

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)**[B19CEOE03]****IV B. Tech I Semester (R19) Regular Examinations****BUILDING SERVICES****(Open Elective: offered by CE)****(Offered to: CSE, 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)	Classify Buildings based on functional use. Explain the role of building services in reaching the full functionality of buildings. What kind of building are you writing your exam right now?	1	2	8
	b)	What are the different types of escalators? Describe the components and discuss the area calculations for installing such a system.	1	2	7
		(OR)			
2.	a)	Discuss the idea of an FTE (Full Time Equivalent) in building design. Emphasise it's role in the sizing of building services. Illustrate with an example.	1	2	8
	b)	What are the different types of lifts? Draw and explain the components of a lift system in a modern commercial building.	1	2	7
		UNIT-II			
3.	a)	List and explain the causes of fire accidents in modern high rise buildings. What are the design measures taken to detect fires and fight them in the building?	2	2	8
	b)	Draw and explain the various fire safety related symbols found on fire extinguishers, fire hydrants, fire safety systems. Why is fire fighting systems primed by a separate diesel engine located outside the building and open to sky?	2	2	7
		(OR)			
4.	a)	What are the building design features and functional systems that aid in external intervention from a fire squad for quick control of a fire accident? Discuss the importance of regular fire safety audit for the same.	2	2	8
	b)	Narrate a typical first response from the occupants of a building in case of a fire accident and all the steps leading to safe exit and full control over the incident by competent disaster management team.	2	2	7
		UNIT-III			
5.	a)	Discuss the significance of designing a centralised hot water system in a hotel building. How is the plumbing system designed from a safety and energy savings point of view?	3	2	8

	b)	Draw the outline of a one pipe system for collection and conveyance of Wastewater in a 4 storey building. Explain how used water from different rooms is conveyed out of the building.	3	2	7
		OR			
6.	a)	Draw and explain the functions of various plumbing and sanitary Fixtures used inside a 3 BHK residential building.	3	2	8
	b)	Draw the outline of a two pipe system for collection and conveyance of Waste water in a 4 storey building. Explain how used water from different rooms is conveyed out of the building.	3	2	7
		UNIT-IV			
7.	a)	Discuss the importance of daylighting in indoor spaces for occupant health and energy efficiency. What design measures can avoid glare and heat gains inside a living space without cutting out day lighting?	4	2	8
	b)	What is lighting power density? What are dimmable lights? How can they help in achieving visual comfort and energy savings?	4	2	7
		OR			
8.	a)	Discuss the concepts of lumen and lux used in selecting luminaires. Cite a few examples of lux levels on working surfaces recommended in the National Building Code of India.	4	2	8
	b)	Explain the concept of cooling degree / Heating degree days. Illustrate it's use in the design of Mechanical Ventilation and Air Conditioning systems in a building.	4	2	7
		UNIT-V			
9.	a)	Distinguish between Rainwater Recharge and Rainwater Harvesting. What strategy do you recommend for Bhimavaram? How do you size RWH system in a building?	5	2	8
	b)	Explain the construction and working of a flat plate type Solar Water Heater. Size a system for a family of four living in a coastal climate like Bhimavaram	5	2	7
		OR			
10.	a)	What are green roofs? What is their role in resource conservation in a building? How can they help prevent urban flooding?	5	2	8
	b)	Explain the construction and working of an evacuated tube type Solar Water Heater. Size a system for a family of four living in a dry climate like Hyderabad.	5	2	7

CO-COURSE OUTCOME

KL-KNOWLEDGE LEVEL

M-MARKS

NOTE : Questions can be given as A,B splits or as a single Question for 15 marks

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)**[B19CEO04]****IV B. Tech I Semester (R19) Regular Examinations****GREEN BUILDINGS****(Open Elective: offered by CE)****(Offered to: CSE, 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)	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	8
	b)	What is a green field project? What aspects of building design, construction and operation are to be addressed for consideration as a sustainable site?	1	2	7
		(OR)			
2.	a)	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	8
	b)	What is a brown field project? What aspects of building design, construction and operation are to be addressed for consideration as a sustainable site?	1	2	7
		UNIT-II			
3.	a)	Discuss the significance of using only mechanically processed building materials such as rammed earth, stabilised mud and adobe. To what extent can they replace cement and steel which are amongst the most energy intensive and GHG intensive construction materials?	2	2	8
	b)	Highlight the importance of recycling in building materials used for Green Buildings. Distinguish between Post Industrial and Post Consumer wastes used in the recycling process for building materials.	2	2	7
		(OR)			
4.	a)	'Cement and Steel though energy intensive, are versatile building materials. However, we can optimise their usage using a host of technologies and design systems.' Explain a few examples supporting the above statement.	2	2	8
	b)	Identify value added finishes used for increasing the Indoor Environmental Quality of a green building. How can we justify their additional cost in attaining green credentials for buildings?	2	2	7
		UNIT-III			
5.	a)	What is the Energy Conservation Building Code of India? What kind of buildings is required to comply with it? What is its relevance to getting a green building rating?	3	2	8

	b)	What is rainwater harvesting (RWH) ? Why is it important in the sustainability of built environment? How do you estimate a building's RWH potential and design a storage or a percolation system?	3	2	7
OR					
6.	a)	What is grey water and black water? How can it be recycled in large building complexes? What are its potential reuse cases?	3	2	8
	b)	Discuss the idea of embodied energy. How do you go about reducing the embodied energy accumulated in a building project?	3	2	7
UNIT-IV					
7.	a)	Explain the significance of day lighting in green buildings. How does one strike a balance between day lighting and heat gain?	4	2	8
	b)	Fans, Air Coolers and Air Conditioners are all used for Thermal Comfort, yet they do not use the same amount of energy per hour of operation. Discuss their usage from a green building perspective, to maintain occupant comfort and minimise energy usage.	4	2	7
OR					
8.	a)	What are green roofs? What is their role in a green buildings. Explain with a case study.	4	2	8
	b)	Write a brief note on the scope of building automation and the role of BMS (Building Management System) in optimising the functionality of the managed spaces and resource consumption.	4	2	7
UNIT-V					
9.	a)	Write a brief note on CII, IGBC and it's green rating programmes in India. State the rating levels offered by them.	5	2	8
	b)	Write a brief note on TERI, GRIHA Council and it's green rating programmes in India. State the rating levels offered by them.	5	2	7
OR					
10.	a)	Write a brief note on USGBC, GBCI and it's green rating programmes in India. State the rating levels offered by them.	5	2	8
	b)	Write a brief note on World Bank Group, IFC and it's green rating programmes in India. State the rating levels offered by them.	5	2	7

CO-COURSE OUTCOME

KL-KNOWLEDGE LEVEL

M-MARKS

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SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)

[B19CSOE04]

IV B. Tech I Semester (R19) Regular Examinations

DATA BASE MANAGEMENT SYSTEMS

(Open Elective: offered by CSE)

(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).	Compare Database Management Systems with File Processing Systems	1	3	8
	b).	Explain the roles of different database users	1	2	7
OR					
2.	a).	Discuss the applications of Database Management Systems	1	2	7
	b).	Describe the structure of a Database Management System	1	2	8
UNIT-II					
3.		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	15
OR					
4.		What are relational instances and schemas? How'd you use keys and schemas in relational model?	2	3	15
UNIT-III					
5.	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 iv) A muslim woman marries at most one man and a muslim man could marry many woman	3	3	8
	b).	Demonstrate set operations in SQL	3	2	7
OR					
6.	a).	Demonstrate set operations in SQL	3	2	7
	b).	Illustrate basic features of ER model	3	3	8
UNIT-IV					
7.	a).	Apply Loss-less join decomposition into BCNF for an example table	4	3	8
	b).	Apply dependency preserving decomposition into 3NF for an example table	4	3	7
OR					

8.		Illustrate Normal forms from 1 NF to BCNF.	4	3	15
UNIT-V					
9.		What are page tables and Transaction tables? Describe analysis, redo and undo steps of ARIES.	5	2	15
OR					
10.		Explain 2PL and time stamp ordering protocols	5	2	15
		CO-COURSE OUTCOME	KL-KNOWLEDGE LEVEL		M-MARKS

NOTE : Questions can be given as A,B splits or as a single Question for 15 marks



SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)

[B19CSOE05]

IV B. Tech I Semester (R19) Regular Examinations

OBJECT ORIENTED PROGRAMMING THROUGH C++

(Open Elective: offered by CSE)

(Offered to: CE & ME)

MODEL QUESTION PAPER

TIME: 3Hrs.

Max. Marks: 75M

Answer ONE Question from EACH UNIT

All questions carry equal marks

			CO	KL	M
UNIT-I					
1.	a).	Discuss the differences between C and C++	1	2	7
	b).	Explain about disadvantages of conventional programming.	1	2	8
OR					
2.	a).	Explain about key concepts of Object Oriented Programming.	1	2	8
	b).	Explain about advantages of OOPS.	1	2	7
UNIT-II					
3.	a).	Explain Classes, Objects and Member Functions.	2	2	7
	b).	Write a C++ program to overload area() and perimeter() function to calculate area of shapes like triangle, square, circle and rectangle.	2	3	8
OR					
4.	a).	How will you destroy the objects initialized by the constructor in the program?	2	2	6
	b).	Explain the use of different constructors (default, parameterized and copy constructors) with suitable examples.	2	2	9
UNIT-III					
5.	a).	Explain inheritance with the advantages and disadvantages.	3	2	8
	b).	Illustrate the visibility of base class members for the access specifiers: private, protected and public while creating the derived class and also explain the syntax for creating derived class.	3	3	7
OR					
6.	a).	What are the various types of situations that might arise and can be handled in data conversion between incompatible types?	3	2	8
	b).	Write C++ Program to overload + operator to add two matrices.	3	3	7
UNIT-IV					
7.	a).	Explain virtual classes and their need while building class hierarchy.	4	2	7
	b).	Explain the role of this pointer in C++ with a programming example.	4	2	8
OR					
8.	a).	How does polymorphism promote extensibility? Illustrate	4	3	7
	b).	With a program explain how late binding can be achieved in C++.	4	3	8
UNIT-V					

9.	a).	Explain Class Template and Function Template	5	2	8
	b).	Write a C++ program that illustrates exception handling with the help of keywords: try, throws and catch.	5	3	7
OR					
10.	a).	What is STL? Briefly explain the use of containers, vectors, lists and maps.	5	2	8
	b).	Write a C++ program for Generic Bubble Sort using Template Functions.	5	3	7

CO-COURSE OUTCOME

KL-KNOWLEDGE LEVEL

M-MARKS

NOTE : Questions can be given as A,B splits or as a single Question for 15 marks



SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)**[B19CSOE06]****IV B. Tech I Semester (R19) Regular Examinations****PYTHON PROGRAMMING****(Open Elective: offered by CSE)****(Offered to: CE)****MODEL QUESTION PAPER****TIME: 3 Hr****Max. Marks: 75****Answer ONE Question from EACH UNIT****All questions carry equal marks***********

			CO	KL	M
UNIT-I					
1.	a).	Explain the basic data types available in Python with examples.	1	2	7
	b).	List and explain all the operators available in python	1	2	8
OR					
2.	a).	Illustrate the different types of control flow statements in Python	1	2	8
	b).	Write a program to display the Fibonacci sequence up to nth term where n is provided by the user.	1	2	7
UNIT-II					
3.	a).	Write Python program to count the total number of vowels, consonants and blanks in a String.	2	2	7
	b).	Compare mutable and Immutable data types in Python with suitable examples.	2	2	8
OR					
4.	a).	Explain List operations available in python.	2	2	8
	b).	Write a program to Display both the keys and values sorted in alphabetical order by the key.	2	2	7
UNIT-III					
5.	a).	Explain the concept of accessibility of variables in nested functions.	3	3	8
	b).	Define a function that calculates the sum of all numbers from 0 to its argument.	3	3	7
6.	a).	What are modules, how do you use them in your programs	3	3	7
	b).	Write a short note on i) Keyword Arguments ii) Lambda Functions.	3	3	8
UNIT-IV					
7.	a).	Discuss the following methods associated with the file object a) read() b) readline() c) readlines() d) tell() e) seek() f) write().	4	2	8
	b).	Write Python Program to Count the Number of Words in a given file.	4	2	7
OR					
8.	a).	Explain the concept of class methods and static methods with examples.	4	2	7
	b).	Write Python Program to Demonstrate Multiple Inheritance with Method Overriding.	4	2	8
UNIT-V					

9.	a).	What is the difference between else block and finally block in exception handling? Explain with an example program.	5	2	8
	b).	Discuss in detail about Scrolling list boxes.	5	3	7
OR					
10.	a).	Explain in detail about User defined exceptions	5	2	8
	b).	Explain about command buttons and Responding to events	5	3	7
		CO-COURSE OUTCOME	KL-KNOWLEDGE LEVEL		M-MARKS

NOTE : Questions can be given as A,B splits or as a single Question for 15 marks



SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)

[B19ECOE03]

IV B. Tech I Semester (R19) Regular Examinations

DIGITAL SIGNAL PROCESSING

(Open Elective: offered by ECE)

(Offered to: CE, CSE, IT & 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.	Discuss the advantages of DSP over analog signal processing?	1	2	7
	b.	Illustrate various discrete time signals with diagrams?	1	2	8
OR					
2	a.	Inspect whether the following systems are linear, Time Invariant or both. i) $y(n) = x(2n)$ ii) $y(n) = n x(n-2)$	1	3	7
	b.	Discuss causality of the DT-LTI system?	1	2	8
UNIT-II					
3	a.	Find the Z-transform of the signal $x(n) = 2^n u(n) - 3^n u(-n-1)$ and its region of convergence	2	3	7
	b.	Discuss the ROC properties of Z Transform	2	2	8
OR					
4	a.	Compute the response of the system $y(n) = 0.7y(n-1) - 0.12y(n-2) + x(n-1) + x(n-2)$ to the input $x(n) = u(n)$ Discuss the stability of the above DT system?	2	3	7
	b.	Realise of the following digital transfer function using Direct form-I $X(Z) = \frac{z^2 + 2z + 4}{(z - 8)(z^2 - 0.9z + 0.14)}$	2	3	8
UNIT-III					
5	a.	Compute the DFT of the following sequence using Radix-2 DIT FFT flow graph. Show the all intermediate stage results: $x(n) = \{0,1,2,0, -2, -1,0,0\}$	3	3	7
	b.	Find the DFT of the sequence $x(n) = \{3, 2, 5, 4\}$	3	3	8
OR					
6	a.	Obtain the circular convolution of the two sequences given below using DFT method $x_1(n) = \{1, -2, 3, 1\}$, $x_2(n) = \{2, 3, 0, -4\}$	3	3	7
	b.	Discuss the computational complexities involved in direct DFT and FFT.	3	3	8
UNIT-IV					
7	a.	Design digital Butterworth lowpass IIR filter using BLT method. The filter	4	4	15

		specifications are given by i) -3dB cutoff frequency at 0.5π rad, ii) at least 15dB attenuation at 0.75π rad			
OR					
8	a.	Compare Impulse invariance and Bilinear transformation methods of IIR digital filter design	4	2	7
	b.	Convert the following analog filter with transfer function using impulse invariance method $H_a(S) = \frac{s + 0.2}{(s + 0.2)^2 + 25}$	4	3	8
UNIT-V					
9	a.	Design a linear-phase low pass FIR digital filter to meet the following specifications: (i) Pass band = 0 to 10 kHz (ii) Sampling frequency = 100 kHz(iii) Filter order =10. Compute the impulse response of the desired FIR digital filter using Hamming window	5	3	7
	b	What is Gibb's phenomenon? Discuss the selection criteria of windows with respect to FIR filter design	5	2	8
OR					
10		Design a linear-phase band pass FIR digital filter to meet the following specifications: (i) Pass band = 100Hz to 200Hz (ii) Sampling frequency = 1000Hz (iii) No. of samples =11. Compute the impulse response of the desired FIR digital filter using Rectangular and Hamming windows.	5	3	15

CO-COURSE OUTCOME KL-KNOWLEDGE LEVEL M-MARKS

NOTE : Questions can be given as A,B splits or as a single Question for 15 marks

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)

[B19ECOE04]

IV B. Tech I Semester (R19) Regular Examinations

MICROPROCESSOR AND INTERFACING

(Open Elective: offered by ECE)

(Offered to: CE, CSE & 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		Determine the features and architecture of INTEL 8085 Microprocessor	1	3	15
OR					
2	a).	Represent the types and features of interrupts in 8085 Microprocessor	1	2	8
	b).	Indicate flag register of 8085 microprocessor	1	3	7
UNIT-II					
3	a).	Explain the Register set of 8085 Microprocessor.	2	2	7
	b)..	Explain the addressing modes of 8085 with examples	2	2	8
OR					
4	a).	Explain the operation of stack in 8085 microprocessor with example	2	2	7
	b).	Classify 8085 instructions based on length and list some data transfer instructions.	2	2	8
UNIT-III					
5		Draw and explain the functional block diagram of PPI 8255	3	3	15
OR					
6		Discuss in detail the block diagram of programmable interval Timer/Counter chip 8253 with a neat sketch?	3	3	15
UNIT-IV					
7		With neat diagram explain the internal architecture of INTEL 8086 microprocessor	4	2	15
OR					
8	a).	Illustrate the generation of a 20-bit physical address in 8086 with an example.	4	3	7
	b)	Draw the flag register of 8086 microprocessor and explain the function of each flag.	4	2	8
UNIT-V					

9	a).	Define addressing mode and explain the data addressing modes presented in 8086 Microprocessor with examples	5	2	8
	b).	Draw the programmable register array of 8086 and explain the function of each register	5	2	7
OR					
10	a).	Explain the operation of stack in 8086 microprocessor with example	5	2	7
	b).	Classify 8086 instructions and list some arithmetic instructions.	5	2	8
		CO-COURSE OUTCOME	KL-KNOWLEDGE LEVEL		M-MARKS

NOTE : Questions can be given as A,B splits or as a single Question for 15 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 & 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 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 importance of Li ion battery	4	3	8
OR					
8	a).	Explain single phase bridge inverter operation and draw waveforms and write	4	3	8

		its distortion factor and THD			
	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

NOTE : Questions can be given as A,B splits or as a single Question for 15 marks



SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19EEOE02]

IV B. Tech I Semester (R19) Regular Examinations
ELECTRICAL ESTIMATION AND COSTING

(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).	Discuss in detail about Electrical diagrams.	1	3	7
	b).	Discuss in detail about Methods of representation of wiring diagrams.	1	3	8
OR					
2	a).	Explain the concept of system of connection of electrical appliances and accessories.	1	3	7
	b).	With the help of schematic and wiring diagram explain a simple fan and light circuit.	1	4	8
UNIT-II					
3	a).	With the help of neat sketch, Explain about three phase four wire distributed system.	2	3	7
	b).	Discuss in detail about the guidelines for the installation of fittings	2	3	8
OR					
4	a).	Discuss about various protections of electrical systems.	2	3	7
	b).	Explain in detail about the location of switches and outlets.	2	3	8
UNIT-III					
5	a).	What are the factors to be considered for electrical installation of residential building? Explain.	3	3	7
	b).	Discuss in detail about the estimation of material for the electrical installation of commercial building.	3	3	8
OR					
6	a).	How electrical installation is done for commercial buildings? Explain.	3	3	7
	b).	Discuss in detail about the electrical installation of small industries.	3	3	8
UNIT-IV					
7	a).	Discuss in detail about various types of substations.	4	3	7
	b).	With the help of neat sketch, discuss about floor mounted type substations.	4	3	8
OR					
8	a).	What is an outdoor substation? What are its features?	4	3	7

	b).	What are the advantages and disadvantages of pole mounted type substations? Explain.	4	3	8
UNIT-V					
9	.	Explain in detail about Estimation and cost for 1000 Meter 400/230 Volt overhead transmission line with street lightning.	5	3	15
OR					
10	a).	Explain in detail about the type of support required for overhead distribution lines.	5	3	7
	b).	Discuss in detail about the mechanical design of overhead lines.	5	4	8
CO-COURSE OUTCOME			KL-KNOWLEDGE LEVEL		M-MARKS

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SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19EEOE03]

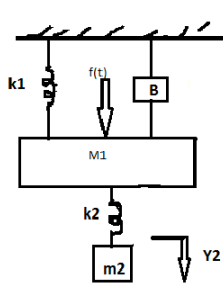
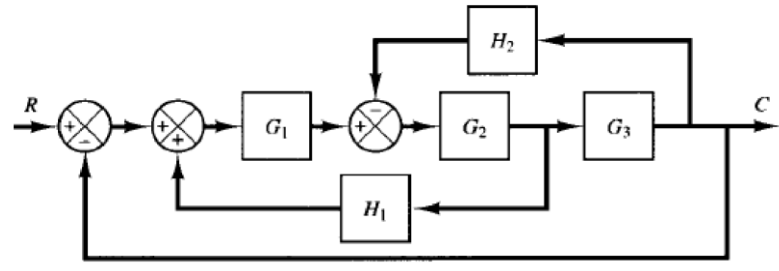
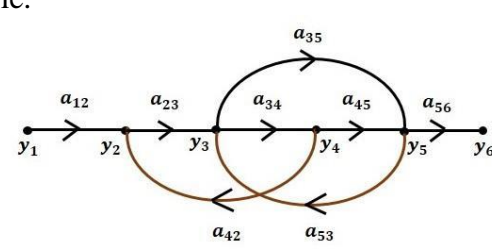
IV B. Tech I Semester (R19) Regular Examinations
PRINCIPLES OF CONTROL SYSTEMS
 (Open Elective: offered by EEE)
 (Offered to: CE, CSE, IT & ME)
MODEL QUESTION PAPER

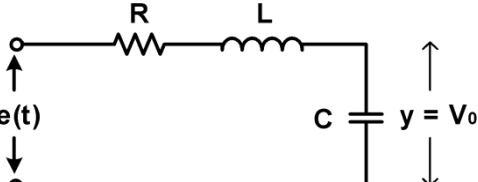
TIME: 3 Hrs.

Max. Marks: 75 M

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

All questions carry equal marks

			CO	KL	M
UNIT-I					
1.	a).	Illustrate the difference between open-loop and closed loop control systems with examples.	1	3	7
	b).	For the given mechanical system, obtain the transfer function and draw its electrical analogy based on f-i analogy. 	1	3	8
OR					
2.	a).	Find the transfer function C/R for the following system by using block diagram reduction technique 	1	3	8
	b).	Obtain the transfer function y_6/y_1 for the given SFG using Mason's gain rule. 	1	3	7
UNIT-II					
3.	a).	Distinguish between type and order of a system. What are the various error constants and how they are related to the type of the system?	2	3	7

	b).	Derive the expression for unit-step response of a standard second-order system which is under-damped. Also, describe the transient response specifications.	2	3	8
OR					
4.	a).	Discuss the standard input signals used to test control systems. Which one is used mostly and why?	2	3	7
	b).	A unity feedback system is characterized by an open-loop transfer function $G(s) = K/S(S+10)$. Determine the value of gain K such that the system has a damping ratio of 0.5. With this value of K, find the settling time, percentage of overshoot and steady state error for a unit-ramp input.	2	4	8
UNIT-III					
5.	a).	Explain how 'Relative stability' of a system can be assessed using RH criterion?	3	3	7
	b).	Using R-H criterion, find the range of K for the closed loop system to be stable. The open loop transfer function of the system is $G(S)H(S) = \frac{K}{S(S+1)(S+2)}$	3	4	8
OR					
6.	a).	Demonstrate the steps involved while drawing the root locus of a system.	3	3	7
	b).	Obtain the Root-locus for the system with $G(S)H(S) = \frac{K}{S(S+4)(S^2+4S+8)}$ What value of K makes the closed loop system marginally stable?	3	4	8
UNIT-IV					
7.	a).	What are the frequency domain specifications? A second order system step response shows 25% overshoot. What is its resonant peak in frequency response?	4	3	7
	b).	Illustrate Correlation between Time and Frequency Responses.	4	3	8
OR					
8.	a).	Draw the Bode plots for the system having. $G(S)H(S) = \frac{2500}{S(S+5)(S+50)}$ Determine the Gain Margin and Phase Margin.	4	4	8
	b).	Draw the Polar plot for the system having Transfer function $G(S)H(S) = \frac{5}{s(s+1)(s+2)}$ Determine the Gain Margin and Phase Margin.	4	4	7
UNIT-V					
9.	a).	Obtain the state variable model for the system given below. 	5	3	7

	b).	Obtain a state variable representation of the following system using any one method $G(s) = \frac{1}{s(s^2 + 3s + 2)}$	5	3	8
OR					
10.	a).	Check for controllability and observability of the system described below. $\dot{X} = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ 0 & -2 & -3 \end{bmatrix} X + \begin{bmatrix} 1 \\ 0 \\ 0 \end{bmatrix} U$ $Y = [3 \quad 4 \quad 1] X$	5	4	7
	b).	Consider $A = \begin{bmatrix} 0 & 1 \\ -2 & -3 \end{bmatrix}$. Compute STM by using Laplace transformation method and Cayley-Hamilton theorem.	5	3	8

CO-COURSE OUTCOME

KL-KNOWLEDGE LEVEL

M-MARKS

NOTE : Questions can be given as A,B splits or as a single Question for 15 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: 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° 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° . 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

NOTE : Questions can be given as A,B splits or as a single Question for 15 marks



SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)**[B19EEOE05]****IV B. Tech I Semester (R19) Regular Examinations****ELECTRICAL VEHICLES****(Open Elective: offered by EEE)****(Offered to: 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 in detail evolution of EVs.	1	K4	7
	b.	Describe Vehicle dynamics with fixed tractive effort	1	K4	8
OR					
2	a.	Compare EV with IC Engine Vehicle.	1	K4	8
	b.	What is Vehicle resistance, explain in detail	1	K4	7
UNIT-II					
3	a.	Explain in detail EV motor sizing	2	K4	8
	b.	Discuss Various configurations of EVs in detail	2	K4	7
OR					
4	a.	Discuss in detail about power train components.	2	K4	7
	b.	Explain the operation of parallel HEV	2	K4	8
UNIT-III					
5	a.	What is the importance of lead acid battery, explain its operation?	3	K4	8
	b.	Explain in Detail Battery Management System in EVs	3	K4	7
OR					
6	a.	What are various battery performance parameters and compare various batteries by using the battery performance parameters	3	K4	8
	b.	What are various Li ion batteries and explain their operation and how safety is important in handling the lithium-ion batteries	3	K4	7
UNIT-IV					
7	a.	Explain the working schematic of PMSM drives with respect to EV.	4	K4	7
	b.	Explain the working schematic of SRM drives with respect to EV.	4	K4	8
OR					
8	a.	Explain the working schematic of PM-BLDC drives with respect to EV.	4	K4	8
	b.	Explain the working of Electric Drive Components	4	K4	7

UNIT-V					
9	a.	Explain various charging algorithms of EVs	5	K4	7
		Explain Switched mode power supply circuit operation in EV Charger	5	K4	8
OR					
10	a.	Explain in detail V2G Technology	5	K4	7
	b.	Explain detail about the DC fast Charging configurations	5	K4	8

CO-COURSE OUTCOME

KL-KNOWLEDGE LEVEL

M-MARKS

NOTE : Questions can be given as A,B splits or as a single Question for 15 marks



SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19EEOE06]

IV B. Tech I 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: $\text{MatA} = \begin{bmatrix} 4 & 7 & 1 \\ 7 & 2 & 3 \\ 5 & 5 & 9 \end{bmatrix}; \text{MatB} = \begin{bmatrix} 6 & 0 & 4 \\ 9 & 8 & 1 \\ 7 & 5 & 2 \end{bmatrix}; \text{MatC} = \begin{bmatrix} 2 & 5 & 3 \\ 0 & 17 & 9 \\ 8 & 0 & 1 \end{bmatrix}$ 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.		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.		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.		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

NOTE : Questions can be given as A,B splits or as a single Question for 15 marks

SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)

[B19ITOE04]

IV B. Tech I Semester (R19) Regular Examinations

WEB TECHNOLOGIES

(Open Elective: offered by IT)

(Offered to: CE, & ME)

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).	Create a simple HTML page which demonstrates the use of the various types of lists. Try adding a definition list which uses an unordered list to define terms.	1	3	8
	b).	Show how group and alignment of table rows and columns is achieved using HTML.	1	2	7
		OR			
2.	a).	Compare and contrast HTML and DHTML.	1	3	8
	b).	Explain the various ways you can reference a color in CSS.	1	2	7
		UNIT-II			
3.	a).	Write a java script to validate a form consisting of a username. Also navigate to another web page after validation.	2	3	8
	b).	Explain Built in objects in JavaScript.	2	2	7
		OR			
4.	a).	Write a JavaScript to validate a form consisting of a username and password? using regular expression	2	2	7
	b).	Write a java script to determine whether a given number is an 'ARMSTRONG NUMBER' or not. [Eg: 153 is an Armstrong number, since sum of the cube of the digits is equal to the number i.e., $1^3 + 5^3 + 3^3 = 153$]	2	3	8
		UNIT-III			
5.	a).	What is a valid XML and well formed XML	3	2	7
	b).	Explain the four possible keywords in a DTD declaration with suitable examples.	3	2	8
		OR			
6.	a).	Explain the advantages of XML schemas over DTDs.	3	2	8
	b).	List and explain components of XML Schema?	3	2	7
		UNIT-IV			
7.	a).	Write the steps to run basic PHP? write any four string function s in php	3	2	7

	b).	Explain different types of arrays in php with example?	3	2	8
		OR			
8.	a).	Write a PHP script to connect to MySQL database and insert records into table	3	3	7
	b).	Explain predefined and user defined functions in PHP with an example.	3	2	8
		UNIT-V			
9.	a).	Explain about arrays creation, manipulation functions that support by RUBY with example.	3	2	8
	b).	Explain any four IO functions in ruby with example	3	2	7
		OR			
10.	a).	Explain hashes and classes in ruby with suitable examples.	3	3	8
	b).	Write about different types of variables in Ruby with examples.	3	2	7
		CO-COURSE OUTCOME	KL-KNOWLEDGE LEVEL	M-MARKS	

NOTE : Questions can be given as A,B splits or as a single Question for 15 marks



SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19MEOE04]

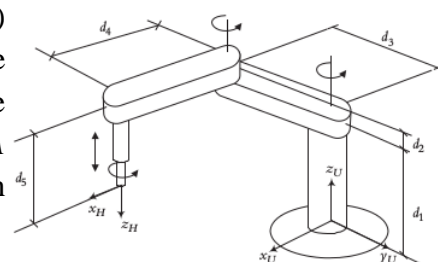
IV B. Tech I Semester (R19) Regular Examinations
INTRODUCTION TO ROBOTICS
(Open Elective: offered by ME)
(Offered to: CE, CSE & IT)
MODEL QUESTION PAPER

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 various components of robot.	1	2	7
	b).	Discuss applications of robot in brief.	1	2	8
OR					
2.	a).	Explain working principle of encoders.	1	2	7
	b).	Compare various types of actuation systems.	1	2	8
UNIT-II					
3.	a).	Find the new location of point $P(1, 2, 3)^T$ relative to the reference frame after a rotation of 30° about the z -axis followed by a rotation of 60° about the y -axis.	2	2	7
	b).	A frame B is rotated 90° about the z -axis, then translated 3 and 5 units relative to the n - and o -axes respectively, then rotated another 90° about the n -axis, and finally, 90° about the y -axis. Find the new location and orientation of the frame. $B = \begin{bmatrix} 0 & 1 & 0 & 1 \\ 1 & 0 & 0 & 1 \\ 0 & 0 & -1 & 1 \\ 0 & 0 & 0 & 1 \end{bmatrix}$	2	2	8
OR					
4.	a).	Suppose that a robot is made of a Cartesian and RPY combination of joints. Find the necessary RPY angles to achieve the following: $T = \begin{bmatrix} 0.527 & -0.574 & 0.628 & 4 \\ 0.369 & 0.819 & 0.439 & 6 \\ -0.766 & 0 & 0.643 & 9 \\ 0 & 0 & 0 & 1 \end{bmatrix}$	2	3	8
	b).	Also find the Euler angles for the above matrix	2	3	7
UNIT-III					
5.		For the following SCARA-type robot: a) Assign the coordinate frames based on the D-H representation, b) Fill out the parameters table, c) Write all the A matrices, and d) Write the ${}^U T_H$ matrix in terms of the A matrices.	3	3	15



OR

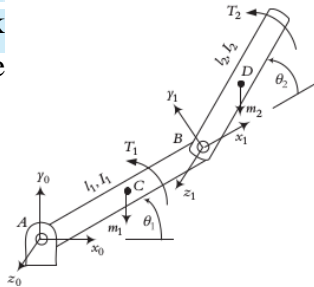
6.	a).	<p>In the 2-DOF robot, the transformation matrix 0T_H is given in symbolic form, as well as in numerical form for a specific location. The length of each link l_1 and l_2 is 1 unit. Calculate the values of θ_1 and θ_2 for the given location.</p> ${}^0T_H = \begin{bmatrix} C_{12} & -S_{12} & 0 & l_2 C_{12} + l_1 C_1 \\ S_{12} & C_{12} & 0 & l_2 S_{12} + l_1 S_1 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix} = \begin{bmatrix} -0.2924 & -0.9563 & 0 & 0.6978 \\ 0.9563 & -0.2924 & 0 & 0.8172 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$	3	3	7
	b).	<p>Suppose the location and orientation of a hand frame is expressed by the following matrix. What is the effect of a differential rotation of 0.15 radians about the z-axis, followed by a differential translation of [0.1, 0.1, 0.3]? Find the new location of the hand.</p> ${}^R T_H = \begin{bmatrix} 0 & 0 & 1 & 2 \\ 1 & 0 & 0 & 7 \\ 0 & 1 & 0 & 5 \\ 0 & 0 & 0 & 1 \end{bmatrix}$	3	3	8

UNIT-IV

7.	<p>Joint 1 of the 6-axis robot is to go from initial angle of $\theta_i = 30^\circ$ to the final angle of $\theta_f = 75^\circ$ in 5 seconds with a cruising velocity of $\omega_1 = 10^\circ/\text{sec}$. Find the necessary time for blending and plot the joint positions, velocities, and accelerations.</p>	4	3	15
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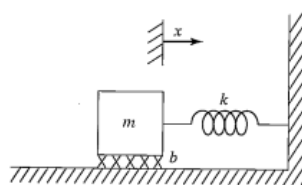
OR

8.	<p>Using the Lagrangian method, derive the equations of motion for the 2-DOF robot arm, as shown in Figure below. The center of mass for each link is at the center of the link. The moments of inertia are I_1 and I_2.</p>	4	3	15
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UNIT-V

9.	a).	<p>Determine the motion of the system shown below if the parameter values are $m = 1$, $b = 5$, and $k = 6$ and the block is released from rest from a position $x = -1$.</p>	5	3	8
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	b).	<p>Explain the concept of control law partitioning with the help of block diagram</p>	5	3	7
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OR

10	a).	Analyze the stability of a linear spring mass damper system using Lyapunov method	1	2	7
	b).	Develop the block diagram for model-based control for nonlinear control of manipulator	1	2	8
		CO-COURSE OUTCOME	KL-KNOWLEDGE LEVEL		M-MARKS

NOTE : Questions can be given as A,B splits or as a single Question for 15 marks



SAGI RAMA KRISHNAM RAJU ENGINEERING COLLEGE (A)
[B19BSOE03]

IVB. Tech I Semester Regular Examinations
MATHEMATICS FOR MACHINE LEARNING

(Open Elective: offered by M&H)
(Offered to: CE, CSE, IT & ME)
MODEL QUESTION PAPER

Time: 3 Hrs.

Max. Marks:75

Answer any one Question from Each Unit
All questions carry equal Marks

UNIT-1		CO	KL	M
1	Establish that the set $S = \{(1,2,1), (2, 1, 0), (1, -1, 2)\}$ forms a basis for $V_3(F)$	1	3	15
OR				
2	Let W be the plane generated by the vectors $(1,1,1)$ and $(1,0,1)$. Determine the orthogonal projection $P:R^3 \rightarrow W$	1	3	15
UNIT-2				
3	If α and β are vectors in the inner product space $V(F)$ prove that $\langle a\alpha - b\beta, a\alpha - b\beta \rangle = a\bar{a}\langle\alpha, \alpha\rangle - a\bar{b}\langle\alpha, \beta\rangle - b\bar{a}\langle\beta, \alpha\rangle + b\bar{b}\langle\beta, \beta\rangle$	2	3	15
OR				
4	Apply Gram-Schmidt orthogonalization to the following sequence of vectors in $R^3 = \begin{bmatrix} 1 \\ 2 \\ 0 \end{bmatrix}; \begin{bmatrix} 8 \\ 1 \\ -6 \end{bmatrix}; \begin{bmatrix} 0 \\ 0 \\ 1 \end{bmatrix}$ and determine orthogonal basis and orthonormal basis	2	3	15
UNIT-3				
5	Establish that the squared error of SVD at a truncation rank of $(k+1)$ is no larger than the squared error of PCA at a truncation rank of k for any $k \geq 1$.	3	3	15
OR				
6	Explain about $K - \text{mean}$ clustering with working procedure	4	3	15
UNIT-4				
7	Explain Support vector machines working principles	5	3	15
OR				
8	Explain about RBF kernel with data example	5	3	15
UNIT-5				
9	Explain about Polynomial kernel with data example	6	3	15
OR				
10	Explain SVM multi label classifier with letter recognition data example	6	3	15
CO-COURSE OUTCOME		KL-KNOWLEDGE LEVEL		M-MARKS

NOTE : Questions can be given as A,B splits or as a single Question for 15 marks