				Course Code:B23ADOE03	
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		OPERATING SYSTEMS			
		Offered by AIDS			
		(Offered to 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 Operating system.	**1**	**1**	**2**
	b).	Explain Debugging	**1**	**2**	**2**
	c).	List Multi-threading Models	**2**	**1**	**2**
	d).	Explain Context-Switching	**2**	**2**	**2**
	e).	What is Monitor?	**3**	**2**	**2**
	f).	Demonstrate Swapping	**3**	**2**	**2**
	g).	What are Contiguous memory allocation techniques.	**4**	**2**	**2**
	h).	What is Page fault?	**4**	**2**	**2**
	i).	List any two File attributes.	**5**	**1**	**2**
	j).	Define Access Matrix.	**5**	**1**	**2**
				5 x 10 = 50 Marks	
		UNIT-1	**CO**	**KL**	**M**
2.	**a).**	Draw the Micro kernel Operating System Structure and explain the components.	**1**	**2**	**5**
	b).	Describe the major services provided by Operating System	**1**	**2**	**5**
		OR			
3.	**a).**	Explain the different process management system calls	**1**	**2**	**5**
	b).	Illustrate the Booting process of Operating System	**1**	**2**	**5**
		UNIT-2			
4.	**a).**	Illustrate Thread scheduling algorithms	**2**	**2**	**4**
	b).	Assume you have the following jobs to execute with one processor, with the jobs arriving in the order listed here Process | Burst Time | Arrival Time P0 | 80 | 0	**2**	**3**	**6**

		<table><tr><td>P1</td><td>20</td><td>10</td></tr><tr><td>P2</td><td>10</td><td>10</td></tr><tr><td>P3</td><td>20</td><td>80</td></tr><tr><td>P4</td><td>50</td><td>85</td></tr></table> Find out the following by using Round Robin Scheduling Algorithm with a Quantum of 15. i. Gantt chart illustrating the execution of these processes ii. Turnaround time of the Processes iii. Average wait time for the Processes			
		OR			
5.		Assume you have the following jobs to execute with one processor <table><tr><td>Process Id</td><td>Arrival time</td><td>Burst time</td><td>Priority</td></tr><tr><td>P1</td><td>8</td><td>6</td><td>1</td></tr><tr><td>P2</td><td>5</td><td>15</td><td>2</td></tr><tr><td>P3</td><td>4</td><td>8</td><td>0</td></tr><tr><td>P4</td><td>3</td><td>5</td><td>4</td></tr><tr><td>P5</td><td>0</td><td>13</td><td>3</td></tr></table> Find out Average Waiting time and Average Turnaround Time using Shortest Job First (Both Preemptive and Non-Premptive)	**2**	**3**	**10**
		UNIT-3			
6.	**a).**	Illustrate the Critical Section Problem solution for the Dining Philosophers problem using Semaphores	**3**	**2**	**5**
	b).	Describe in detail Sleep and Wakeup	**3**	**2**	**5**
		OR			
7.		Describe Dead lock avoidance using Banker's Algorithm with an example.	**3**	**2**	**10**
		UNIT-4			
8.	**a).**	Compare Contiguous and Non-Contiguous memory allocations	**4**	**2**	**4**
	b).	Find out the seek distance of read write head using Shortest seek time first Disk scheduling algorithm, when the order of cylinder request is 82, 170, 43, 140, 24, 16, 190 and current position of Read/Write head is: 50.	**4**	**3**	**6**

		OR			
9.	**a).**	Consider the following page reference string: 1 2 3 4 2 1 5 6 2 1 2 3 7 6 3 2 1 2 3 6. Find out the Number of Page faults using i) FIFO, LRU and Optimal page replacement algorithms with 3 frames.	**4**	**3**	**6**
	b).	Explain any two RAID Levels with diagram.	**4**	**2**	**4**
		UNIT-5			
10.	**a).**	Discuss File system implementation and explain File allocation algorithm.	**5**	**2**	**5**
	b).	What is the Access Matrix? Explain copy, owner and control rights with an example access matrix.	**5**	**2**	**5**
		OR			
11.	**a).**	Explain various file access methods with suitable examples.	**5**	**2**	**5**
	b).	Explain Protection goals and principles.	**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: B23ADOE04	
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)					**R23**
III B.Tech. II Semester MODEL QUESTION PAPER					
SOFTWARE ENGINEERING					
Offered by AIDS					
(Offered to 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 software engineering.	**1**	**1**	**2**
	b).	What is meant by a process and a task.	**1**	**1**	**2**
	c).	List non-functional requirements for a system.	**2**	**1**	**2**
	d).	Define behavioral model.	**2**	**1**	**2**
	e).	What is an actor and a use-case?	**3**	**1**	**2**
	f).	What is the difference between a sequence diagram and a collaboration diagram?	**3**	**1**	**2**
	g).	Define white box testing and black box testing.	**4**	**1**	**2**
	h).	How to define a debugging process?	**4**	**2**	**2**
	i).	Write about metric maintenance.	**5**	**2**	**2**
	j).	What is SQA?	**5**	**1**	**2**
				5 x 10 = 50 Marks	
		UNIT-1			
2.	**a).**	Explain waterfall model with neat diagram.	**1**	**2**	**5**
	b).	Illustrate unified process.	**1**	**2**	**5**
		OR			
3.	**a).**	Categorize process assessment and improvement	**1**	**3**	**5**
	b).	Explain software myths	**1**	**2**	**5**
		UNIT-2			
4.	**a).**	Interpret functional requirements with examples.	**2**	**2**	**5**
	b).	Differentiate user requirements and system requirements.	**2**	**3**	**5**
		OR			
5.	**a).**	Classify the characteristics of context model, behavioral model and data model.	**2**	**3**	**5**
	b).	Interpret Software Requirements document.	**2**	**2**	**5**

		UNIT-3			
6.	**a).**	Identify the relationships in class diagram for **"Airlines Reservation System".**	**3**	**2**	**5**
	b).	Explain interaction diagrams.			
		OR	**3**	**3**	**5**
7.	**a).**	Design the complete use-case model for the following system "**Hospital management system"**	**3**	**2**	**5**
	b).	Explain about architectural styles.	**4**	**2**	**5**
		UNIT-4			
8.	**a).**	Explain about white box testing with examples.	**4**	**2**	**5**
	b).	Interpret black box testing with examples.	**4**	**2**	**5**
		OR			
9.	**a).**	Interpret "A strategic approach to software testing".	**4**	**2**	**5**
	b).	Illustrate unit testing with examples.	**4**	**2**	**5**
		UNIT-5			
10.	**a).**	Explain metrics for design model.	**5**	**2**	**5**
	b).	Interpret metrics for testing, metrics for maintenance.	**5**	**3**	**5**
		OR			
11.	**a).**	Categorize ISO 9000 quality standards.	**1**	**2**	**5**
	b).	Explain about white box testing with examples.	**1**	**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: B23AMOE04
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		DATABASE MANAGEMENT SYSTEMS			
		(Offered by AIML)			
		(Offered to 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).**	What are goals of DBMS?	**1**	**1**	**2**
	b).	What is Data Independence? List the types.	**1**	**1**	**2**
	c).	Quote the example for composite attribute.	**2**	**1**	**2**
	d).	What is meant by cardinality and degree of relation?	**2**	**1**	**2**
	e).	Explain difference between drop and delete commands?	**3**	**1**	**2**
	f).	Explain left outer join?	**3**	**1**	**2**
	g).	State 1NF with example?	**4**	**1**	**2**
	h).	Define dependency preserving decomposition?	**4**	**1**	**2**
	i).	What is conflict serializability?	**5**	**1**	**2**
	j).	Mention any two failure classifications?	**5**	**1**	**2**
					5 x 10 = 50 Marks
		UNIT-1			
2.	**a)**	Compare Database Management Systems with File Processing Systems	**1**	**3**	**4**
	b)	Explain the roles of different database users	**1**	**2**	**6**
		OR			
3.	**a)**	Discuss the applications of Database Management Systems	**1**	**2**	**5**
	b)	Describe the structure of a Database Management System	**1**	**2**	**5**
		UNIT-2			
4.		Give syntax and apply the SQL commands for defining two example tables of your choice. Then insert data, update data in the tables	**2**	**3**	**10**
		OR			
5.		What are relational instances and schemas? How'd you use keys and schemas in relational model?	**2**	**3**	**10**
		UNIT-3			
6.	**a)**	Apply conceptual DB design and draw E-R diagram for the following situations by assuming appropriate Attributes	**3**	**3**	**5**

		i) A Part is supplied by many suppliers at different costs and a supplier supplies many parts ii) An employee works in at most one department and a department has many employees iii) A house has at least and at most one owner and owner has many houses.			
	b)	Demonstrate set operations in SQL	**3**	**3**	**5**
		OR			
7.	**a)**	Apply different kinds of joins in SQL to example queries	**2**	**3**	**5**
	b)	Illustrate basic features of ER model	**2**	**3**	**5**
		UNIT-4			
8.	**a)**	Apply Loss-less join decomposition into BCNF for an example table	**4**	**3**	**5**
	b)	Apply dependency preserving decomposition into 3NFfor an example table	**4**	**3**	**5**
		OR			
9.		Illustrate Normal forms from 1 NF to BCNF with suitable examples.	**4**	**3**	**10**
		UNIT-5			
10.	**a)**	Briefly discuss about ARIES algorithm.	**5**	**2**	**5**
	b)	What is a Transaction? Explain about transaction states?	**5**	**2**	**5**
		OR			
11.	**a)**	What is locking protocol? Describe the Strict Two Phase locking protocol?	**5**	**2**	**5**
	b)	Explain in detail about ACID properties with examples?	**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: B23AMOE05

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

III B.Tech. II Semester MODEL QUESTION PAPER

APPLIED MACHINE LEARNING

(Offered by AIML)

(Offered to 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).**	What are the main types of machine learning?	**1**	**1**	**2**
	b).	Define normalization in the context of feature transformation.	**1**	**2**	**2**
	c).	Explain the difference between missing data and noisy data.	**2**	**2**	**2**
	d).	What is the role of information gain in building a decision tree?	**2**	**1**	**2**
	e).	Explain about Bias Variance Trade-off	**3**	**2**	**2**
	f).	What is a confusion matrix, and what information does it provide?	**3**	**1**	**2**
	g).	Define Mean Squared Error (MSE).	**4**	**1**	**2**
	h).	State the equation of a simple linear regression model.	**4**	**2**	**2**
	i).	Differentiate between a biological neuron and an artificial neuron.	**5**	**2**	**2**
	j).	Describe the impact of the number of clusters (K) on the performance of K-means clustering	**5**	**2**	**2**

5 x 10 = 50 Marks

		UNIT-1			
2.	**a).**	Illustrate the types of data using examples	**1**	**2**	**5**
	b).	What is normalization of data. Given the following data points for a feature “Age”: [20, 35, 50], apply min-max normalization to scale the values between 0 and 1.	**1**	**2**	**5**
		OR			
3.	**a).**	Describe the different forms of machine learning: Supervised, Unsupervised, and Reinforcement Learning.	**1**	**2**	**5**
	b).	Write detailed note on Feature Transformations.	**1**	**2**	**5**
		UNIT-2			
4.	**a).**	Explain filter method in feature selection	**2**	**2**	**5**
	b).	Apply PCA on the following dataset	**2**	**3**	**5**

Feature	Example1	Example2	Example3	Example 4
A	4	8	13	7
B	11	4	5	14

		OR			
5.	**a).**	Describe the techniques used for handling missing data and noisy data during data cleaning.	**2**	**2**	**5**
	b).	Apply Information gain metric to generate decision tree for the following dataset	**2**	**3**	**5**

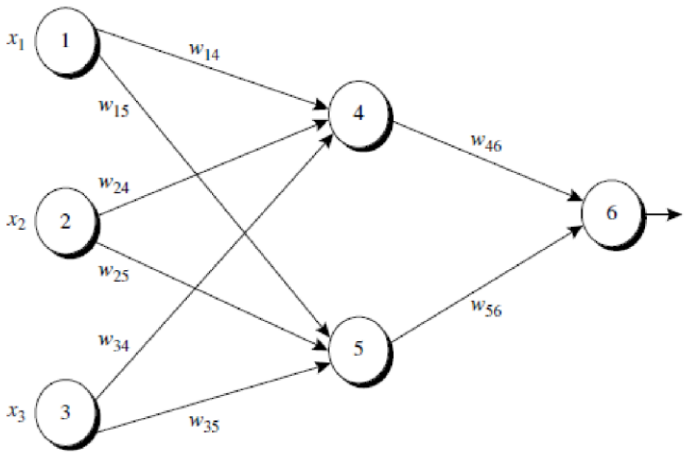
RID	age	income	student	credit_rating	Class: buys_computer
1	youth	high	no	fair	no
2	youth	high	no	excellent	no
3	middle_aged	high	no	fair	yes
4	senior	medium	no	fair	yes
5	senior	low	yes	fair	yes
6	senior	low	yes	excellent	no
7	middle_aged	low	yes	excellent	yes
8	youth	medium	no	fair	no
9	youth	low	yes	fair	yes
10	senior	medium	yes	fair	yes
11	youth	medium	yes	excellent	yes
12	middle_aged	medium	no	excellent	yes
13	middle_aged	high	yes	fair	yes
14	senior	medium	no	excellent	no

		UNIT-3			
6.	**a).**	Explain how the confusion matrix can be constructed for this classification task. What metrics can you derive from it?	**3**	**2**	**5**
	b).	Consider the following training data and classify the pattern using Naive Bayes Classifier.	**3**	**3**	**5**

Pattern	Feature1	Feature2	Feature3	Class
1	0	0	0	C0
2	1	0	1	C1
3	1	0	0	C0
4	1	1	1	C1
5	0	1	1	C1
6	0	1	1	C0
7	1	0	1	?

		OR			
7.	**a).**	What is an ROC curve? How is it used to compare the performance of classifiers? Draw and explain a typical ROC curve.	**3**	**2**	**5**
	b).	Apply K-Nearest Neighbor Classifier to following dataset	**3**	**3**	**5**

Brightness	Saturation	Class
40	20	Red
50	50	Blue
60	90	Blue
10	25	Red
70	70	Blue
60	10	Red
25	80	Blue

<table>
<tr><td></td><td></td><td colspan="4">UNIT-4</td></tr>
<tr><td>8.</td><td>a).</td><td>Apply linear regression to the following data, where the score in the aptitude test is used to predict the score in the statistics course. Also predict If a student made an 80 on the aptitude test, what score would he get in statistics?
<table>
<tr><th>Aptitude Test Score</th><th>Statistics Score</th></tr>
<tr><td>95</td><td>85</td></tr>
<tr><td>85</td><td>95</td></tr>
<tr><td>80</td><td>70</td></tr>
<tr><td>70</td><td>65</td></tr>
<tr><td>60</td><td>70</td></tr>
</table></td><td>4</td><td>3</td><td>5</td></tr>
<tr><td></td><td>b).</td><td>Illustrate Support Vector Machines with kernel trick.</td><td>4</td><td>2</td><td>5</td></tr>
<tr><td></td><td></td><td colspan="4">OR</td></tr>
<tr><td>9.</td><td>a).</td><td>Describe how KNN regression works and how it differs from KNN Classification.</td><td>4</td><td>3</td><td>5</td></tr>
<tr><td></td><td>b).</td><td>Compare Linear SVMs and Non-Linear SVMs in terms of their applicability and performance</td><td>4</td><td>2</td><td>5</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td colspan="4">UNIT-5</td></tr>
<tr><td>10.</td><td>a).</td><td>Explain Agglomerative Clustering method</td><td>5</td><td>2</td><td>5</td></tr>
<tr><td></td><td>b).</td><td>Apply back propagation algorithm on following MLP and data. Show the Weights values after single epoch

</td><td>5</td><td>3</td><td>5</td></tr>
<tr><td></td><td></td><td colspan="4">OR</td></tr>
<tr><td>11.</td><td>a).</td><td>Explain how a single-layer perceptron works for binary classification. Give an example.</td><td>5</td><td>2</td><td>5</td></tr>
<tr><td></td><td>b).</td><td>Consider the following set of data points:
(2,3), (3,4), (5,6), (8,8), (9,10)
Apply the first iteration of K-Means clustering with K=2 and initial centroids as (2,3) and (8,8). Show the new centroids.</td><td>5</td><td>3</td><td>5</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 10 marks

		Course Code: B23CEOE03			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		DISASTER MANAGEMENT			
		(Offered by Civil Engineering)			
		(Offered to AIDS, AIML, CSIT, CSBS, CSD, CSE, CIC, ECE, EEE, IT & 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).**	What is disaster management?	**1**	**2**	**2**
	b).	What is capacity building? Give one example.	**1**	**2**	**2**
	c).	Mention two ways disasters affect livelihoods in rural areas.	**2**	**2**	**2**
	d).	How do greenhouse gases contribute to climate change?	**2**	**2**	**2**
	e).	What are the four main phases of the disaster management cycle?	**3**	**2**	**2**
	f).	What is the difference between relief and recovery?	**3**	**2**	**2**
	g).	What is the role of education in disaster risk reduction (DRR)?	**4**	**2**	**2**
	h).	What is community-based disaster recovery?	**4**	**2**	**2**
	i).	How does technology help in disaster management?	**5**	**2**	**2**
	j).	What is geospatial technology?	**5**	**2**	**2**
					5 x 10 = 50 Marks
		UNIT-1	**CO**	**KL**	**M**
2.	**a).**	What are urban floods? Should they be considered natural disaster or man-made disaster?	**1**	**3**	**5**
	b).	What are Natural Disasters? Is there a relationship between development And occurrence of natural disasters?	**1**	**3**	**5**
		OR			
3.	**a).**	What are Man-made Disasters? How is the work of scientists and engineers related to their occurrence?	**1**	**3**	**5**
	b).	Are urban and rural population susceptible to the same types of natural and man-made disasters? Are rural population at lower risk compared to urban population from a disaster point-of-view?	**1**	**3**	**5**
		UNIT-2			
4.	**a).**	Summarise the interventions needed in a community in the aftermath of a disaster. What support do the disaster survivors need to rebuild their communities?	**2**	**3**	**5**

	b).	Explain the Impacts of disasters on the loss of human lives and livestock with examples. How are the physical and environmental conditions affected by a disaster?	**2**	**3**	**5**
		OR			
5.	**a).**	Why are GHG (Green House Gas) reductions the focus of climate change mitigation? Which of the GHGs are the greatest contributors to climate change from the top 5 GHG emitting countries in the world?	**2**	**3**	**5**
	b).	Explain global climate change. Establish any relationship between global climate change and the occurrence of natural disasters.	**2**	**3**	**5**
		UNIT-3			
6.	**a).**	Discuss the various stages of the disaster management cycle. Explain the structural and non-structural measures necessary for effective mitigation of disaster impacts.	**3**	**3**	**5**
	b).	Associate the basic strategies and practices of disaster risk reduction with the disaster management cycle.	**3**	**3**	**5**
		OR			
7.	**a).**	Describe a risk management framework. How do you assess the vulnerability of a community to incidence of disasters?	**3**	**3**	**5**
	b).	Explain the global policies and best practices in the domain of disaster risk reduction and management.	**3**	**3**	**5**
		UNIT-4			
8.	**a).**	Describe the role of education in community preparedness to face disasters. What are the essentials of school disaster education?	**4**	**3**	**5**
	b).	Differentiate between government preparedness and community preparedness. Why is it important to have community preparedness for facing disasters?	**4**	**3**	**5**
		OR			
9.	**a).**	What is the difference between disaster mitigation and adaptation? How does social capital enhance the community response to disasters?	**4**	**3**	**5**
	b).	Explain how resilience can be designed in a community towards facing disasters. How do you go about building community capacity for action?	**4**	**3**	**5**
		UNIT-5			
10.	**a).**	Explain the role of multimedia technology in disaster risk management and training.	**5**	**3**	**5**
	b).	Explain how technology is helping forecast natural disasters and supporting disaster management.	**5**	**3**	**5**
		OR			
11.	**a).**	Explain how indigenous and traditional knowledge of environment and ecology can help reduce the incidence of disasters.	**5**	**3**	**5**

	b).	How does Geospatial Information help in predicting extreme weather events and associated disasters?	**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: B23CEOE04	
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		GREEN BUILDINGS			
		(Offered by Civil Engineering)			
		(Offered to AIDS, AIML, CSIT, CSBS, CSD, CSE, CIC, ECE, EEE, IT & 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).**	Name three methods of stormwater management through landscape design.	**1**	**1**	**2**
	b).	Define greenfield and brownfield sites	**1**	**1**	**2**
	c).	What is the importance of FSC certification in wood products?	**2**	**1**	**2**
	d).	List three types of alternative cements used in green building construction.	**2**	**1**	**2**
	e).	What is waste to energy conversion?	**3**	**1**	**2**
	f).	List three forms of energy commonly used in buildings.	**3**	**1**	**2**
	g).	State the importance of ventilation in buildings	**4**	**1**	**2**
	h).	Define greenroof	**4**	**1**	**2**
	i).	Abbreviate GRIHA and IGBC.	**5**	**1**	**2**
	j).	Discuss the importance of green building rating systems.	**5**	**1**	**2**
				5 x 10 = 50 Marks	
		UNIT-1			
2.	**a).**	Discuss the concept of a ‘Green’ Building. Explain how it is different from a ‘Sustainable Building’. Tabulate the typical features of a green building.	**1**	**2**	**5**
	b).	What is a contaminated site? What additional site preparation is needed if you intend to construct a green building on such a site?	**1**	**2**	**5**
		OR			
3.		What is the significance of selecting a site amongst multiple options in getting a higher green rating? If there is no option but one site for a building project, how do you maximise on getting green credits?	**1**	**2**	**10**
		UNIT-2			
4.	**a).**	Write a note on FSC certification, clearly stating its principles.	**2**	**2**	**5**
	b).	Distinguish between renewable and non-renewable materials.	**2**	**2**	**5**
		OR			
5.	**a).**	Describe any two alternative roofing or low-energy walling systems.	**2**	**2**	**5**

	b).	What are post-consumer and post-industrial wastes? Explain their usage in green building materials with examples.	**2**	**2**	**5**
		UNIT-3			
6.		Explain the concept of embodied energy in building materials. Give few examples for a low and high embodied energy building material used in modern buildings.	**3**	**2**	**10**
		OR			
7.		What are various types and sources of wastewater in residential buildings? What are the benefits of treating wastewater within the premises of buildings instead of discharging into municipal drains or the environment.	**3**	**2**	**10**
		UNIT-4			
8.	**a).**	State the significance of natural lighting penetrating inside buildings to achieve occupant comfort and health.	**4**	**2**	**5**
	b).	Explain the working principle of an air-conditioner used in cooling buildings.	**4**	**2**	**5**
		OR			
9.	**a).**	How is the building design related to saving energy consumption related to lighting inside buildings.	**4**	**2**	**5**
	b).	Explain any two passive (which do not require electricity or other forms of external energy input) cooling strategies adopted in green buildings.	**4**	**2**	**5**
		UNIT-5			
10.		Write a short note on LEED Green Building Certification. Mention the various levels of rating awarded in the LEED programme.	**5**	**2**	**10**
		OR			
11.	**a).**	Explain succinctly about the Energy Conservation Building Code of India and its application in new buildings.	**5**	**2**	**5**
	b).	What is the National Building Code of India? What are the parts in the code that address Green / Sustainable Buildings directly?	**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:B23CEOE03	
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B. Tech. II Semester MODEL QUESTION PAPER			
		BUSINESS STRATEGY			
		(Offered by CSBS)			
		(Offered to 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).**	What is the meaning of strategic management?	**1**	**2**	**2**
	b).	Why is having a vision important for an organization?	**1**	**2**	**2**
	c).	What is core competence? Give an example.	**2**	**2**	**2**
	d).	Define competitive advantage.	**2**	**2**	**2**
	e).	What is a strategic group?	**3**	**2**	**2**
	f).	What is the industry life cycle?	**3**	**2**	**2**
	g).	What is a joint venture?	**4**	**2**	**2**
	h).	What is business portfolio analysis?	**4**	**2**	**2**
	i).	What is a global strategy?	**5**	**2**	**2**
	j).	Give one example of a strategy used in the internet economy.	**5**	**2**	**2**
				5 x 10 = 50 Marks	
		UNIT-1			
2.	**a).**	What is Vision Statement and write the components of Strategic Management Objective?	**1**	**2**	**5**
	b).	Explain about Fit Concept in strategic Management and briefly explain the strategy content.	**1**	**2**	**5**
		OR			
3.	**a).**	Discuss how strategic management helps an organization deal with environmental uncertainty and competition.	**1**	**2**	**5**
	b).	Describe the classical, evolutionary, and processual schools of thought in strategic management.	**1**	**2**	**5**
		UNIT-2			
4.	**a).**	Differentiate between resources, capabilities, and core competencies with examples.	**2**	**2**	**5**
	b).	Explain the VRIO framework. How can it be used to identify sustained competitive advantages?	**2**	**2**	**5**

		OR			
5.	**a).**	What is the capabilities-based approach to strategy? How is it different from traditional resource-based views?	**2**	**2**	**5**
	b).	Define core competence. How does it contribute to achieving a competitive advantage?	**2**	**2**	**5**
		UNIT-3			
6.	**a).**	Mention the phases in Industry Life Cycle and its influence of each phase in a business.	**3**	**2**	**5**
	b).	What is the main goal of Value Chain and Discuss the Generic Strategies?	**3**	**2**	**5**
		OR			
7.	**a).**	Discuss the role of the threat of substitutes and bargaining power of buyers in shaping industry competition.	**3**	**2**	**5**
	b).	What are the different stages of the industry life cycle? Briefly explain the strategic implications at each stage.	**3**	**2**	**5**
		UNIT-4			
8.	**a).**	What are the main motives behind corporate diversification? Explain with examples.	**4**	**2**	**5**
	b).	How does diversification help in risk reduction and market expansion?	**4**	**2**	**5**
		OR			
9.	**a).**	Discuss the advantages and challenges of pursuing unrelated diversification.	**4**	**2**	**5**
	b).	What is a strategic alliance? How does it differ from a joint venture?	**4**	**2**	**5**
		UNIT-5			
10.	**a).**	Explain the McKinsey 7S Framework and its significance in strategy implementation.	**5**	**3**	**5**
	b).	What are the key challenges faced by firms competing in global markets? How can strategies be adapted accordingly?	**5**	**3**	**5**
		OR			
11.	**a).**	Differentiate between the “hard” and “soft” elements of the 7S Framework with examples.	**5**	**3**	**5**
	b).	Discuss the role of corporate governance in strategic management.	**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: B23CSOE03	
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		PRINCIPLES OF DATABASE MANAGEMENT SYSTEMS			
		(Offered by CSE)			
		(Offered to 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).**	What are the goals of DBMS?	**1**	**1**	**2**
	b).	What is Data Independence? List the types.	**1**	**1**	**2**
	c).	Quote the example for composite attribute.	**2**	**1**	**2**
	d).	What is meant by cardinality and degree of relation?	**2**	**1**	**2**
	e).	Explain the difference between drop and delete commands?	**3**	**1**	**2**
	f).	Explain the left outer join?	**3**	**1**	**2**
	g).	State 1NF with example?	**4**	**1**	**2**
	h).	Define dependency preserving decomposition?	**4**	**1**	**2**
	i).	What is conflict serializability?	**5**	**1**	**2**
	j).	Mention any two failure classifications?	**5**	**1**	**2**
				5 x 10 = 50 Marks	
		UNIT-1			
2.	**a)**	Compare Database Management Systems with File Processing Systems	**1**	**3**	**4**
	b)	Explain the roles of different database users	**1**	**2**	**6**
		OR			
3.	**a)**	Discuss the applications of Database Management Systems	**1**	**2**	**5**
	b)	Describe the structure of a Database Management System	**1**	**2**	**5**
		UNIT-2			
4.		Give syntax and apply the SQL commands for defining two example tables of your choice. Then insert data, update data in the tables	**2**	**3**	**10**
		OR			
5.		What are relational instances and schemas? How'd you use keys and schemas in relational model?	**2**	**3**	**10**

		UNIT-3			
6.	**a)**	Apply conceptual DB design and draw E-R diagram for the following situations by assuming appropriate Attributes i) A Part is supplied by many suppliers at different costs and a supplier supplies many parts ii) An employee works in at most one department and a department has many employees iii) A house has at least and at most one owner and owner has many houses.	**3**	**3**	**5**
	b)	Demonstrate set operations in SQL	**3**	**3**	**5**
		OR			
7.	**a)**	Apply different kinds of joins in SQL to example queries	**2**	**3**	**5**
	b)	Illustrate basic features of ER model	**2**	**3**	**5**
		UNIT-4			
8.	**a)**	Apply Loss-less join decomposition into BCNF for an example table	**4**	**3**	**5**
	b)	Apply dependency preserving decomposition into 3NFfor an example table	**4**	**3**	**5**
		OR			
9.		Illustrate Normal forms from 1 NF to BCNF with suitable examples.	**4**	**3**	**10**
		UNIT-5			
10.	**a)**	Briefly discuss ARIES algorithm.	**5**	**2**	**5**
	b)	What is a Transaction? Explain about transaction states?	**5**	**2**	**5**
		OR			
11.	**a)**	What is the locking protocol? Describe the Strict Two Phase locking protocol?	**5**	**2**	**5**
	b)	Explain in detail about ACID properties with examples?	**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: B23CIOE03

SAGI RAMA KRISHNAMRAJU ENGINEERING COLLEGE (A) **R23**

III B.Tech. II Semester MODEL QUESTION PAPER

OPERATING SYSTEMS

(Offered by CIC)

(Offered to CE, ECE, EEE & ME)

Time: 3 Hrs. **Max.Marks:70M**

Answer Question No.1compulsorily

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

Assume suitable data if necessary

10x 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).	Explain process states.	**2**	**1**	**2**
	d).	Explain waiting time and turnaround time	**2**	**2**	**2**
	e).	List the two basic operations of a Semaphore?	**3**	**1**	**2**
	f).	Explain race condition with an example.	**3**	**1**	**2**
	g).	Explain page table.	**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**

5x 10 = 50 Marks

		UNIT-1			
2.	**a).**	Explain Operating System Structures?	**1**	**2**	**5**
	b).	List different types of system calls.	**1**	**2**	**5**
		OR			
3.		Explain the different functions and services provided by an operating system.	**1**	**2**	**10**
		UNIT-2			
4.	**a).**	Differentiae Process and Thread.	**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 Detection?	**3**	**2**	**5**
	b).	Explain how semaphores are used while solving reader and writers problem.	**3**	**2**	**5**
		OR			
7.		Explain Banker's Algorithm with an Example?	**3**	**2**	**10**
		UNIT-4			
8.	**a).**	What is virtual memory? Discuss the benefits of virtual memory Technique.	**4**	**2**	**5**
	b)	Differentiate Paging and segmentation	**4**	**3**	**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 above reference string and find out how many page faults are produced.	**4**	**3**	**5**
	b).	Explain the following disk scheduling algorithm with proper Example a)FCFS b)LOOK c)C-SCAN.	**4**	**2**	**5**
		UNIT-5			
10.	**a).**	Explain file allocation methods in detail.	**5**	**2**	**5**
	b).	Explain the need and Goals of protection.	**5**	**2**	**5**
		OR			
11.	**a).**	Explain the implementation of access matrix.	**5**	**2**	**5**
	b).	Write short notes on file allocation methods	**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: B2CIOE04	
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		DATABASE MANAGEMENT SYSTEMS			
		(Offered by CIC)			
		(Offered to 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).**	What are goals of DBMS?	**1**	**1**	**2**
	b).	What is Data Independence? List the types.	**1**	**1**	**2**
	c).	Quote the example for composite attribute.	**2**	**1**	**2**
	d).	What is meant by cardinality and degree of relation?	**2**	**1**	**2**
	e).	Explain difference between drop and delete commands?	**3**	**1**	**2**
	f).	Explain left outer join?	**3**	**1**	**2**
	g).	State 1NF with example?	**4**	**1**	**2**
	h).	Define dependency preserving decomposition?	**4**	**1**	**2**
	i).	What is conflict serializability?	**5**	**1**	**2**
	j).	Mention any two failure classifications?	**5**	**1**	**2**
				5 x 10 = 50 Marks	
		UNIT-1			
2.	**a)**	Compare Database Management Systems with File Processing Systems	**1**	**3**	**4**
	b)	Explain the roles of different database users	**1**	**2**	**6**
		OR			
3.	**a)**	Discuss the applications of Database Management Systems	**1**	**2**	**5**
	b)	Describe the structure of a Database Management System	**1**	**2**	**5**
		UNIT-2			
4.		Give syntax and apply the SQL commands for defining two example tables of your choice. Then insert data, update data in the tables	**2**	**3**	**10**
		OR			
5.		What are relational instances and schemas? How'd you use keys and schemas in relational model?	**2**	**3**	**10**
		UNIT-3			

6.	**a)**	Define and differentiate between Domain, Key, and Integrity constraints.	**3**	**3**	**5**
	b)	Illustrate the SELECT and PROJECT operations in Relational Algebra	**3**	**3**	**5**
		OR			
7.	**a)**	Describe any two extended features of the ER model	**2**	**3**	**5**
	b)	What are the different types of relationships in ER models?	**2**	**3**	**5**
		UNIT-4			
8.	**a)**	Apply Loss-less join decomposition into BCNF for an example table	**4**	**3**	**5**
	b)	Apply dependency preserving decomposition into 3NFfor an example table	**4**	**3**	**5**
		OR			
9.		Illustrate Normal forms from 1 NF to BCNF with suitable examples.	**4**	**3**	**10**
		UNIT-5			
10.	**a)**	Briefly discuss about ARIES algorithm.	**5**	**2**	**5**
	b)	What is a Transaction? Explain about transaction states?	**5**	**2**	**5**
		OR			
11.	**a)**	What is locking protocol? Describe the Strict Two Phase locking protocol?	**5**	**2**	**5**
	b)	Explain in detail about ACID properties with examples?	**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:B23ECOE02
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B. Tech. II Semester MODEL QUESTION PAPER			
		LINEAR AND DIGITAL ICS APPLICATIONS			
		(Offered by ECE)			
		(Offered to AIDS, AIML, CE, CSIT, CSBS, CSD, CSE, CIC, EEE, IT & 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).**	Draw the Pin diagram of Op-Amp.	**1**	**2**	**2**
	b).	Define CMRR.	**1**	**3**	**2**
	c).	Draw the circuit diagram of first order HPF using op-amp	**2**	**2**	**2**
	d).	Draw the circuit diagram of current to voltage converter using op-amp	**2**	**1**	**2**
	e).	Draw the Pin diagram of 555 timer.	**3**	**1**	**2**
	f).	Mention any 4 applications of 555 Timer as Monostable multivibrator.	**3**	**2**	**2**
	g).	What are the different types of DACs?	**4**	**2**	**2**
	h).	List important specifications of ADC.	**4**	**1**	**2**
	i).	Draw the circuit diagram of Decoder using 74x138.	**5**	**2**	**2**
	j).	Draw the diagram of T-FF.	**5**	**1**	**2**
					5 x 10 = 50 Marks
		UNIT-1			
2.	**a).**	Draw a block diagram of typical OP-AMP and explain the function of each block.	**1**	**3**	**5**
	b).	Explain the operation of Square wave generator circuit with neat circuit diagram	**1**	**3**	**5**
		OR			
3.	**a).**	Explain the operation of a Regenerative comparator with circuit diagram and Waveforms.	**1**	**2**	**4**
	b).	Explain the operation of any 2 of the following op amp applications. (i) Differentiator (ii) Integrator	**1**	**2**	**6**
		UNIT-2			
4.	**a).**	Derive the transfer function of a first order LPF.	**2**	**3**	**5**
	b).	Explain the operation of Wein-bridge oscillator	**2**	**2**	**5**
		OR			

5.	**a).**	Design voltage to current converter using op-amp and then explain its operation.	**2**	**3**	**5**
	b).	Explain the operation of Quadrature oscillator and derive an expression for frequency of oscillations	**2**	**3**	**5**
		UNIT-3			
6.	**a).**	Draw the circuit of Schmitt trigger using IC555 timer and explain its operation?	**3**	**3**	**5**
	b).	Draw and explain the working of 555-timer circuit in astable mode to get output waveform with 50% duty cycle.	**3**	**4**	**5**
		OR			
7.	**a).**	List important specifications of 566 VCO IC.	**3**	**3**	**5**
	b).	With the help of schematic diagram of 555 timer, explain how it can be used as mono stablemultivibrator	**3**	**3**	**5**
		UNIT-4			
8.	**a).**	With a neat diagram explain the working principle of R-2R ladder type DAC.	**4**	**3**	**5**
	b).	With a neat block diagram, explain successive approximation type A/D converters in detail.	**4**	**3**	**5**
		OR			
9.	**a).**	Which is the fastest ADC? Explain the operation and discuss its merits and demerits.	**4**	**3**	**5**
	b).	Draw and explain the circuit diagram of parallel comparator type ADC.	**4**	**3**	**5**
		UNIT-5			
10.	**a).**	Explain CMOS AND-OR-INVERT logic with an example	**5**	**3**	**5**
	b).	Explain the following Sequential logic circuits with suitable ICs. (a) Multiplexer. (b) De Multiplexer	**5**	**3**	**5**
		OR			
11.	**a).**	Explain the following Combinational logic circuits with suitable ICs. (a) D flip-flop. (b) JK Flip-flop.	**5**	**3**	**5**
	b).	Design an Universal shift Register using IC74X194 and explain the operation.	**5**	**4**	**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: B23EEOE03			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		SENSORS & TRANSDUCERS			
		(Offered by EEE)			
		(Offered to AIDS, AIML, CE, CSIT, CSBS, CSD, CSE, CIC, ECE, IT & 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 a sensor and a transducer with one example each.	**1**	**2**	**2**
	b).	Define sensitivity and accuracy of a sensor.	**1**	**2**	**2**
	c).	State the principle of operation of a capacitive sensor.	**2**	**2**	**2**
	d).	Name any two types of accelerometers.	**2**	**2**	**2**
	e).	What is the basic principle of gas thermometric sensors?	**3**	**2**	**2**
	f).	What is the principle of noise thermometry?	**3**	**2**	**2**
	g).	What is the principle of eddy current sensors?	**4**	**2**	**2**
	h).	List two applications of SQUID sensors.	**4**	**2**	**2**
	i).	Define thick film sensor?	**5**	**2**	**2**
	j).	List any two types of sensors used in medical diagnostics.	**5**	**2**	**2**
					5 x 10 = 50 Marks
		UNIT-1	**CO**	**KL**	**M**
2.	**a).**	Classify Sensors based on their Parameters	**1**	**3**	**5**
	b).	Define selectivity and specificity. How are they related?	**1**	**3**	**5**
		OR			
3.	**a).**	Define the Sensor with a block diagram and Obtain the Biological sensing process.	**1**	**3**	**5**
	b).	Discuss the methods of sensor characterization. How is a sensor electrically characterized?	**1**	**3**	**5**
		UNIT-2			
4.	**a).**	Describe the operation of a parallel-plate capacitive sensor and state its advantages in displacement measurement.	**2**	**3**	**5**
	b).	Explain the working of a piezoelectric accelerometer and state its applications.	**2**	**3**	**5**
		OR			
5.	**a).**	Describe the construction and operation of a ferromagnetic plunger-	**2**	**3**	**5**

		type inductive transducer with a suitable diagram.			
	b).	List different types of photosensors and explain the working of any one in detail.	**2**	**3**	**5**
		UNIT-3			
6.	**a).**	Demonstrate about Acoustic Temperature Sensor in detail	**3**	**3**	**5**
	b).	Explain in detail about Detectors	**3**	**3**	**5**
		OR			
7.	**a).**	Compute Heat Flux Sensors with a neat sketch	**3**	**3**	**5**
	b).	Illustrate Spectroscopic Thermometry in detail	**3**	**3**	**5**
		UNIT-4			
8.	**a).**	Summarize the concepts of Hall Effect and Sensors	**4**	**3**	**5**
	b).	Illustrate in detail about Electromagnetic Flowmeter	**4**	**3**	**5**
		OR			
9.	**a).**	Summarize the concepts of Inductance and Eddy Current Sensors	**4**	**3**	**5**
	b).	Describe in detail Angular/Rotary Movement Transducers	**4**	**3**	**5**
		UNIT-5			
10.	**a).**	Illustrate the concepts of Film Sensors	**5**	**3**	**5**
	b).	Explain the application of Sensors for Environmental Monitoring	**5**	**3**	**5**
		OR			
11.	**a).**	Explore in detail Semiconductor IC Technology-Standard Methods.	**5**	**3**	**5**
	b).	Explain the application of Sensors for Aerospace.	**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: B23EEOE04			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		MATLAB PROGRAMMING FOR ENGINEERING APPLICATIONS			
		(Offered by EEE)			
		(Offered to AIDS, AIML, CE, CSIT, CSBS, CSD, CSE, CIC, ECE, IT & 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).**	Write the syntax to find the eigen values of a matrix using MATLAB	**1**	**1**	**2**
	b).	Mention any two built-in functions in MATLAB and their purpose.	**1**	**1**	**2**
	c).	What is the error when inv(A) command is executed on 2x3 matrix	**1**	**2**	**2**
	d).	Write a MATLAB for loop to calculate the sum of numbers from 1 to 10.	**2**	**2**	**2**
	e).	Explain the purpose of the else-if statement in MATLAB.	**2**	**1**	**2**
	f).	List any two functions used for curve fitting in MATLAB.	**3**	**1**	**2**
	g).	How to generate normally distributed random numbers in MATLAB?	**3**	**1**	**2**
	h).	How to find the rank of a 2x2 matrix using MATLAB	**4**	**1**	**2**
	i).	State the difference between ODE and PDE with one MATLAB function used for solving ODEs.	**4**	**2**	**2**
	j).	Write a MATLAB command to implement a single iteration of the Newton-Raphson method.	**5**	**1**	**2**
					5 x 10 = 50 Marks
		UNIT-1			
2.	**a).**	**Explain** the different data types in MATLAB? How are they represented in MATLAB programming?	**1**	**2**	**5**
	b).	**Explain** the vectors, matrices, and their conversions procedures by writing a MATLAB program with an example.	**1**	**2**	**5**
		OR			
3.	**a).**	**Describe** commonly used commands for plotting graphs in results analysis	**1**	**2**	**5**
	b).	Consider three matrices given as follows: $\text{Mat}A = \begin{bmatrix} 4 & 7 & 1 \\ 7 & 2 & 3 \\ 5 & 5 & 9 \end{bmatrix}; \text{Mat}B = \begin{bmatrix} 6 & 0 & 4 \\ 9 & 8 & 1 \\ 7 & 5 & 2 \end{bmatrix}; \text{Mat}C = \begin{bmatrix} 2 & 5 & 3 \\ 0 & 17 & 9 \\ 8 & 0 & 1 \end{bmatrix}$ **Calculate** the following: (a) MatA + MatB, (b) MatB – MatC, (c) MatA *MatC, (d) Transpose of MatB,	**1**	**2**	**5**

		UNIT-2			
4.	**a).**	**Explain** the significance of script files and editor debuggers in MATLAB program.	**2**	**2**	**5**
	b).	For the arrays x and y given below, use MATLAB to **Calculate** all the elements in x that are greater than the corresponding elements in y. x = [−3, 0, 0, 2, 6, 8] y = [−5, −2, 0, 3, 4, 10]	**2**	**3**	**5**
		OR			
5.	**a).**	**Write** a program to evaluate the equation $y(x) = x^2-3x+2$ for all values of x between -1 and 3, in steps of 0.1. Do this twice, once with a for loop and once with vectors. Plot the resulting function using a thick dashed red line	**2**	**3**	**5**
	b).	Mention different types of conditional statements and loop control statements. **Explain** it with suitable example	**2**	**2**	**5**
		UNIT-3			
6.	**a).**	**Explain** the terms Mean, Standard Deviation, median and Mode with suitable matlab examples.	**3**	**2**	**5**
	b).	**Illustrate** the difference between the rand(), randn(), and randi() functions? and explain with examples.	**3**	**2**	**5**
		OR			
7.		Consider $P(x) = -0.02x^3+0.1x^2-0.2x+1.66$, which passes through the four points (1, 1.54), (2, 1.5), (3, 1.42), and (5, 0.66). **Compute** the (a) P(4), (b) P'(4), the extrapolated value P(5.5) and show how to find the coefficients of P(x)	**3**	**3**	**10**
		UNIT-4			
8.		**Solve** the set of linear system equations using the Gauss elimination method. $2x_1 + 4x_2 - 6x_3 = -4$ $x_1 + 5x_2 + 3x_3 = 10$ $x_1 + 3x_2 + 2x_3 = 5$	**4**	**3**	**10**
		OR			
9.	**a).**	**Determine** the rank of M and N, the eigenvalues and eigenvector of M and N of a given matrices $(i)\ M = \begin{bmatrix} -4 & 5 \\ 8 & -11 \end{bmatrix}$ $(ii)\ N = \begin{bmatrix} 0.33 & 1 & 3.3 \\ 0.5 & 0.45 & -5.12 \\ 2 & -2 & 0 \end{bmatrix}$:	**4**	**3**	**5**
	b).	**Solve** the first order ordinary differential equation as given below: dx/dt = x + t. With the initial conditions x (o) = 0. Show a plot for x versus t.	**4**	**3**	**5**

		UNIT-5			
10.		Solve nonlinear equations using Newton Raphson iteration. Assume necessary data is required. $f(x) = x^3 - 6x^2 + 9x - 4 = 0$	**5**	**3**	**10**
		OR			
11.		Write a program to solve the given integrals by using the trapezoidal rule. Assume necessary data. $\int_0^{\pi/2} \sin x \, dx$	**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

					Course Code:B23ITOE02
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		SOFTWARE ENGINEERING			
		Offered by IT			
		(Offered to 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 software engineering.	**1**	**1**	**2**
	b).	What is meant by a process and a task.	**1**	**1**	**2**
	c).	List non-functional requirements for a system.	**2**	**1**	**2**
	d).	Define behavioral model.	**2**	**1**	**2**
	e).	What is an actor and a use-case?	**3**	**1**	**2**
	f).	What is the difference between a sequence diagram and a collaboration diagram?	**3**	**1**	**2**
	g).	Define white box testing and black box testing.	**4**	**1**	**2**
	h).	How to define a debugging process?	**4**	**2**	**2**
	i).	Write about metric maintenance.	**5**	**2**	**2**
	j).	What is SQA?	**5**	**1**	**2**
					5 x 10 = 50 Marks
		UNIT-1	**CO**	**KL**	**M**
2.	**a).**	Explain waterfall model with neat diagram.	**1**	**2**	**5**
	b).	Illustrate unified process.	**1**	**2**	**5**
		OR			
3.	**a).**	Categorize process assessment and improvement	**1**	**3**	**5**
	b).	Explain software myths	**1**	**2**	**5**
		UNIT-2			
4.	**a).**	Interpret functional requirements with examples.	**2**	**2**	**5**
	b).	Differentiate user requirements and system requirements.	**2**	**3**	**5**
		OR			
5.	**a).**	Classify the characteristics of context model, behavioral model and data model.	**2**	**3**	**5**
	b).	Interpret Software Requirements document.	**2**	**2**	**5**

		UNIT-3			
6.	**a).**	Identify the relationships in class diagram for "Airlines Reservation System".	**3**	**3**	**5**
	b).	Explain interaction diagrams.	**3**	**2**	**5**
		OR			
7.	**a).**	Design the complete use-case model for the following system "Hospital management system"	**3**	**3**	**5**
	b).	Explain about architectural styles.	**3**	**2**	**5**
		UNIT-4			
8.	**a).**	Explain about white box testing with examples.	**4**	**2**	**5**
	b).	Interpret black box testing with examples.	**4**	**2**	**5**
		OR			
9.	**a).**	Interpret "A strategic approach to software testing".	**4**	**2**	**5**
	b).	Illustrate unit testing with examples.	**4**	**2**	**5**
		UNIT-5			
10.	**a).**	Interpret software quality assurance.	**5**	**2**	**5**
	b).	Explain metrics for design model.	**5**	**2**	**5**
		OR			
11.	**a).**	Interpret metrics for testing, metrics for maintenance.	**5**	**2**	**5**
	b).	Categorize ISO 9000 quality standards.	**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: B23MEOE03			
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		INDUSTRIAL MANAGEMENT			
		(Offered by ME)			
		(Offered to AIDS, AIML, CE, CSIT, CSBS, CSD, CSE, CIC, ECE, EEE & 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 = 20 Marks
			CO	**KL**	**M**
1.	**a).**	State the importance of planning in management?	**1**	**1**	**2**
	b).	Define process layout and give an example.	**1**	**1**	**2**
	c).	Write about batch production and mass production?	**2**	**1**	**2**
	d).	What is a Gantt chart used for?	**2**	**1**	**2**
	e).	Name two factors that affect productivity.	**3**	**1**	**2**
	f).	Explain the importance of work study?	**3**	**1**	**2**
	g).	Discuss the main objectives of performing the inspection	**4**	**1**	**2**
	h).	Discuss objectives of Six-Sigma.	**4**	**1**	**2**
	i).	Write about Human resource management and types.	**5**	**1**	**2**
	j).	Write about supply chain management	**5**	**1**	**2**
					5 x 10 =50Marks
		UNIT-I			
2		Articulate Henry Fayol's 14 principles of management with examples.	**1**	**3**	**10**
		OR			
3		Elaborate the types of plant layouts. Compare Process Layout and Product Layout with advantages, disadvantages, and applications.	**1**	**3**	**10**
		UNIT-II			
4.		Define Production Planning and Control. Explain its functions and importance in manufacturing.	**2**	**2**	**10**
		OR			
5		Define and differentiate between Loading, Scheduling, Dispatching, and Routing.	**2**	**2**	**10**
		UNIT-III			
6.		A time study was made of an existing job to develop new time standards. The worker was observed for 30 minutes during which he made 20 units.	**3**	**3**	**10**

<table>
<tr><td></td><td></td><td>He was rated at 90% by the analyst. The firm’s allowance for rest and personal time is 12%
(i) What is the normal time for the task?
(ii) What is the standard time for the task?</td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td>OR</td><td></td><td></td><td></td></tr>
<tr><td>7.</td><td></td><td>Explain the Micro Motion Study? Explain SIMO Chart and its importance.</td><td>3</td><td>2</td><td>10</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td>UNIT-IV</td><td></td><td></td><td></td></tr>
<tr><td>8.</td><td></td><td>Draw p-chart and complete with a conclusion from the chart The below given table is a given result of inspection of 20 samples of 100 items each taken on 20 working days
<table>
<tr><td>Sample no</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>No. of defectives</td><td>0</td><td>2</td><td>4</td><td>6</td><td>6</td><td>4</td><td>0</td><td>2</td><td>4</td><td>8</td></tr>
<tr><td>Sample no</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td><td>17</td><td>18</td><td>19</td><td>20</td></tr>
<tr><td>No. of defectives</td><td>8</td><td>0</td><td>4</td><td>6</td><td>14</td><td>0</td><td>2</td><td>6</td><td>6</td><td>2</td></tr>
</table></td><td>4</td><td>4</td><td>10</td></tr>
<tr><td></td><td></td><td>OR</td><td></td><td></td><td></td></tr>
<tr><td>9.</td><td></td><td>Explain the importance of Quality circles and its applications.What is TQM? List applications of Total Quality Management.</td><td>4</td><td>2</td><td>10</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td></td><td></td><td>UNIT-V</td><td></td><td></td><td></td></tr>
<tr><td>10.</td><td></td><td>Discuss the concept and objectives of HRM.How is it different from Personnel Management?</td><td>5</td><td>2</td><td>10</td></tr>
<tr><td></td><td></td><td>OR</td><td></td><td></td><td></td></tr>
<tr><td>11.</td><td></td><td>Discuss the concept of Supply Chain Management.?Explain its components and importance</td><td>5</td><td>2</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 10 marks

					Course Code: B23MEOE04
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		PRODUCT DESIGN AND DEVELOPMENT			
		(Offered by ME)			
		(Offered to AIDS, AIML, CE, CSIT, CSBS, CSD, CSE, CIC, ECE, EEE & 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 = 20 Marks
			CO	**KL**	**M**
1.	**a).**	List out the stages involved in product life cycle.	**1**	**1**	**2**
	b).	Differentiate between product design and product development.	**1**	**2**	**2**
	c).	Define morphology of design. What are its key stages?	**2**	**1**	**2**
	d).	Differentiate between quantitative and qualitative analysis in development economics.	**2**	**2**	**2**
	e).	Name any two tools used for concept selection.	**3**	**1**	**2**
	f).	Define the term 'opportunity identification' in product planning.	**3**	**1**	**2**
	g).	Define rapid prototyping.	**4**	**1**	**2**
	h).	State the importance of problem clarification in the design process.	**4**	**1**	**2**
	i).	Name any two forms of intellectual property relevant to product design.	**5**	**1**	**2**
	j).	What is the purpose of patenting a product?	**5**	**1**	**2**
					5 x 10 = 50 Marks
		UNIT-1			
2.		What are the different classifications and specifications of products? Discuss in detail with suitable examples.	**1**	**3**	**10**
		OR			
3.		Elucidate the stages involved in the modern product development process to launch new products to market.	**1**	**3**	**10**
		UNIT-2			
4.		Elaborate the stages involved in robust design and how each stage contributes to minimizing variation in product performance.	**2**	**3**	**10**
		OR			
5.		Discuss the implications of architecture in product development.	**2**	**3**	**10**
		UNIT-3			
6.		Discuss how customer needs are translated into target and final product specifications with a suitable example.	**3**	**3**	**10**
		OR			
7.		Develop a process for identifying and prioritizing customer needs.	**3**	**3**	**10**

		UNIT-4			
8.		Illustrate the steps involved in internal and external search strategies during concept generation.	**4**	**3**	**10**
		OR			
9.		Apply the concept of concurrent engineering in product development and explain its advantages.	**4**	**3**	**10**
		UNIT-5			
10.		Apply the principles of Design for Manufacturing (DFM) and Design for Assembly (DFA) to improve the efficiency of a product design.	**5**	**3**	**10**
		OR			
11.		Discuss the steps involved in preparing a disclosure for patent filing in product development.	**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

Course Code: B23MEOE05

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

III B.Tech. II Semester MODEL QUESTION PAPER

OPERATIONS MANAGEMENT

(Offered by ME)

(Offered to AIDS, AIML, CE, CSIT, CSBS, CSD, CSE, CIC, ECE, EEE & 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 = 20 Marks

			CO	KL	M
1.	a).	List out the key objectives of operation management	**1**	**1**	**2**
	b).	What is quantitative forecasting	**1**	**2**	**2**
	c).	What are the advantages of a cellular layout	**2**	**1**	**2**
	d).	Why is transportation cost important in plant location	**2**	**2**	**2**
	e).	What do u mean by chase strategy in aggregate planning	**3**	**2**	**2**
	f).	What are the key components of master scheduling	**3**	**2**	**2**
	g).	Define inventory control	**4**	**1**	**2**
	h).	What are the types of inventory cost	**4**	**2**	**2**
	i).	What are the disadvantages of MRP II	**5**	**1**	**2**
	j).	Write the benefits of ERP	**5**	**1**	**2**

5 x 10 = 50 Marks

UNIT-1				
2.	Demonstrate the qualitative and quantitative forecasting techniques in detail.	**1**	**3**	**10**
OR				
3.	Compute the forecast for the 11th period. **MONTHS** 1 2 3 4 5 6 7 8 9 10 **DEMAND** 27 30 32 31 28 27 30 33 33 31 When **α = 0.3** and **α = 0.7**	**1**	**3**	**10**
UNIT-2				
4.	Apply the concepts of plant layout to compare the suitability of process layout and product layout for a manufacturing company.	**2**	**3**	**10**
OR				
5.	Determine the most suitable plant location for a manufacturing unit considering various qualitative and quantitative factors.	**2**	**3**	**10**
UNIT-3				

6.	Demonstrate the techniques of aggregate planning process with a flow chart	**3**	**3**	**10**
	OR			
7.	Determine various costs associated with the aggregate planningand explain how they impact the overall planning decision.	**3**	**3**	**10**
	UNIT-4			
8.	Demonstrate the use of ABC analysis in classifying inventory items for efficient control in a warehouse setup.	**4**	**3**	**10**
	OR			
9.	A company annual usage is 6000 units and the cost of material per unit is Rs20, cost of placing and receiving one order is Rs.60, annual carrying cost of one unit is 10% of its inventory value. Calculate EOQ and determine the various costs incurred in EOQ?	**4**	**3**	**10**
	UNIT-5			
10.	Determine the essential inputs required for Material Requirements Planning and explain how they drive the outputs.	**5**	**3**	**10**
	OR			
11.	Apply the principles of JIT to a manufacturing setup and highlight the operational benefits it provides.	**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

				Course Code: B23MEOE06	
		SAGI RAMA RISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		ADVANCED MANUFACTURING PROCESSES			
		(Offered by ME)			
		(Offered to AIDS, AIML, CE, CSIT, CSBS, CSD, CSE, CIC, ECE, EEE & IT)			
Time: 3 Hrs.				**Max. Mars: 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 principle of Abrasive Jet Machining	**1**	**1**	**2**
	(b)	Mention any two limitations of Electron Beam Machining.	**1**	**1**	**2**
	(c)	Name any two methods of rapid prototyping.	**2**	**1**	**2**
	(d)	List two differences between direct and indirect rapid tooling.	**2**	**1**	**2**
	(e)	What are the types of surface coatings ?.	**3**	**1**	**2**
	(f)	Mention any two characteristics of ceramics.	**3**	**1**	**2**
	(g)	List out the differences between MMC and CMC	**4**	**1**	**2**
	(h)	Define composite material with one example	**4**	**1**	**2**
	(i)	Mention any two uses of printed circuit boards	**5**	**1**	**2**
	(j)	Define wafer bonding	**5**	**1**	**2**
				5 x 10 = 50 Marks	
		UNIT-1	**CO**	**KL**	**M**
2.		Demonstrate the working of Laser Beam Machining with a neat sketch and label the components.	**1**	**3**	**10**
		OR			
3.		Determine the advantages and limitations of Electro chemical Machining Process.	**1**	**3**	**10**
		UNIT-2			
4.		Demonstrate the working principle of Fused Deposition Modelling with appropriate examples.	**2**	**3**	**10**
		OR			
5.		Compute the differences between direct and indirect rapid tooling techniques with applications.	**2**	**3**	**10**
		UNIT-3			

6.		Demonstrate the working of Chemical Vapour Deposition with a schematic representation.	**3**	**3**	**10**
		OR			
7.		Demonstrate the steps involved in processing of particulate ceramics.	**3**	**3**	**10**
		UNIT-4			
8.		Demonstrate the Ball Milling process used in the top-down synthesis of nanomaterial.	**4**	**3**	**10**
		OR			
9.		Apply the Sol-Gel method to synthesize nanomaterial for sensor applications.	**4**	**3**	**10**
		UNIT-5			
10.		Demonstrate the lithography process used in microelectronic circuit fabrication.	**5**	**3**	**10**
		OR			
11.		Determine the critical steps in crystal growth and wafer preparation that influence the yield and reliability of integrated circuits.	**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

				Course Code: B23BSOE02	
		SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)			**R23**
		III B.Tech. II Semester MODEL QUESTION PAPER			
		MATHEMATICS FOR QUANTUM COMPUTING			
		Common for all branches			
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)**	Find whether the set of vectors $\{1+i,\ 1-i\}$is linearly independent over$\mathbb{R}$	**1**	**2**	**2**
	(b)	Define Dual vector space.	**1**	**1**	**2**
	(c)	Define adjoint of an operator and list two of its properties.	**2**	**1**	**2**
	(d)	Prove that projection operators are Idempotent using Dirac notation.	**2**	**3**	**2**
	(e)	Compute the measurement probabilities for $\|\psi\rangle = \frac{1}{\sqrt{3}}\|0\rangle + \sqrt{\frac{2}{3}}\|1\rangle$s	**3**	**1**	**2**
	(f)	Find the density matrix of the pure state$\|\psi\rangle = \sqrt{0.7}\|0\rangle + \sqrt{0.3}\|1\rangle$	**3**	**1**	**2**
	(g)	Name any two reversible logic gates used in Quantum circuits.	**4**	**2**	**2**
	(h)	Prove that Pauli – Y- gate is unitary.	**4**	**1**	**2**
	(i)	Define Quantum Entanglement.	**5**	**1**	**2**
	(j)	Compute the tensor product $\|\psi\rangle = \|0\rangle\otimes\|1\rangle\otimes\|0\rangle$ and express the final vector on the standard basis.	**5**	**1**	**2**
				5*10=50 Marks	
		UNIT-1	**CO**	**KL**	**M**
2.		Show that the set of all complex numbers forms a vector space over the field of real numbers.	**1**	**3**	**10**
		OR			
3.	**(a)**	Express the vector $\bar{w} = \begin{bmatrix} 3 \\ 1+i \end{bmatrix}$ as a linear superposition of the basis $\overline{v_1}$ and $\overline{v_2}$ where $\overline{v_1} = \begin{bmatrix} 1 \\ i \end{bmatrix}$ and $\overline{v_2} = \begin{bmatrix} 1 \\ 2 \end{bmatrix}$.	**1**	**3**	**5**
	(b)	Let $\|\psi\rangle = \begin{bmatrix} 1 \\ i \end{bmatrix}$; $\|\phi\rangle = \begin{bmatrix} i \\ 1 \end{bmatrix}$. Compute (i) $\langle\psi\|\phi\rangle$ (ii) $\|\psi\rangle\langle\phi\|$ (iii) $\|\psi\rangle\langle\psi\|$	**1**	**3**	**5**
		UNIT-2			
4.	**(a)**	Prove that if $[A, B] = 0$, then A and B are said to commute.	**2**	**3**	**5**
	(b)	Show that $U = \frac{1}{2}\begin{pmatrix} 1+i & 1-i \\ 1-i & 1+i \end{pmatrix}$ is unitary.	**2**	**3**	**5**

		OR			
5.	**(a)**	Find the matrix representation of the Linear operator $L(x) = 3x + 2y$, $L(y) = x$ and express L as a sum of outer products.	**2**	**3**	**5**
	(b)	Find the projection of $\bar{v} = \begin{bmatrix} 1 \\ e^{-i\pi/4} \\ 2 \end{bmatrix}$ along $\bar{w} = \begin{bmatrix} i \\ 2 \\ -i \end{bmatrix}$.	**2**	**3**	**5**
		UNIT-3			
6.	**(a)**	Prove that $(A + B)(A + B') = A$ using Boolean algebra.	**3**	**3**	**5**
	(b)	Explain XOR gate with NAND gates only and hence mention number of NAND required for the simplified circuit.			
		OR			
7.	**(a)**	Show that Hadamard on the first qubit of $\|00\rangle$ is equivalent to quantum operation on two qubits.	**3**	**3**	**5**
	(b)	Derive the truth table and logic circuit for the function $F(A, B, C) = (A \oplus B) \cdot C$	**3**	**3**	**5**
		UNIT-4			
8.	**(a)**	What would be the final state for the following Quantum operations (i) I on the state $\|0\rangle$? (ii) X on the state $\|1\rangle$? (iii) Z on the state $\|1+\rangle$? (iv) H on the state $\|1\rangle$?	**4**	**3**	**5**
	(b)	If a qubit $\|\psi\rangle = \frac{1}{\sqrt{2}}(\|0\rangle + \|1\rangle)$. Find the tensor product of $\|\psi\rangle$&$\|\psi\rangle$.	**4**	**3**	**5**
		OR			
9	**(a)**	Apply T gate ($\pi/4$ phase gate) twice on the state $\|1\rangle$. Show step-by-step simplification and final result.	**4**	**3**	**5**
	(b)	Compute the output of a CNOT gate when the input state is $\|\psi\rangle = \frac{1}{\sqrt{2}}(\|00\rangle + \|10\rangle)$.	**4**	**3**	**5**
		UNIT-5			
10.	**(a)**	In a Superdense Coding, Alice wants to send two classical bits using quantum entanglement. Show, step by step, the effect of Pauli operators chosen by Alice on the shared Bell state.	**5**	**3**	**5**
	(b)	Given the two-qubit state $\|\psi\rangle$ = ($\|00\rangle$ + $\|01\rangle$ - $\|10\rangle$ + $\|11\rangle$) and $\|\phi\rangle = \frac{1}{\sqrt{6}}$ ($\|00\rangle$ + i$\|01\rangle$ - 2 $\|10\rangle$), what is the probability of measuring the system in $\|\phi\rangle$ given that originally it is in $\|\psi\rangle$,	**5**	**3**	**5**
		OR			
11		Discuss the purpose of Quantum Shor's Factoring algorithm andGrover's – search algorithm in detail.	**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