Hall Ticket Number :										

R-19

Code: 19A354T

III B.Tech. I Semester Regular Examinations Jan/Feb 2022

Management Science

(Electrical and Electronics Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five* full questions by choosing one question from each unit (5x14 = 70 Marks)

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		Marks	CO	Blooms Level
	UNIT–I			
1.	Define Management? Explain various elements of Management.	14M	C01	L2
	OR			
2.	What are the various structures of organization? Explain.	14M	C01	L1
	UNIT–II			
3.	Briefly discuss the methods of Inventory Management.	14M	C02	L1
	OR			
4.	Discuss about the Product Life Cycle.	14M	C02	L1
	UNIT–III			
5.	Define Human Resource Management? Explain about the functions of HRM.	14M	C03	L1
	OR			
6.	Discuss the following a) Industrial Relations b) Performance appraisal	14M	C03	L2
	UNIT–IV			
7.	Explain the Scope and objectives of Financial Management.	14M	C04	L3
	OR			
8.	Discuss about Programme Evaluation and Review Techniques.	14M	C04	L3
	UNIT–V			
9.	What is Management Information System? Explain characteristics and benefits of MIS.	14M	C05	L1
	OR			
10.	Explain the relationship between ethics and organization.	14M	C05	L2

END

Hall Ticket Number :										

R-19

Code: 19A252T

III B.Tech. I Semester Regular Examinations February 2022

Power Electronics

(Electrical and Electronics Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five* full questions by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	Blooms Level
		UNIT-I			
1.	a)	Describe the different modes of operation of a thyristor with the help of its static V-I characteristics.	7M	CO1	L2
	b)	Explain the different turn on methods of SCR.	7M	CO1	L2
		OR			
2.	a)	Discuss the practical problems associated with series operation of SCR?	7M	CO1	L2
	b)	Describe UJT firing circuit used for triggering SCRs.	7M	CO1	L2
		UNIT-II			
3.	a)	Demonstrate Two transistor analogy of SCR.	7M	CO2	L2
	b)	Design the Snubber circuit for protection of SCR.	7M	CO2	L3
		OR			
4.	a)	Elaborate the methods used to protect an SCR from di/dt and over current.	8M	CO2	L2
	b)	Describe cooling mechanism of SCR.	6M	CO3	L2
		UNIT-III			
5.	a)	Explain the operation of Single Phase fully controlled bridge type rectifier with RL- load.	8M	CO3	L2
	b)	Discuss the effect of freewheeling diode in rectifiers.	6M	CO3	L2
		OR			
6.		Explain the operation of three Phase fully controlled bridge converter with RL-load for continous current operation. Derive the average output voltage expression for the above operation.	14M	CO3	L2
		UNIT-IV			
7.	a)	What is meant by buck converter? Explain its operation. Sketch the necessary waveforms. Derive the output voltage equation.	10M	CO4	L2
	b)	Explain Time ratio control strategy of choppers.	4M	CO4	L2
		OR			
8.	a)	Explain the four quadrant operation of class-E chopper.	7M	CO4	L2
	b)	A step up chopper has input voltage of 220V and output voltage of 660V. If the non-conducting time of thyristor is 100μs, compute the pulse width of the output voltage.	7M	CO4	L3
		UNIT-V			
9.	a)	Explain the operation of single-phase full bridge inverter with the aid of relevant waveforms.	9M	CO5	L2
	b)	Explain Multiple PWM techniques.	5M	CO5	L2
		OR			
10.	a)	Explain about Step-up midpoint type Single phase Cyclo-converter with neat sketches.	7M	CO5	L2
	b)	With neat sketch explain Single phase AC voltage controller for RL-load.	7M	CO5	L2

END

Hall Ticket Number :										

R-19

Code: 19A253T

III B.Tech. I Semester Regular Examinations February 2022

Power System Analysis

(Electrical and Electronics Engineering)

Max. Marks: 70 Time: 3 Hours

Answer any *five full* questions by choosing one question from each unit (5 x 14 = 70Marks)

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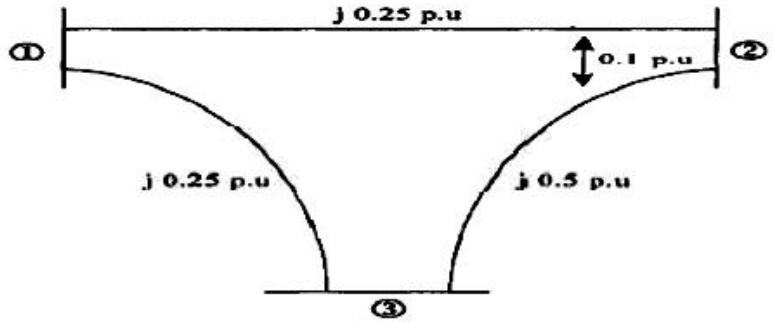
			Marks	CO	Blooms Level
		UNIT–I			
1.	a)	Briefly explain the formation of Z_{loop} using singular transformation method.	7M	CO1	L1
	b)	Compute the bus impedance matrix for the system shown in figure below.			



7M CO1 L3

OR

2.	a)	Discuss how to form Y_{Bus} by direct inspection with a suitable example	7M	CO1	L2
	b)	What are the advantages of Y_{bus} over Z_{bus}?	7M	CO1	L1
		UNIT–II			
3.	a)	Explain the representation of various components in power system for the power flow calculation by deriving the necessary expressions.	7M	CO2	L2
	b)	Briefly explain Fast decoupled load flow method of analysis?	7M	CO2	L1
		OR			
4.	a)	Develop load flow equations suitable for solution by Newton Raphson method using rectangular coordinates when only PQ buses are present.	7M	CO2	L2
	b)	Compare G-S method and N- R methods of load flow solutions.	7M	CO2	L1
		UNIT–III			
5.	a)	What is a 3-Phase unsymmetrical fault? Discuss the different types of unsymmetrical faults that occur in a 3-Phase system	7M	CO3	L2

	b)	A 30 MVA, 3-φ alternator, having its neutral solidly grounded is operating at no load, its voltage being 13.2 kV between lines. It has a reactance to positive sequence currents of 3Ω, the reactance's to negative and zero sequences currents are 90% and 40% of the positive sequence value respectively. For a double line to ground fault, determine i) the currents in the faulty lines, ii) the current through ground and iii) the voltage of healthy phase to neutral.	7M	CO3	L3

OR

6.	a)	Derive the expression for the fault current and terminal voltage for a line to line fault occurs at the terminal of an unloaded 3-phase alternator. Assume that the alternator has an isolated neutral	7M	CO3	L2
	b)	Obtain the symmetrical components of the following set of unbalanced currents I_a = 1.6 250^0, I_b = 1.0 180^0 and I_C = 0.9 132^0. Also find out the neutral current.	7M	CO3	L3

UNIT–IV

7.	a)	Explain Dynamic and Transient Stabilities of a system?	7M	CO4	L1
	b)	Derive an expression for steady state stability limit of a short transmission line having send end and receiving end voltages Vs and V_r an impedance Z.	7M	CO4	L2

OR

8.	a)	Explain Synchronizing Power Coefficient and Power Angle Curve.	7M	CO4	L2
	b)	Explain Determination of Steady State Stability and Methods to improve steady state stability.	7M	CO4	L2

UNIT–V

9.	a)	Derive the swing equation and explain its importance?	7M	CO4	L1
	b)	Explain the Equal Area Criterion by deriving the necessary expression and apply the Equal Area Criterion for the case of "Removal of one of parallel transmission line" for analyzing the transient stability.	7M	CO4	L3

OR

10.	a)	Explain critical clearing time and critical clearing angle, deriving the expressions.	7M	CO4	L2
	b)	Describe the modified Euler's method of stability	7M	CO4	L1

END

Hall Ticket Number :										

R-19

Code: 19A25BT

III B.Tech. I Semester Regular Examinations February 2022

Renewable Energy Systems

(Electrical and Electronics Engineering)

Max. Marks: 70 Time: 3 Hours

Answer any *five full* questions by choosing one question from each unit (5 x 14 = 70Marks)

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			Marks	CO	Blooms Level
		UNIT–I			
1.	a)	Compare and contrast renewable and non-renewable energy resources	7M	1	2
	b)	Write a short note on potential and limitations of renewable energy resources	7M	1	2
		OR			
2.	b)	Infer briefly the role of environmental impact of solar power	7M	2	3
	b)	Elucidate the principle of operation of pyranometer	7M	2	3
		UNIT–II			
3.	a)	How are the concentrating collectors classified based on their operating principle?	7M	3	3
	b)	Explicate the various sensible and latent heat energy storage devices	7M	3	3
		OR			
4.	a)	Explain in detail the working of a solar pump	7M	3	3
	b)	Illustrate with a neat diagram the operating principle of solar pond	7M	3	4
		UNIT–III			
5.	a)	Elucidate in the detail the classification of WECS	7M	4	3
	b)	Discuss the different modes of Wind Power generation	7M	4	3
		OR			
6.	a)	Describe in the detail the basic principle of operation of WECS	7M	4	3
	b)	Derive the expression for Power in wind clearly stating the assumptions.	7M	4	3
		UNIT–IV			
7.	a)	Briefly present the outline of tidal energy estimation	7M	5	2
	b)	Expound about the advantages and operating difficulties of Ocean thermal energy power plant	7M	5	4
		OR			
8.		Describe in detail the various types of wave energy conversion machines. Also state their applications	14M	5	3
		UNIT–V			
9.	a)	Explain in detail about the Geothermal field and the various types of Geothermal resources	7M	5	3
	b)	Write a short note on combustion characteristics of bio gas and economic aspects of bio gas	7M	5	3
		OR			
10.		Illustrate with neat diagram the principle of working and construction of fuel cell	14M	5	3

END

Hall Ticket Number :										

R-19

Code: 19A25ET

III B.Tech. I Semester Regular Examinations February 2022

Battery Energy Storage Systems

(Electrical and Electronics Engineering)

Max. Marks: 70 Time: 3 Hours

Answer *any five* full questions by choosing one question from each unit (5x14 = 70 Marks)

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			Marks	CO	Blooms Level
		UNIT-I			
1.	a)	Discuss the role of Energy storage system in power sector?	7M	CO1	L2
	b)	What are the applications of Energy storage system?	7M	CO1	L2
		OR			
2.	a)	Explain briefly about the chemical and Electro chemical storage system?	7M	CO1	L2
	b)	Discuss the overview of energy storage technologies?	7M	CO1	L2
		UNIT-II			
3.	a)	What are the classification of storage system?	7M	CO2	L1
	b)	Explain the Energy storage system components?	7M	CO2	L2
		OR			
4.	a)	Explain the operation of Lithium-Ion Battery?	7M	CO2	L2
	b)	Explain the components of Battery Energy storage system?	7M	CO2	L2
		UNIT-III			
5.		Enlist the technical considerations carryout in grid applications for BESS.	14M	CO3	L2
		OR			
6.	a)	Discuss the operation and maintenance of BESS.	7M	CO3	L2
	b)	What are the general grid applications of BESS?	7M	CO3	L2
		UNIT-IV			
7.		Briefly explain the Reuse of Electric vehicle Batteries for Energy system?	14M	CO4	L2
		OR			
8.	a)	Explain the challenges in reducing carbon Emissions?	10M	CO4	L1
	b)	Discuss the Recycling process?	4M	CO4	L2
		UNIT-V			
9.		Discuss the Peak shaving and Load Leveling by using energy storage system?	14M	CO5	L2
		OR			
10.		Explain the following a) Policy recommendation to frequency Regulation b) Single line diagram for Micro grid	14M	CO5	L2

END

Hall Ticket Number :										

R-19

Code: 19A251T

III B.Tech. I Semester Regular Examinations February 2022

Electrical and Electronic Measurements

(Electrical and Electronics Engineering)

Max. Marks: 70 Time: 3 Hours

Answer any *five full* questions by choosing one question from each unit (5 x 14 = 70Marks)

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			Marks	CO	Blooms Level
		UNIT–I			
1.	a)	Briefly explain characteristics of measuring instruments?	7M	1	1
	b)	Describe how a potential divider arrangement is used for multipliers used for multi range voltmeters. Derive expressions for resistance of different sections for a 4 range voltmeter?	7M	1	3
		OR			
2.	a)	Describe the constructional details of an attraction type moving iron instrument with the help of a neat diagram. Derive the expression for deflection if spring control is used and comment upon the shape of the scale?	10M	1	3
	b)	Define limiting errors. Derive the expression for relative limiting error?	4M	1	2
		UNIT–II			
3.	a)	Describe a circuit for testing of a single phase induction type energy meter at different loads and power factors?	7M	2	2
	b)	In a dynamometer wattmeter the moving coil has 500 turns of mean diameter 30 mm. Estimate the torque if the area of the field and the moving coils are at (i) 60^0 (ii) 90^0 when the flux density produced by field coils is 15 X 10^{-3} Wb/m^2, the current in moving coil is 0.05 A and the power factor is 0.866.	7M	2	3
		OR			
4.	a)	Explain the special features incorporated in an electrodynamometer type of wattmeter so that it can be used for low power factor applications?	10M	2	2
	b)	Explain about Creeping error in single phase induction type energy meter	4M	2	3
		UNIT–III			
5.	a)	Draw the circuit diagram of a Crompton's potentiometer and explain its working. Describe the steps used when measuring an unknown resistance?	7M	2	2

	b)	Describe the design and constructional features used in potential transformers for reduction of ratio and phase angle errors.	7M	2	2

OR

6.	a)	Describe the construction and working of a coordinate type a.c. potentiometer. How is it standardized? Explain how an unknown voltage measured with it.	7M	2	2
	b)	Explain in detail the effect of opening the secondary circuit of a current transformer when the primary winding is energized?	7M	2	2

UNIT–IV

7.	a)	Draw the circuit of a Wheatstone bridge and derive the conditions of balance.	7M	3	2
	b)	Explain how Wien's bridge can be used for experimental determination of frequency. Derive the expression for frequency in terms of bridge parameters.	7M	3	2

OR

8.	a)	What are the different difficulties encountered in the measurement of high resistance? Explain how these difficulties are overcome.	7M	3	2
	b)	Derive the equation of balance for an Anderson's bridge. Draw the phasor diagram for conditions under balance.	7M	3	2

UNIT–V

9.	a)	What are the different types of amplifiers used for CROs? Describe the basis on which they are classified.	7M	4	2
	b)	Draw a basic circuit of a digital frequency meter using various sections. Explain the functions of each section.	7M	4	2

OR

10.	a)	Describe how the following measurements can be made with the use of a CRO: (i) Frequency (ii) Phase angle	10M	4	2
	b)	List out the advantages and disadvantages of smart energy meters.	4M	4	2

END

Hall Ticket Number :										

R-19

Code: 19A25DT

III B.Tech. I Semester Regular Examinations February 2022

Fuzzy Logic and Neural Network

(Electrical and Electronics Engineering)

Max. Marks: 70 Time: 3 Hours

Answer any *five full* questions by choosing one question from each unit (5 x 14 = 70Marks)

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			Marks	CO	Blooms Level
		UNIT-I			
1.	a)	Distinguish between classical sets and Fuzzy sets	7M	CO1	L2
	b)	Let X={1, 2, 3, ……10}. Determine the cardinalities and relative cardinalities of the following fuzzy sets. i) A = {(2, 0.4), (3, 0.6), (4, 0.8), (5, 1.0), (6, 0.8), (7, 0.6), (8, 0.4)} ii) B = {(2, 0.4), (4, 0.8), (5, 1.0), (7, 0.6)}	7M	CO1	L2
		OR			
2.	a)	Explain union, intersection and complement with reference to fuzzy set and classical sets.	7M	CO1	L2
	b)	Discuss Cardinalities and Membership Functions	7M	CO1	L2
		UNIT-II			
3.	a)	Discuss any two membership value assignment?	7M	CO2	L2
	b)	Distinguish between Crisp logic and Fuzzy logic	7M	CO2	L2
		OR			
4.	a)	Define defuzzification. Explain any two methods of defuzzification.	7M	CO2	L2
	b)	How are the rules formed in a fuzzy rule-based system? Explain.	7M	CO2	L2
		UNIT-III			
5.	a)	Explain the following: (i) Spiking neuron model, (ii) Integrate and fire neuron model	7M	CO3	L1
	b)	Briefly explain the historical developments of ANN, with a mention of their potential applications.	7M	CO3	L1
		OR			
6.	a)	Write short notes on artificial neural network architectures.	7M	CO3	L1
	b)	What are the various types of neuron activation functions? Explain any two with a neat sketch	7M	CO3	L4
		UNIT-IV			
7.		State and explain the generalized delta learning rule applied in back propagation algorithm	14M	CO4	L4
		OR			
8.	a)	Explain the general concept of associate memory. Define associate matrix and associate rules	7M	CO4	L4
	b)	Discuss the working of single layer perceptron and multilayer perceptron with relevant algorithm and compare them	7M	CO4	L4
		UNIT-V			
9.		What do you mean by fault diagnosis? Explain the fault diagnosis by using a neural network with a neat sketch?	14M	CO5	L3
		OR			
10.		Write short notes on application of artificial neural networks (ANN) and fuzzy logic (FL) as forecasting tools for predicting the load demand in short term category.	14M	CO5	L3

END