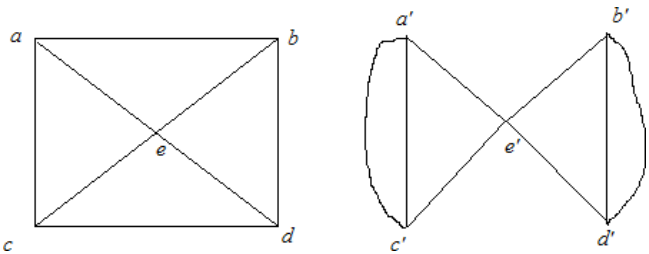|					
		UNIT-III			
5.	a)	Apply change the order of integration and evaluate $\int_0^\infty \int_x^\infty \frac{e^{-y}}{y} dx\, dy$	3	3	7
	b)	Evaluate $\int_0^\infty \int_0^\infty e^{-(x^2+y^2)} dx\, dy$ by changing to polar coordinates	3	3	7
		OR			
6.	a)	Evaluate $\int_{-1}^1 \int_0^z \int_{x-z}^{x+z}(x + y + z)dx\,dy\,dz$	4	3	7
	b)	Determine the area between the parabolas $y^2 = 4ax$ and $x^2 = 4ay$	4	3	7
		UNIT-IV			
7.	a)	Obtain the directional derivative of $\varphi = xy + yz + zx$ at A in the direction of AB where $A = (1,2,-1)$, $B = (5,6,8)$.	5	3	7
	b)	Determine the values of a and b such that the surface $ax^2 - byz = (a + 2)x$ and $4x^2y + z^3 = 4$ cut orthogonally at $(1, -1, 2)$.	5	3	7
		OR			
8.	a)	Show that the vector $(x^2 - yz)\bar{\imath} + (y^2 - zx)\bar{\jmath} + (z^2 - xy)\bar{k}$ is irrotational and find its scalar potential.	5	3	7
	b)	Determine $Curl\ \bar{F}$ and $div\bar{F}$ for $\bar{F} = x^2y\,\bar{I} - 2xz\,\bar{J} + 2yz\bar{K}$	5	3	7
		UNIT-V			
9.	a)	Determine the work done in moving a particle once round the circle $x^2 + y^2 = 9$ in the xy- plane by the force $\bar{F} = (2x - y - z)\bar{\imath} + (x + y - z^2)\bar{\jmath} + (3x - 2y + 4z)\bar{k}$	6	3	7
	b)	Evaluate the line integral by Stokes's theorem for the vector function $\bar{F} = y^2\bar{\imath} + x^2\bar{\jmath} + (z + x)\bar{k}$ and C is the triangle with vertices $(0,0,0), (1,0,0)\ and\ (1,1,0)$.	6	3	7
		OR			
10.		Verify Green's theorem in the plane For $\oint [(3x^2 - 8y^2)dx + (4y - 6xy)dy]$,C where C is boundary of the region defined by $y = \sqrt{x}, y = x^2$	6	3	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: B20BS2103		
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R 20**
		II B. Tech I Semester - MODEL QUESTION PAPER			
		MATHEMATICAL FOUNDATION OF COMPUTER SCIENCE			
		(Common to AIDS & 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)**	Establish that $\{((p \lor q) \to r) \land (\neg p)\} \to (q \to r)$ is a tautology	**1**	**3**	**7**
	b)	Establish 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)	Determine the PDNF and PCNF of $p \lor \neg q$	**1**	**3**	**7**
		UNIT-II			
3	**a)**	Determine the number of ways of arranging 6 boys and 6 girls in a row. Also determine the number of arrangements in which i) All girls will be together. ii) No two girls will be together. iii) Boys and girls come alternatively.	**2**	**3**	**7**
	b)	i) Determine the term independent of x in the expansion of $(x^2 + \frac{1}{12}x)$ ii) Determine the coefficient of $x^5 y^{10} z^5 w^5$ in the expansion $(x + 7y + 3z + w)^{25}$	**2**	**3**	**7**
		OR			

4.	a)	A cricket team of 11 is to be selected out of 14 players of whom 5 are bowlers. Determine the number of ways in which this can be done so as to include at least 3 bowlers.	2	3	7
	b)	Determine the number of integers between 1 and 250 which are divisible by any of the integers 2,3,5 or 7.	2	3	7
		UNIT-III			
5.	a)	Let R denote a relation on the set of ordered pairs of positive integers such that $(x, y)(u, v)$ if and only if $xv = y$. Then establish that „R" is an equivalence relation.	3	3	7
	b)	Define Hasse diagram. Draw the Hasse diagram for the Poset $(P(S), \leq)$ where $S = \{1,2,3\}$	3	3	7
		OR			
6.	a)	Establish that a Lattice „L" is distributive iff $\forall$ x, y, z $\in$ L (x * y)$\oplus$ (y * z)$\oplus$ (z * x) $\equiv$ (x $\oplus$ y)*(y $\oplus$ z)*(z $\oplus$ x)	4	3	7
	b)	Consider the Boolean polynomial $(x, y, z) = x * (y \quad z')$. If B={0,1}, compute the truth table of the function $f: B_3 \rightarrow B$ defined by p. Also draw logical diagram.	4	3	7
		UNIT-IV			
7.	a)	Determine the number of integral solutions for the equation $x_1+ x_2+ x_3+ x_4+ x_5=20$ 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 n $7.3\square2 -10Sn\square1 - 7Sn-Sn$ for $\geq$n $2.n$	5	3	7
		OR			
8.	a)	Determine 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)	Define isomorphism of graphs. Examine whether the following graphs are isomorphic or not.	6	3	7

	b)	State and Prove Euler's formula for planar graphs.	6	3	7
		OR			
10.	**a)**	Establish that a tree with „n" elements has exactly „n-1" edges.	6	3	7
	b)	Explain Kruskal's algorithm for minimal spanning tree with a suitable Example.	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

	SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)		R 20
II B. Tech I Semester MODEL QUESTION PAPER
OBJECT ORIENTED PROGRAMMING WITH JAVA
(Common to AIML & CSG)
	Time: 3 Hrs	colspan="3"	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).**	Differentiate AWT and Swings.	5	2	7
	b).	Write a JDBC program to retrieve data from the database.	5	3	7
		OR			
10.	**a).**	Explain different types of JDBC Drivers with neat diagrams.	5	2	8
	b).	Explain different types of Layout Managers.	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 QUESTION 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: B20HS2101
	SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)				R 20
	II B. Tech I Semester MODEL QUESTION PAPER				
	MANAGERIAL ECONOMICS AND FINANCIAL ACCOUNTANCY				
	(Common to CSG & ME)				
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.		Define Managerial Economics and Explain its nature and scope	1	2	14
		OR			
2.		What do you mean by Elasticity of demand? Explain in detail about degrees of Price elasticity of Demand?	1	2	14
		UNIT-II			
3.		Define Cost &classify the Elements of Cost?	2	2	14
		OR			
4.		How do you calculate BEP? What are its Assumptions and Applications?	2	3	14
		UNIT-III			
5.		What are Market Structures and explain the features of Perfect Competition?	3	2	14
		OR			
6.		Why is pricing significant in the context of business? Describe any four pricing practices?	3	2	14
		UNIT-IV			
7.		Describe about the Importance of Accounting and types of accounts	4	2	14
		OR			

8.		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: 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 Adjust the following: Prepaid rent Rs. 100 Depreciate the following: Buildings @ 10per cent per annum Machinery @ 20 per cent per annum Furniture @ 15 per cent per annum Provide for bad debts Rs. 100 Outstanding insurance Rs. 50 Closing stock Rs. 12,000	4	3	14
		UNIT-V			
9.		Explain about capital and the sources available for raising finance	5	2	14
		OR			
10.		Explain about the concept and causes of depreciation. Evaluate the straight- line method and diminishing balance methods.	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

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)		**R 20**
II B. Tech II Semester MODEL QUESTION PAPER		
DATA SCIENCE& STATISTICAL METHODS		
(For CSG)		

Time: 3 Hrs.				Max. Marks:70

Answer any one Question from Each Unit

All questions carry equal Marks

Q.No		CO	KL	M
	UNIT - I			
1.a)	Explain the methods related to primary and secondary data.	1	2	7
b)	Determine median and quartiles for the following data.	1	3	7

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of students	11	18	25	28	30	33	22	15

		CO	KL	M
	(OR)			
2.a)	A random variable X has the probability density function given by $$f(x) = \begin{cases} x & if\ 0 \le x < 1 \\ 2-x & if\ 1 \le x < 2 \\ 0 & elsewhere \end{cases}$$ Find E(X) and V(X).	1	3	7
b)	Define Moment generating function and mention its properties	1	2	7
	UNIT – II			
3.a)	A car -hire firm has two cars which it hires out day by day. The number of demands for a car on each day is distributed as a Poisson distribution with mean 1.5. Calculate the proportion of days on which (i) there is no demand (ii) some demand is refused.	2	3	7
b)	Fit a binomial distribution to the following data	2	3	7

X:	0	1	2	3	4
f:	28	62	46	10	4

		CO	KL	M
	(OR)			
4. a)	Determine mean and variance of Gamma distribution.	2	3	7
b)	In a normal distribution, 10.33% of the items under 25-kilogram weight and 89.97% of the items are under 70 kilograms weight. What are the mean and standard deviation of the distribution?	2	3	7

	UNIT – III			
5.	A population consists of four numbers 2,3,4 and 5. Consider all possible distinct samples of size two with replacement. Determine (a) the population mean (b) the population standard deviation (c) the sampling distribution of means (d) the mean of the s.d of means (e) s.d. of sampling distribution of standard deviation.	**3**	**3**	**14**
	(OR)			
6. a)	Describe (i) Neyman Pearson lemma (ii) Procedure of testing of Hypothesis	**4**	**3**	**7**
b)	Before an increase in excise duty on tea,800 persons out of a sample of 1,000 persons were found to be tea drinkers. After an increase in duty, 800 people were tea drinkers in a sample of 1,200 people. Using standard error proportion, state whether there is a significant decrease in the consumption of tea after the increase in excise duty.	**4**	**3**	**7**

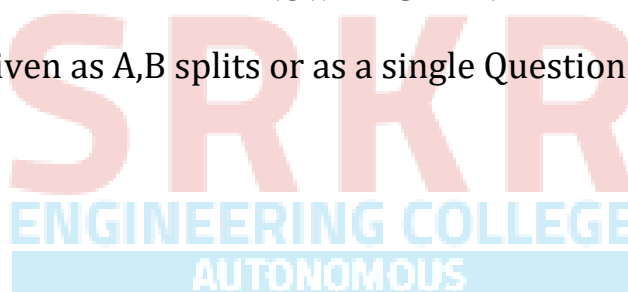|	**UNIT – IV**			
7.a)	The height of 10 males of a given locality are found to be 70, 67, 62, 68, 61, 68, 70, 64, 64, 66 inches, is it reasonable to believe that the average height is greater than 64 inches? Test at 5% significance level.	**5**	**3**	**7**
b)	The manager of Akash software company wishes to study the number of hours senior executives by types of industry spend at their desktop computers. The manager selected a sample of 5 executives from each of three industries- Banking, Retail and Insurance. Test at 5% level of significance weather there is a difference in the average number of hours spent per week by industry. 	Banking	12	10	11	12	10
---	---	---	---	---	---
Retail	8	8	6	8	10
Insurance	10	6	6	8	8		**5**	**3**	**7**
	(OR)			
8. a)	In two independent samples of sizes 8 and 10 the sum of squares of deviations of the sample values from the respective sample means were 84.4 and 102.6. Test whether the difference of variances of the population is significant are not.	**5**	**3**	**7**
8. b)	The following figures show the distribution of digits in numbers chosen at random from a telephone directory. 	Digits	0	1	2	3	4	5	6	7	8	9
---	---	---	---	---	---	---	---	---	---	---
frequency	1026	1107	997	966	1075	933	1107	972	964	853 | Test whether the digits may be taken to occur equally frequently in the directory.	**5**	**3**	**7**

	UNIT-V			
9. a)	Explain fitting of an exponential curve $y = ae^{bx}$ for a given set of data points.	**6**	**3**	**7**
b)	Ten participants in a contest are ranked by two judges as follows <table><tr><td>Serial number</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><td>9</td><td>10</td></tr><tr><td>x</td><td>1</td><td>6</td><td>5</td><td>10</td><td>3</td><td>2</td><td>4</td><td>9</td><td>7</td><td>8</td></tr><tr><td>y</td><td>6</td><td>4</td><td>9</td><td>8</td><td>1</td><td>2</td><td>3</td><td>10</td><td>5</td><td>7</td></tr></table> Determine the rank correlation coefficient.	**6**	**3**	**7**
	(OR)			
10. a)	Fit a straight line to the following data by method of least squares <table><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>	**6**	**3**	**7**
b)	Determine the regression lines of x on y and y on x for the following data <table><tr><td>X</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td></tr><tr><td>Y</td><td>15</td><td>17</td><td>14</td><td>18</td><td>16</td><td>15</td></tr></table>	**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

			Course Code: B20AM2201		
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R 20**
		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
vv		**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
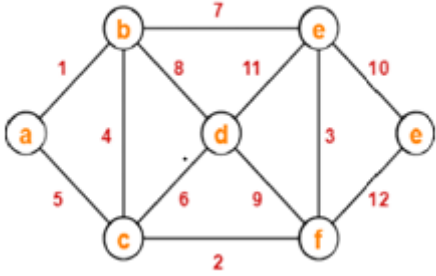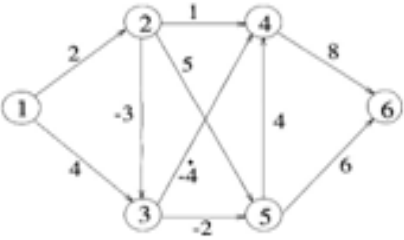
NOTE: Questions can be given as A,B splits or as a single Question for 14 marks

			Course Code: B20CD2202
	SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE(A)		R 20
	II B. Tech II Semester MODEL QUESTION PAPER		
	DESIGN AND ANALYSIS OF ALGORITHMS		
	(For CSG)		
Time: 3Hrs.			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).	Define an algorithm. What are the different criteria that satisfy the algorithm? (Algorithm specifications).	1	2	7
	b).	What is Strassen's matrix multiplication? Explain its time complexity?	1	2	7
		OR			
2	a).	Explain how algorithms performance is analyzed? Describe asymptotic notations?	1	2	7
	b).	Draw the tree of calls of merge sort for the following set. (35,25,15,10,45,75, 85, 65,55,5,20,18)	1	3	7
		UNIT-II			
3	a).	Present a Greedy Algorithm for Sequencing Unit Time Jobs with deadlines and profits.	2	3	7
	b).	Illustrate, how to find the minimum cost spanning tree by using Prim's Algorithm.	2	3	7
		OR			
4	a).	Solve knapsack problem with greedy approach for instances n=3,m=6,profits are(p1, p2,p3) =(1,2,5), weights are (w1,w2,w3) = (2,3,4) .	2	3	7

	b).	What is a Minimum cost spanning tree? Identify an efficient data structure for implementation of Kaushal's Algorithm for the connected Weighted Graph. 	2	3	7
		UNIT-III			
5	a).	Construct an optimal travelling sales person tour using Dynamic Programming. 010 93 5062 9607 7350	3	3	7
	b).	Apply dynamic programming to obtain optimal binary search tree for the identifier set (a1,a2,a3,a4)=(cin ,for,int ,while) with(p1,p2, p3,p4)=(1,4,2,1),(q0,q1,q2, q3,q4) = (4,2,4,1,1) and also write algorithm for its construction.	3	3	7
		OR			
6	a).	Solve0/1 knapsack problem for the following data using sets method Let us consider that the capacity of the knapsack is W = 25 and the items are as shown in the following table. 	Item	A	B	C	D
---	---	---	---	---
Profit	24	18	18	10
Weight	24	10	10	7		3	3	7
	b).	Find the shortest path from node1 to every other node in the graph given below using all pairs shortest algorithm. 	3	3	7

			CO	KL	M
		UNIT-IV			
7	**a).**	Relate Hamiltonian cycle with travelling sales person problem and also give the back tracking solution vector that finds all Hamiltonian cycles for any directed or undirected graph.	4	3	7
	b).	Write the branch and bound algorithm to generate minimum length tour for the given cost adjacency matrix. $$\begin{bmatrix} \infty & 18 & 28 & 8 & 9 \\ 13 & \infty & 14 & 2 & 1 \\ 1 & 3 & \infty & 1 & 2 \\ 17 & 4 & 16 & \infty & 1 \\ 14 & 2 & 5 & 16 & \infty \end{bmatrix}$$	4	3	7
		OR			
8	**a).**	Draw the portion of state space tree generated by recursive back tracking algorithm for sum of subsets problem with an example.	4	3	7
	b).	Consider the knapsack instance n=4,(p1,p2,p3,p4)=(10,10,12,18),(w1,w2,w3,w4)=(2,4,6,9)and m=15. Solvethis0/1Knapsack problem using least cost branch and bound.	4	3	7
		UNIT-V			
9	**a).**	Write short notes on i) Classes of NP-hard ii) Classes of NP-complete And Prove that if NP≠CO−NP, then P≠NP	5	3	7
	b).	Explain how Modular arithmetic is used in Large Integer Multiplication.	5	2	7
		OR			
10	**a).**	State and prove Cook's theorem.	5	3	7
	b).	Explain Chinese Remainder theorem in detail.	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

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)	R 20
II B. Tech II Semester MODEL QUESTION PAPER	
OPERATING SYSTEMS	
(For 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).	What is Operating System? Explain about Loosely coupled and Tightly Coupled operating systems?	1	2	7
	b).	What is Micro Kernel Structure? How it is different from Layered Structure?	1	2	7
		OR			
2.	a).	What is an Interrupt? How the Interrupts are handled by Operating System?	1	2	7
	b).	What is Virtual Machine? Explain different Hypervisors used in virtual machine?	1	2	7
		UNIT - II			

3.	a).	The following table represents details of four processes
		
		 Process Arrival Time Burst Time
		 P1 0 6
		 P2 4 8
		 P3 6 7
		 P4 2 3
		
		 Calculate average waiting time and Average Turnaround time using the following scheduling algorithms
		    i) Non-Preemptive Shortest Job First Scheduling algorithm.
		    ii) Preemptive Shortest Job First Scheduling algorithm
			2	3	10

	b).	Explain any two Multi Processor scheduling algorithms? List out its advantages and limitations	2	2	4
		OR			

4.	a).	The following table represents details of four processes
		
		Process Arrival Times Burst Time Priority
		P1 8 9 4
		P2 6 5 5
		P3 4 6 1
		P4 4 5 6
		P5 0 6 3
		P6 2 8 2
		
		Calculate average waiting time and Average Turnaround time using the following scheduling algorithms
		    i) Non-Preemptive Priority scheduling algorithm
		    ii) Preemptive Priority scheduling algorithm
			2	3	10

	b).	How the threads are scheduled? Explain	2	2	4
		UNIT - III			

5.	a).	Explain the following terms with suitable examples
		    i) Critical Section.
		    ii) Semaphore.
			3	2	7

	b).	Design a solution for handling deadlock when it is occurred?	3	3	7
		OR			
6.	a).	Write a semaphore solution for the Readers and Writers problem	3	3	7
	b).	Design a deadlock avoidance algorithm? Outline the advantages and Limitations.	3	3	7
		UNIT - IV			
7.	a).	Summarize different Free space management techniques used in contiguous memory allocation?	4	2	7
	b).	What is Inverted Paging? How it different from paging?	4	3	7

8.	a).	Find out number of page faults for the given page requests using Least recently Used page replacement algorithm when
		    i) Number of frames =3
		    ii) Number of Frames = 4
		Where, page requests: 5, 7, 6, 0, 7, 1, 7, 2, 0, 1, 7, 1, 0.
			4	2	7

	b).	What is paged segmentation? How it is implemented in MULTICS?	4	3	7
		UNIT - V			
9.	a).	What is system protection? Explain different protection mechanisms?	5	2	7
	b).	How the Processes and files are managed in Unix operating system?	5	2	7
		OR			
10.	a).	What is file system implementation? Explain i-node file allocation algorithm?	5	2	7

	b).	How the Processes and files are managed in Windows operating system?	**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: B20CD2204

	Course Code: B20CD2204
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)	**R 20**
II B. Tech II Semester MODEL QUESTION PAPER	
COMPUTER GRAPHICS	
(For CSG)	

Time: 3 Hrs.	Max. Marks:70

Answer any one Question from Each Unit

All questions carry equal Marks

			CO	KL	M
		UNIT – I			
1.	a).	Explain applications areas of Computer Graphics?	1	2	7
	b).	Describe the Raster-Scan system with illustrations.	1	2	7
		OR			
2.	a).	Explain about CRT monitors	1	2	7
	b).	Describe about Logical classification of Input Devices	1	2	7
		UNIT – II			
3.	a).	Illustrate DDA Line drawing algorithm using an example.	2	3	7
	b).	Scan convert a circle with radius 5 units and centre point (5,5) using Mid- Point Circle Algorithm.	2	3	7
		OR			
4.	a).	Scan convert a line starting at (0,0) and ending at (10,6) using Brenham's Line drawing algorithm.	2	3	7
	b).	Illustrate Flood fill algorithm.	2	3	7
		UNIT – III			
5.	a).	Demonstrate Two-Dimensional translation, rotation and scaling.	3	3	7
	b).	Obtain the coordinates of a square with (-2,-2), (2,-2), (2,2)and (-2,2) as the corner points after rotating it by 90 degrees clockwise about the point (2,2).	3	3	7
		OR			
6.	a).	Derive transformation matrix for 2D fixed point scaling.	3	3	7
	b).	Derive transformation matrix for 2D pivot point rotation.	3	3	7

		UNIT – IV			
7.	a).	Derive the transformation matrix for Window-to-Viewport coordinate transformation.	4	3	7
	b).	Demonstrate Cohen-Sutherland line Clipping Algorithm with diagrams.	4	3	7
		OR			
8.	a).	Illustrate Liang-Barsky line clipping algorithm.	4	3	7
	b).	Apply Sutherland-Hodgeman algorithm for polygon Clipping.	4	3	7
		UNIT – V			
9.	a).	Construct Three-Dimensional translation and scaling transformation matrices.	5	3	7
	b).	Illustrate natural cubic spline	5	3	7
		OR			
10.	a).	Derive transformation matrix for 3D Rotation about an arbitrary line.	5	3	7
	b).	Illustrate the properties of Bezier curves.	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