SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19CEOE05]
IV B. Tech II Semester (R19) Regular Examinations
ALTERNATIVE ENERGY SOURCES
(Open Elective: Offered by CE)
(Offered to: CSE, ECE, IT & ME)
MODEL QUESTIONPAPER

TIME: 3Hrs.   **Max. Marks: 75M**

Answer **ONE Question** from **EACH UNIT**
All questions carry equal marks

			CO	KL	M
		UNIT – I			
1.	(a)	Explain the need for development of renewable energy sources.	1	2	8
	(b)	Explain in detail the scarcity of conventional energy sources in global scenario.	1	2	7
		OR			
2.	(a)	Explain hybrid systems in detail.	1	2	8
	(b)	Explain the reduction potential of carbon dioxide gas.	1	2	7
		UNIT – II			
3.	(a)	Explain solar heating and cooling processes with a neat sketch.	2	2	8
	(b)	Explain the measurement and estimation of solar radiation.	2	2	7
		OR			
4.	(a)	Explain solar photovoltaic conversion processes.	2	2	8
	(b)	Explain the applications of solar energy conversion processes.	2	2	7
		UNIT – III			
5.	(a)	Derive the expression for power generation from wind turbine using Betz model.	3	2	8
	(b)	List and explain various types of winds and factors influencing wind generation.	3	2	7
		OR			
6.	(a)	Explain the design aspects of windmill.	3	2	8
	(b)	Explain the concepts of energy wheeling and energy banking concepts.	3	2	7
		UNIT – IV			
7.	(a)	Explain how biomass is converted by gasification process.	4	2	8
	(b)	Explain in detail the anaerobic digestion of biomass.	4	2	7
		OR			
8.	(a)	Explain how urban waste is collected and converted into energy.	4	2	8
	(b)	Explain how biomass is converted by pyrolysis and liquefaction processes.	4	2	7
		UNIT – V			

9.	(a)	Explain the theory and working principle of ocean thermal energy conversion (OTEC) system.	5	2	8
	(b)	Explain with a neat sketch, the operation of geothermal power plant.	5	2	7
		OR			
10.	(a)	Explain with a neat sketch, the working and operation of any turbine used for hydropower generation.	5	2	8
	(b)	Explain the tidal energy conversion process with a neat sketch	5	2	7

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS

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SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19CEOE06]
IV B. Tech II Semester (R19) Regular Examinations
INTELLIGENCE TRANSPORT SYSTEM
(Open Elective: Offered by CE)
(Offered to: CSE, ECE, EEE, IT & ME)
MODEL QUESTIONPAPER

TIME: 3Hrs.   **Max. Marks: 75M**

Answer **ONE** Question from **EACH UNIT**
All questions carry equal marks

			CO	KL	M
		UNIT – I			
1.	(a)	Define ITS? What are its roles and responsibilities in the field of transportation?	1	2	8
	(b)	What is ATIS functionality and its role in transportation system?	1	2	7
		OR			
2.		Discuss the importance of smart route systems briefly and explain its benefits with examples.	1	2	15
		UNIT – II			
3.	(a)	What is ATMS? List the objectives and uses of ATMS?	2	3	8
	(b)	What are various strategies employed in ATMS?	2	3	7
		OR			
4.		Explain in detail about congestion pricing with examples.	2	3	15
		UNIT – III			
5.	(a)	Describe various types of APTS? Discuss the use of APTS in real time traffic analysis.	3	3	8
	(b)	How does 'ITS' improves the efficiency and safety of Commercial Vehicle Operations?	3	3	7
		OR			
6.	(a)	What are the goals of Automated Highway System (AHS).	3	3	8
	(b)	What are the objectives and benefits of Electronic Toll Collection?	3	3	7
		UNIT – IV			
7.	(a)	Explain the organizational and institutional issues involved in ITS?	4	4	8
	(b)	Explain about Regionally - Scaled ITS deployment.	4	4	7
		OR			
8.		Explain the working of ITS in developed and developing countries.	4	4	15
		UNIT – V			
9.	(a)	What are the critical issues in ITS. Suggest suitable measures to control them.	5	4	8

	(b)	Explain various issues involved in R & D policy. Explain briefly.	5	4	7
		OR			
10.	(a)	Describe various conclusions which are needed to develop future ITS?	5	4	8
	(b)	What are the major emerging issues in ITS?	5	4	7

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19CSOE07]
IV B. Tech II Semester (R19) Regular Examinations
MACHINE LEARNING
(Open Elective: Offered by CSE)
(Offered to: CE, ECE, EEE & ME)
MODEL QUESTIONPAPER

TIME: 3Hrs.   **Max. Marks: 75M**

Answer **ONE Question** from **EACH UNIT**
All questions carry equal marks

			CO	KL	M
		UNIT – I			
1.	(a)	Illustrate in detail about ingredients of Machine Learning.	1	2	8
	(b)	Demonstrate about curse of Dimensionality and Overfitting.	1	2	7
		OR			
2.	(a)	List out & explain the models in the output of Machine Learning.	1	2	7
	(b)	Differentiate between Prior Probability and Conditional Probability.	1	2	8
		UNIT – II			
3.	(a)	Demonstrate least-squares method using least square regression for classification.	2	2	8
	(b)	Demonstrate Nearest Neighbor Classification with suitable example.	2	2	7
		OR			
4.	(a)	Develop Decision trees for following set of training examples.	2	3	8
	(b)	Explain briefly distance based clustering and hierarchical clustering.	2	2	7

Develop Decision trees for following set of training examples.

Day	Outlook	Temperature	Humidity	Wind	Play Tennis
D1	Sunny	Hot	High	Weak	No
D2	Sunny	Hot	High	Strong	No
D3	Overcast	Hot	High	Weak	Yes
D4	Rain	Mild	High	Weak	Yes
D5	Rain	Cool	Normal	Weak	Yes
D6	Rain	Cool	Normal	Strong	No
D7	Overcast	Cool	Normal	Strong	Yes
D8	Sunny	Mild	High	Weak	No
D9	Sunny	Cool	Normal	Weak	Yes
D10	Rain	Mild	Normal	Weak	Yes
D11	Sunny	Mild	Normal	Strong	Yes
D12	Overcast	Mild	High	Strong	Yes
D13	Overcast	Hot	Normal	Weak	Yes
D14	Rain	Mild	High	Strong	No

		UNIT – III			
5.	(a)	Explain Feature construction and selection.	3	2	7
	(b)	Compare Bagging and random forests.	3	2	8
		OR			
6.	(a)	Explain how thresholding and discretisation is done in feature transformations	3	2	7
	(b)	Demonstrate Ada boost and Gradient Boosting.	3	2	8
		UNIT – IV			
7.	(a)	Summarize Principle Component Analysis.	4	2	8
	(b)	Illustrate LDA	4	2	7
		OR			
8.	(a)	Compare Model Evaluation Techniques.	4	2	8
	(b)	Demonstrate the Regularization Process	4	2	7
		UNIT – V			
9.	(a)	Explain back propagation in Neural Network with suitable Example.	5	2	8
	(b)	Explain Markov Decision Process.	5	2	7
		OR			
10.	(a)	Compare multilayer perceptrons with respect to linear perceptron.	5	2	8
	(b)	Outline the uses of Reinforcement Learning.	5	2	7

CO-COURSE OUTCOME   **KL-KNOWLEDGE LEVEL**   **M-MARKS**
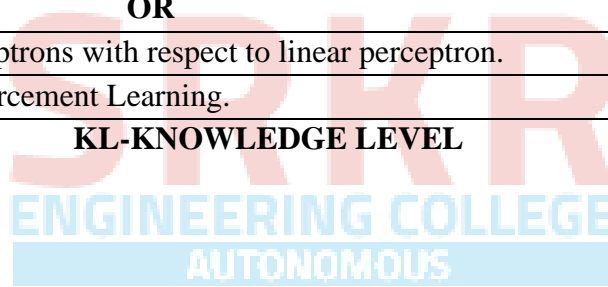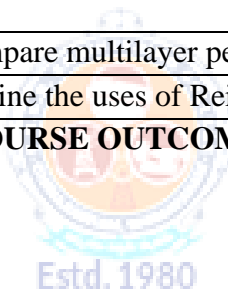
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19CSOE08]
IV B. Tech II Semester (R19) Regular Examinations
INTERNET OF THINGS
(Open Elective: Offered by CSE)
(Offered to: CE & ME)
MODEL QUESTIONPAPER

TIME: 3Hrs.   **Max. Marks: 75M**

Answer **ONE Question** from **EACH UNIT**
All questions carry equal marks

			CO	KL	M
		UNIT – I			
1.	(a)	Explain the overview of Internet of Things	1	2	8
	(b)	Identify the sources of IOT	1	2	7
		OR			
2.	(a)	Classify the design principles for connected devices	1	2	8
	(b)	Illustrate the oneM2M IoT architecture	1	2	7
		UNIT – II			
3.	(a)	Explain OSI stack for the IoT/M2M Systems	2	2	8
	(b)	Demonstrate about ease of designing and affordability	2	2	7
		OR			
4.	(a)	Demonstrate communication technologies	2	2	7
	(b)	Explain device management system in IOT	2	2	8
		UNIT – III			
5.	(a)	Explain the design Principles for the Web Connectivity for connected-Devices	3	2	8
	(b)	Explain features of Arduino with neat block diagram	3	2	7
		OR			
6.	(a)	Explain about Message Communication protocols for Connected Devices	3	2	8
	(b)	Illustrate DHT Sensor with Arduino,	3	2	7
		UNIT – IV			
7.	(a)	Write about 6lowPAN	4	2	8
	(b)	Write about Wired Communication Technologies	4	2	7
		OR			
8.	(a)	Explain about communication protocols based on the exchange of messages (MQTT)	4	2	8
	(b)	Write about COAP	4	2	7
		UNIT – V			
9.	(a)	Explain the Data Organizing and Analytics in IoT/M2M	5	2	8

	(b)	Explain the IOT/M2M Data Acquiring and Storage	5	2	7
		OR			
10.	(a)	Explain about data storage and computation using Cloud Platform for IoT/M2M	5	2	8
	(b)	Illustrate about integration and Enterprise Systems	5	2	7

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19CSOE09]
IV B. Tech II Semester (R19) Regular Examinations
OPERATING SYSTEMS
(Open Elective: Offered by CSE)
(Offered to: CE, ECE, EEE & ME)
MODEL QUESTIONPAPER

TIME: 3Hrs.   **Max. Marks: 75M**

Answer ONE Question from EACH UNIT
All questions carry equal marks

			CO	KL	M
		UNIT – I			
1.	(a)	Explain the abstract view of system components.	1	2	8
	(b)	Discuss the Simple Operating System Structure.	1	2	7
		OR			
2.	(a)	Explain different types of Operating Systems.	1	2	8
	(b)	Define a System call. Explain the various types of system calls provided by Operating System.	1	2	7
		UNIT – II			
3.	(a)	Differentiate one- to- one, many- to-one multi-threading models.	2	2	8
	(b)	Explain Dining Philosophers problem? Discuss the solution to Dining Philosopher's problem using monitors.	2	2	7
		OR			
4.	(a)	Explain Primitive Priority Scheduling Algorithms with an Example?	2	2	7
	(b)	Discuss the solution to Reader/Writers Problem using semaphores.	2	2	8
		UNIT – III			
5.	(a)	Differentiate paging and segmentation.	3	2	8
	(b)	Explain briefly the performance of Demand paging with an example.	3	2	7
		OR			
6.	(a)	Define Page Fault. When does a page fault occur? Describe the action taken by OS when page fault occurs.	3	2	7
	(b)	Apply FIFO and LRU page replacement algorithms for the following string to determine the number of page faults. 7 0 1 2 0 3 0 4 2 3 0 2 1 2 0 1 7 0 1 for a memory with '3' frames.	3	3	8
		UNIT – IV			
7.	(a)	Apply the deadlock detection algorithm to determine deadlock will exist or not for the following system with 5 process and 3 resource types (resource type A has 7 instances, B has 2 instances, and C has 6 instances) Snapshot at time T0	4	3	8

		Process	Allocation	Request	Available			
			A B C	A B C	A B C			
			P0 0 1 0	0 0 0	0 0 0			
			P1 2 0 0	2 0 2				
			P2 3 0 3	0 0 0				
			P3 2 1 1	1 0 0				
			P4 0 0 2	0 0 2				
	(b)	Explain various File access methods with Suitable examples				4	2	7
		OR						
8.	(a)	Explain deadlock avoidance using banker's algorithm with suitable example.				4	2	7
	(b)	Apply FCFS, SSTF disk arm scheduling schemes to find total number head movements for the following string 98 183 37 122 14 124 65 67 assume the head pointer at 53.				4	3	8
		UNIT – V						
9.	(a)	Explain System and Network Threats				5	2	8
	(b)	Describe the System Component of Windows XP architecture				5	2	7
		OR						
10.	(a)	Explain Principles and domain Protections.				5	2	8
	(b)	Describe the components of the Linux System				5	2	7

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19ECOE05]
IV B. Tech I Semester (R19) Regular Examinations
INTERNETS OF THINGS
(Open Elective: Offered by ECE)
(Offered to: CE & ME)
MODEL QUESTIONPAPER

TIME: 3Hrs.   **Max. Marks: 75M**

Answer **ONE Question** from **EACH UNIT**
All questions carry equal marks

			CO	KL	M
		UNIT-I			
1	a.	Explain the typical Embedded system architecture with relevant diagram?	1	2	7
	b.	Illustrate an application-specific Embedded system with suitable examples?	1	2	8
		OR			
2	a.	Explain the characteristics of embedded systems	1	2	7
	b.	Discuss about Real time clock with respect to an Embedded Hardware?	1	2	8
		UNIT-II			
3	a.	Explain about serial communication devices and parallel device ports?	1	2	7
	b.	Discuss the significance of Watchdog timer in an Embedded System	1	2	8
		OR			
4	a.	What is a Device Driver? Explain different types of device drivers and use of them	2	2	7
	b.	Explain about memory organization in Embedded system	2	2	8
		UNIT-III			
5	a.	Draw and explain about Physical Design & Logical Design of IoT	1	2	7
	b.	Define IoT and mention different Characteristics of IoT	1	2	8
		OR			
6	a.	Explain in detail about IoT protocols	1	2	8
	b.	Differences and Similarities between M2M and IoT.	1	2	7
					7
		UNIT-IV			
7	a.	Name and explain in detail about any two communication concepts (SPI, I2C)	3	2	7
	b.	Explain How to interface Ultrasonic Sensor with Raspberry PI	3	2	8
		OR			
8		Explain the Basic building blocks of an IoT architecture with Raspberry PI device.	3	3	15

		UNIT-V			
9	a.	Explain in detail about Web Application Messaging Protocol (WAMP).	4	3	7
	b.	Demonstrate the role of Cloud based communication & Data Analytics In IoT	4	3	8
		OR			
10		Analyze IoT Design Methodology with a use case.	4	4	15

CO-COURSE OUTCOME　　　**KL-KNOWLEDGE LEVEL**　　　**M-MARKS**

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19ECOE06]
II B. Tech I Semester Regular Examinations
VLSI design
(Open Elective: Offered by ECE)
(Offered to: EEE)
MODEL QUESTION PAPER

TIME: 3 Hrs.   **Max. Marks: 75 M**

Answer **ONE Question** from **EACH UNIT**
All questions carry equal marks

			CO	KL	M
		UNIT - I			
1.	a).	Explain the NMOS fabrication steps with neat diagrams.	1	3	8
	b).	Discuss alternate forms of Pull-up Configurations and derive the relation between pull –up tp pull-down ratio for nMOS inverter.	1	3	7
		OR			
2.	a).	With neat diagrams explain the process of P-well CMOS Inverter.	1	3	7
	b).	Compare CMOS, BiCMOS and Bipolar technologies.	1	3	8
		UNIT - II			
3.	a).	Draw the stick diagrams and layouts for (a) nMOS inverter (b) CMOS inverter (c) 3 Input NAND and NOR gates	2	3	8
	b).	Define Buried contact, Butting contact and Via contact.	2	2	7
		OR			
4.	a).	Sketch λ-based design rules for wires, transistors and contacts.	2	3	8
	b).	Draw the layout diagram for OAI logic using CMOS.	2	2	7
		UNIT - III			
5.	a).	explain the concept of capacitance in layout design	3	3	8
	b).	Calculate total on resistance of CMOS inverter where ZPU/ZPD=4/1	3	3	7
		OR			
6.	a).	Define sheet resistance and Apply the concept to MOS transistors and inverters	3	3	8
	b).	Explain the concept of Area capacitance of layers with an example	3	3	7
		UNIT - IV			
7.		Draw scaled NMOS transistor and derive all scaling factors for device parameters. Consider Combined V and D scaling model	3	2	15
		OR			

8.	a).	Explain about subthreshold currents and current density	3	2	8
	b).	Explain limitations of scaling.	3	2	7
		UNIT - V			
9.	a).	Explain CMOS as a ratioed logic	4	2	8
	b).	Distinguish between combinational and sequential switching circuits	4	2	7
		OR			
10.	a).	Explain charge leakage and charge sharing in dynamic logics.	4	2	8
	b).	Give a brief explanation about Latches and registers.	4	2	7

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19EEOE01]
IV B. Tech I Semester (R19) Regular Examinations
INTRODUCTION TO ELECTRICAL SYSTEMS
(Open Elective: Offered by EEE)
(Offered to: CE, CSE & IT)
MODEL QUESTION PAPER

TIME: 3 Hrs.   **Max. Marks: 75 M**

Answer ONE Question from EACH UNIT
All questions carry equal marks

			CO	KL	M
		UNIT-I			
1	a.	What are non-renewable and renewable sources of energy? sketch the layout of hydel power plant	1	3	8
	b.	Define the Electrical quantities i) Voltage ii) Current iii) Power iv) Energy? write the relation between power and Energy	1	3	7
		OR			
2	a.	Explain with neat sketch thermal power plant?	1	3	8
	b.	Explain principle of operation electrical generator and derive emf equation in single loop generator?	1	3	7
		UNIT-II			
3	a.	Explain in brief about Transmission and Distribution system	2	3	8
	b.	Explain various components of substation with the help of schematic diagram	2	3	7
		OR			
4	a.	What is the principle operation of single-phase transformer and mention main applications of transformers?	2	3	7
	b.	Explain in brief about Indian power grid	2	3	8
		UNIT-III			
5	a.	Explain the principle of operation of 3 phase induction motor.	3	3	8
	b.	Explain the laws of Illumination.	3	3	7
		OR			
6	a.	Derive the torque equation in dc motor and write down the application of dc motors	3	3	7
	b.	Explain the construction and principle of operation fluorescent lamp.	3	3	8
		UNIT-IV			
7	a.	What is rectifier? Explain operation of single-phase diode rectifier with neat sketch?	4	3	7
	b.	Explain lead acid battery cell and Li ion battery cell operation and explain	4	3	8

		importance of Li ion battery			
		OR			
8	a.	Explain single phase bridge inverter operation and draw waveforms and write its distortion factor and THD	4	3	8
	b.	Define DoD, C-rate, capacity, SoC, Energy density, SoH of a battery? Compare these parameter values of Li ion batteries and lead battery	4	3	7
		UNIT-V			
9	a.	Explain briefly about the methods of artificial respiration for the person affected by electrical shock?	5	3	8
	b.	Explain the construction details and working principle of plate earthing with a neat sketch?	5	3	7
		OR			
10	a.	Explain the construction details and operation of a miniature circuit breaker (MCB)?	5	3	7
	b.	Explain in detail about the different types of electrical hazards?	5	3	8

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19EEOE04]
IV B. Tech I Semester (R19) Regular Examinations
BASIC POWER ELECTRONICS
(Open Elective: Offered by EEE)
(Offered to: ECE & ME)
MODEL QUESTION PAPER

TIME: 3 Hrs.   **Max. Marks: 75 M**

Answer ONE Question from EACH UNIT
All questions carry equal marks

			CO	KL	M
		UNIT – I			
1.	a).	Draw the Static V-I characteristics of SCR.	1	3	7
	b).	Illustrate the operation of SCR with two transistor analogy.	1	3	8
		OR			
2.	a).	Explain the working of IGBT.	1	3	8
	b).	Discuss about commutation of thyristor and explain load commutation.	1	3	7
		UNIT – II			
3.	a).	Explain the operation of single-phase half wave circuit with R load. Determine the expression for output voltage.	2	3	7
	b).	A single-phase semi converter is operating at 230V,50Hz supply. The load consists of R=10 ohms and a highly inductance to make load current ripple free. For a firing angle of 45^0 calculate the output voltage.	2	3	8
		OR			
4.	a).	Explain the advantages of freewheeling diode.	2	3	6
	b).	With a neat sketch and waveforms explain the operation of single-phase full converter with RL load.	2	3	9
		UNIT – III			
5.	a).	Explain the operation of step-up chopper and derive the relationship between input and output voltage in step-up chopper.	3	3	7
	b).	A step-up chopper has input voltage of 230V and output voltage of 660V. If the conducting time of thyristor is 120μsec, compute the pulse width of output voltage.	3	3	8
		OR			
6.	a).	With the neat sketch explain the operation of step-down chopper.	3	3	8
	b).	Explain various control strategies for varying duty cycle in choppers.	3	3	7

		UNIT – IV			
7.	a).	Illustrate the operation of step-down cycloconverter with neat circuit and waveforms.	4	3	8
	b).	Explain the operation of step-down cycloconverter with RL load.	4	3	7
		OR			
8.	a).	With neat sketch explain the operation of AC voltage controller with RL load.	4	3	7
	b).	A single-phase full wave AC voltage controller has a resistive load of 10 ohms and the input voltage of 230V. The delay angle of each thyristor is 60^0. Determine the rms value of output voltage.	4	3	8
		UNIT – V			
9.	a).	Illustrate the operation of single-phase full bridge inverters.	5	3	8
	b).	Explain the voltage control in single phase inverter.	5	3	7
		OR			
10.	a).	With neat sketch explain the operation of single-phase full bridge inverters.	5	3	8
	b).	Explain any two PWM techniques in inverters.	5	3	7

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS
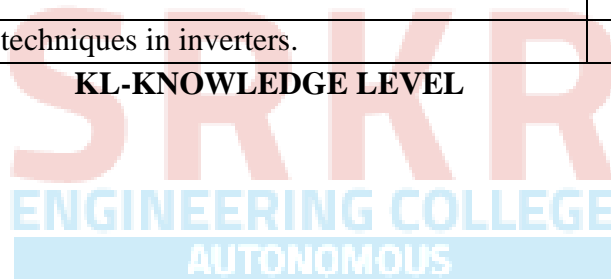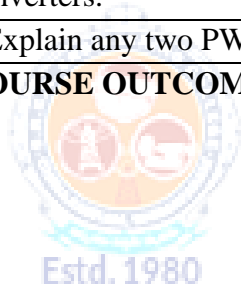
SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19EEOE06]
IV B. Tech - Semester (R19) Regular Examinations
MATLAB PROGRAMMING FOR ENGINEERING APPLICATIONS
(Open Elective: Offered by EEE)
(Offered to: CE, CSE, IT & ME)
MODEL QUESTION PAPER

TIME: 3 Hrs.   **Max. Marks: 75 M**

Answer ONE Question from EACH UNIT
All questions carry equal marks

			CO	KL	M
		UNIT - I			
1.	a).	**Explain** the vectors, matrices, and its conversions procedures with an example using MATLAB.	1	3	8
	b).	**Explain** the different data types in MATLAB? How are they represented in MATLAB programming?	1	3	7
		OR			
2.	a).	**Explain** the line plots, subplots, bar plots, surface plots with suitable examples.	1	3	7
	b).	Consider three matrices given as follows: $$MatA = \begin{bmatrix} 4 & 7 & 1 \\ 7 & 2 & 3 \\ 5 & 5 & 9 \end{bmatrix}; MatB = \begin{bmatrix} 6 & 0 & 4 \\ 9 & 8 & 1 \\ 7 & 5 & 2 \end{bmatrix}; MatC = \begin{bmatrix} 2 & 5 & 3 \\ 0 & 17 & 9 \\ 8 & 0 & 1 \end{bmatrix}$$ Write a MATLAB program to **find** the following: (a) Mat A + Mat B, (b) Mat B – Mat C, (c) Mat A *Mat C, (d) Determinant of Mat C.	1	3	8
		UNIT - II			
3.	a).	**Explain** the different types of conditional statements with an example.	2	3	8
	b).	For the arrays x and y given below, **use** the MATLAB program to obtain 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	7
		OR			
4.	a).	**Explain** the different loop control statements with suitable example	2	3	8
	b).	**Write** a program using FOR loop to evaluate the equation $y(x) = x^2-3x+2$ for all values of x between -1 and 3, in steps of 0.1.	2	3	7
		UNIT - III			
5.	a).	**Explain** the terms Mean, Standard Deviation, median and Mode with MATLAB syntax.	3	3	8
	b).	**Illustrate** the difference between the rand (), randn (), and randi () functions? and explain with examples.	3	3	7

		OR			
6.	a).	Write a program to **Compute** the (a) P (4), (b) P' (4), for a given expression 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).	3	3	15
		UNIT - IV			
7.	a).	Write a program to **find** the rank of M and N, the eigen values 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	8
	b).	Write a program to **solve** the set of linear system equations using the Matrix inverse method. $2x_1 + 4x_2 - 6x_3 = -4$ $x_1 + 5x_2 + 3x_3 = 10$ $x_1 + 3x_2 + 2x_3 = 5$	4	3	7
		OR			
8.	a).	Write a program to **solve** the first order ordinary differential equation as given below: dx/dt = x + t .With the initial conditions x (0) = 0.	4	3	15
		UNIT - V			
9.	a).	Write a simple program to **solve** a nonlinear equation using gauss–seidel Iteration. Assume necessary data required. $f(x) = x^3 - 6x^2 + 11x + 6 = 0$	5	3	15
		OR			
10.	a).	**Explain** in detail about the Rungekutta-4 method for solving ordinary differential equation.	5	3	7
	b).	**Explain** in detail about the trapezoidal method for solving integral equation.	5	3	8

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19ITOE05]
IV B. Tech - Semester (R19) Regular Examinations
CLOUD COMPUTING
(Open Elective: Offered by IT)
(Offered to: CE, ECE, EEE & ME)
MODEL QUESTION PAPER

TIME: 3 Hrs.   **Max. Marks: 75 M**

Answer ONE Question from EACH UNIT
All questions carry equal marks

			CO	KL	M
		UNIT - I			
1.	a).	What is Cloud Computing? Explain about Cloud Components with neat diagram.	1	2	7
	b).	Distinguish and differentiate Full Virtualization and Para Virtualization.	1	2	8
		OR			
2.	a).	Explain Database services and its benefits.	1	2	7
	b).	Discuss about the tools and products available for virtualization.	1	2	8
		UNIT - II			
3.	a).	Define PaaS. Explain about Google App Engine and Force.com?	2	2	8
	b).	What are the pros and cons of SaaS?	2	2	7
		OR			
4.	a).	What are the Services provided by SaaS? Discuss in detail.	2	2	7
	b).	Explain about Service Oriented Architecture with neat diagram.	2	2	8
		UNIT - III			
5.	a).	Apply IaaS concepts to improving Performance through Load Balancing with neat diagrams?	3	3	8
	b).	Write and Analyze different types of Server in IaaS solutions?	3	3	7
		OR			
6.	a).	Explain about Amazon Simple Storage Service (S3)?	3	3	7
	b).	Write about Server types in IaaS solutions?	3	3	8
		UNIT - IV			
7.	a).	Write the advantages of Cloud based data base solutions?	4	2	8
	b).	Explain in detail about Client Server Distributed Architecture for Cloud based solutions?	4	2	7
		OR			
8.	a).	Elaborate Web Application Framework with example.	4	3	8
	b).	Differentiate between Traditional Apps Vs Cloud Apps.	4	3	7

		UNIT - V			
9.	a).	Explain the importance of Data Storage Wiping?	5	3	8
	b).	Are the clouds secured? List and discuss security implications of cloud computing.	5	3	7
		OR			
10.	a).	Write an Analysis Document on the business continuity and Disaster Recovery in the Cloud environment?	5	2	7
	b).	Write about the Big data and its impact on Cloud.	5	2	8

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS

SAGI RAMAKRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19ITOE06]
IV B. Tech I Semester (R19) Regular Examinations
INTERNET OF THINGS
(Open Elective: Offered by IT)
(Offered to: CE & ME)
MODEL QUESTION PAPER

Time: 3 Hrs.   **Max. Marks: 75**

Answer ONE Question from EACH UNIT
All questions carry equal marks

			CO	KL	M
		UNIT-I			
1	a)	What are technology areas behind IoTs ?	1	2	7
	b)	What are the Sources of the IoTs ?	1	2	8
		OR			
2	a)	How does M2M communication work? Explain.	1	2	7
	b)	Differentiate IoT and M2M Communication.	1	3	8
		UNIT-II			
3	a)	Discuss Modified OSI Stack for the IoT/M2M Systems	2	2	7
	b)	Explain about data management and consolidation gateway.	2	2	8
		OR			
4	a)	Explain about any two communication technologies used in IoTs.	2	2	7
	b)	Draw ETSI M2M domains and high level architecture	2	3	8
		UNIT-III			
5		Explain Web Connectivity for connected-Devices network using RESTFUL	3	2	15
		OR			
6		Briefly discuss about Service-oriented protocol (COAP), Communication protocols based on the exchange of messages (MQTT).	3	3	15
		UNIT-IV			
7	a)	Explain Wireless Communication Technologies.	4	3	7
	b)	Discuss Network Layer of IoT, 6lowPAN adaptation layer for devices with limited resources.	4	3	8
		OR			
8	a)	Explain Dynamic routing protocols for wireless Adhoc networks	4	2	7
	b)	Write any 3 Wired Communication Technologies in detail	4	2	8

		UNIT-V			
9	a)	Discuss data acquiring and Storage data Organizing data	5	4	7
	b)	Explain the process of Data Collection, Storage and Computing Using a Cloud Platform	5	2	8
		OR			
10		Explain IOT based cloud based services using Xively & Nimbits	5	2	15

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS

IV B. Tech II Semester (R19) Regular Examinations
MECHATRONICS
(Open Elective: Offered by ME)
(Offered to: CE, CSE, ECE, EEE & IT)
DEPARTMENT OF MECHANICAL ENGINEERING
MODEL QUESTION PAPER
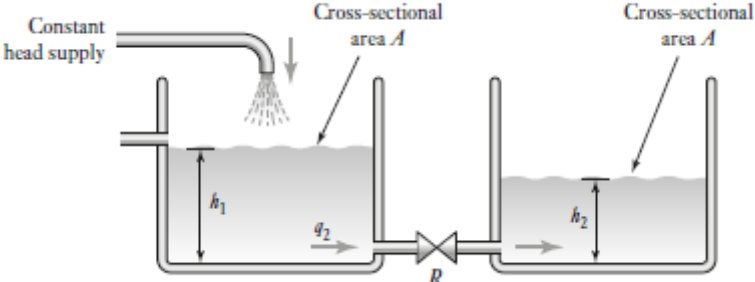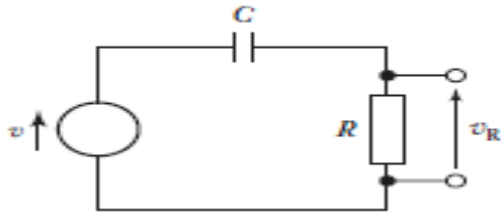
TIME: 3Hrs.   **Max. Marks: 75 M**

Answer **ONE Question** from **EACH UNIT.**
All questions carry equal marks.

			CO	KL	M
		UNIT-I			
1.	a).	What do you understand by the term Mechatronics? With a neat diagram, show the basic elements of a Mechatronic system. Give examples of Mechatronic systems.	1	2	7
	b).	Write short notes on i) proximity sensor and ii) hall effect sensor	1	2	8
		OR			
2.	a).	Enumerate the different signal conditioning methods? Explain them briefly.	1	2	7
	b).	Discuss integrating and differentiating amplifier.	1	2	8
		UNIT-II			
3.	a).	What is direction control valve? Explain the operation of single solenoid valve.	2	2	7
	b).	What do you understand by the term Actuation system? With a neat schematic diagram, describe the construction and working of a Hydraulic system.	2	2	8
		OR			
4.	a).	Explain digital to analog and analog to digital converters.	2	2	8
	b).	Draw ladder logic diagram of OR, NOR, and XOR logic.	2	2	7
		UNIT-III			
5.	a).	What is the use of a mechanical switch? How does an electrical relay operate? Draw the relay drive circuit and explain its operation.	3	3	8
	b).	Write the working principle of stepper motor.	3	3	7
		OR			
6.	a).	Derive the relationship between the height $h2$ and time for the hydraulic system shown in Figure 1. Neglect inertance.	3	3	8

Figure 1

b).	Derive the relationship between the output, the potential difference across the resistor R of vR, and the input v for the circuit shown in Figure 2 which has a resistor in series with a capacitor. Figure 2	3	3	7

UNIT-IV

7.	a).	A first-order system has a time constant of 4s and a steady-state transfer function of 6. What is the form of the differential equation for this system?	4	3	7
	b).	What is the overall transfer function for a closed-loop system having a forward-path transfer function of $5/(s+3)$ and a negative feedback-path transfer function of 10?	4	3	8

OR

8.	a).	Explain the closed loop control system using a block diagram.	4	3	7
	b).	Explain PD and PID control.	4	3	8

UNIT-V

9.	a).	Describe basic elements of microprocessor-based control system.	5	3	7
	b).	Lists out differences between microprocessor and microcontroller.	5	3	8

OR

10.	a).	Define PLC. Sketch and explain the basic functions of PLC.	5	3	7
	b).	What is an industrial robot? With the help of a block diagram describe different components of a robotic system.	5	3	8

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19MEOE06]
IV B. Tech II Semester (R19) Regular Examinations
GREEN ENERGY SYSTEMS
(Open Elective: Offered by ME)
(Offered to: CE, CSE, ECE & IT)
MECHANICAL ENGINEERING
MODEL QUESTION PAPER

TIME: 3Hrs.   **Max. Marks: 75 M**

Answer **ONE Question** from **EACH UNIT.**
All questions carry equal marks.

			CO	KL	M
		UNIT-I			
1.	a).	Discuss the difference between a pyrheliometer and pyranometer	1	2	7
	b).	Explain any two solar radiation measurement devices with help of neat sketch	1	2	8
		OR			
2.	a).	Enumerate the different types of concentrating type collectors.	1	2	7
	b).	Explain the extraterrestrial and terrestrial solar radiation.	1	2	8
		UNIT-II			
3.	a).	Illustrate the solar distillation with neat sketch.	2	3	7
	b).	How are wind energy systems classified? Explain	2	2	8
		OR			
4.	a).	Illustrate the central tower receiver power plant with neat sketch	2	3	7
	b).	Explain the Horizontal axis windmill with neat sketch.	2	2	8
		UNIT-III			
5.	a).	Explain the three basic kinds of geothermal resources.	3	2	7
	b).	Explain the methods of harnessing of geo -thermal energy	3	2	8
		OR			
6.	a).	Illustrate how heat is extracted from hot dry rocks with neat sketch	3	3	7
	b).	Discuss the working of KVIC digester with neat sketch	3	2	8
		UNIT-IV			
7.	a).	Explain the controls of HVAC	4	2	7
	b).	Describe the classification of fuel cells based on the type of electrolyte	4	2	8
		OR			
8.	a).	Discuss the working of hydrogen –oxygen fuel cell	4	2	7
	b).	Explain the working of Axial flow compressor with neat sketch	4	2	8
		UNIT-V			

9.	a).	List the construction material used in green buildings and explain briefly.	5	2	7
	b).	Discuss the benefits of green manufacturing systems.	5	2	8
		OR			
10.	a).	Describe about the vegetable based cutting fluids	5	2	7
	b).	Explain the environmental impact of current manufacturing systems	5	2	8

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19MEOE07]
IV B. Tech II Semester (R19) Regular Examinations
MICRO-ELECTRO MECHANICAL SYSTEMS
(Open Elective: Offered by ME)
(Offered to: CE, CSE, ECE, EEE & IT)
MODEL QUESTION PAPER

TIME: 3Hrs.   **Max. Marks: 75 M**

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

All questions carry equal marks.

			CO	KL	M
		UNIT-I			
1.	a).	Explain about structural and sacrificial materials.	1	3	8
	b).	Describe the MEMS gyroscopes.	1	3	7
		OR			
2.	a).	Explain about surface micro machining and wafer bonding.	1	3	7
	b).	Describe about shear mode piezo actuator and gripping piezo actuator.	1	3	8
		UNIT-II			
3.	a).	Explain about thermal flow sensors and micro hot plate gas sensors.	2	3	7
	b).	Write about thermisters and thermo devices in detail.	2	3	8
		OR			
4.	a).	Describe U-shaped horizontal and vertical electro thermal actuator.	2	3	8
	b).	Illustrate shape memory alloys (SMA) and data storage cantilever in detail.	2	3	7
		UNIT-III			
5.	a).	Explain the principle of MOEMS technology in detail.	3	3	7
	b).	Explain about digital micro mirror device (DMD).	3	3	8
		OR			
6.	a).	Describe about micro lens and micro mirrors.	3	3	8
	b).	Explain about grating light valve (GLV).	3	3	7
		UNIT-IV			
7.	a).	Explain magnetic materials for MEMS and properties.	3	3	7
	b).	Describe about magnetic probe based storage device.	3	3	8
		OR			
8.	a).	Write about mag MEMS actuators and by directional micro actuator.	3	3	8
	b).	Describe about feedback circuit integrated magnetic actuator.	3	3	7
		UNIT-V			
9.	a).	Explain about fluid actuation methods.	4	3	8

	b).	Explain about tuner/filter, resonator and clarification of tuner.	4	3	7
		OR			
10.	a).	Describe micro fluid dispenser and micro pumps.	4	3	8
	b).	Describe about RF MEMS and MEMS inductors.	4	3	7

CO-COURSE OUTCOME   KL-KNOWLEDGE LEVEL   M-MARKS