Roll No. | | | | | | | | | | |

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E. /B. Tech (Full Time) - END SEMESTER EXAMINATIONS, APR / MAY 2024

EE5251 –BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

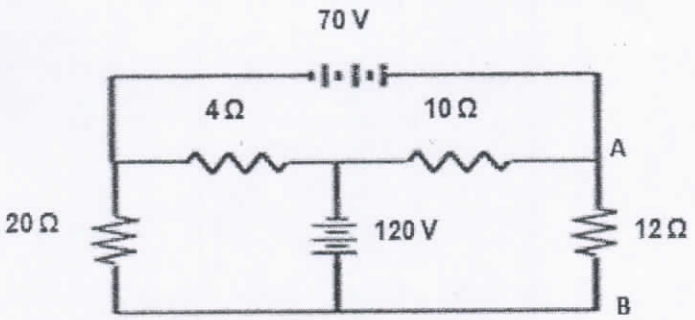
(Regulation 2019)

Time:3 hrs Max. Marks: 100

PART- A (10x2=20Marks)
(Answer all Questions)

Q. No.	Questions	Marks
1	A series RL circuit of R=10 Ω and X_L=15 Ω has an applied voltage of 100 V. Find real Power, reactive Power and Power factor.	2
2	Explain the function of fuse, MCB.	2
3	Distinguish between star and delta connection.	2
4	Differentiate magnetic and electric circuits.	2
5	Define back Emf.	2
6	Write any four application of DC series motor.	2
7	Write about semiconductor and its types.	2
8	Draw the circuit diagram of zener diode act as voltage regulator.	2
9	Define holding current and latching current in SCR.	2
10	Differentiate BJT and FET.	2

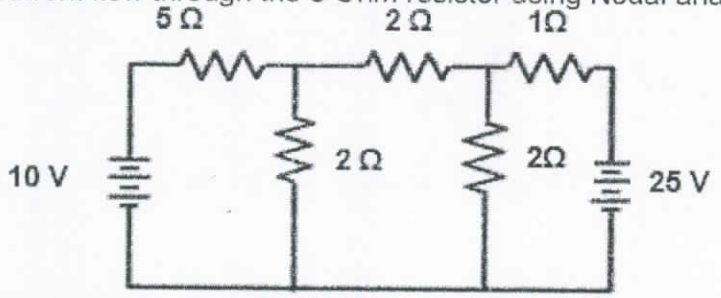
PART- B (5x 13=65Marks)
(Restrict to a maximum of 2 subdivisions)

Q. No.	Questions	Marks
11 (a)	(i) Using mesh analysis find a 12 Ohm branch current in the below circuit. 	10
	(ii) Draw the schematic of domestic wiring.	3
	(OR)	
11 (b)	(i)A series circuit consisting of 25 Ω resistor ,64 mH inductor and 80 μF capacitor connected to a 110 V,50 Hz, single phase supply .Calculate the current ,Voltage across resistor, Voltage across inductor, Voltage across capacitor and overall power factor of the circuit. Draw the neat phasor diagram.	10

12 (a)	(i)Derive the equation for 3φ balanced star connection $v_L = \sqrt{3}v_{ph}$.	5
	(ii) Three identical coils, each having resistance of 10Ω and inductance of 0.03 H are connected as delta load to a three phase 400 V, 50Hz supply. Calculate I_L, I_{ph}, Real power, Reactive power, Power factor. Also draw the phasor diagram.	8
	(OR)	
12.(b)	(i)Define magnetic circuit, Self and Mutual inductance.	6
	(ii) Define magnetic flux density, MMF.(ii) Calculate the reluctance of magnetic coil which is wounded uniformly of an iron core provided that the relative permeability of the iron is 1400 .Also the length of the magnetic circuit is 70cm and the cross sectional area of the core is $5cm^2$.	7
13 (a)	(i) A 10 pole DC shunt generator with 800 wave connected conductors are running at 600 RPM supplies a load of 15Ω resistance at terminal voltage of 240V. The armature resistance is 0.28Ω and field resistance is 240Ω. Determine the armature current, induced EMF and flux per pole.	7
	(ii) Derive the transformer EMF Equation.	6
	(OR)	
13 (b)	Why single phase induction motor not a self-starting machine. Also Describe in detail the types of single phase induction motor and its applications.	13
14 (a)	(i)Explain the working of PN junction diode with its VI characteristics. Also write its applications.	7
	(ii) Explain the types of rectifier and its applications.	6
	(OR)	
14 (b)	Briefly explain the wave shaping clipper and clamper circuits and its applications.	13
15 (a)	Explain the construction and working of CB and CE transistor configuration.	13
	(OR)	
15 (b)	Explain the construction and working of MOSFET also write its applications.	13

PART- C (1x 15=15Marks)

(Q.No.16 is compulsory)

Q. No.	Questions	Marks
16.	(i)Find the current flow through the 5 Ohm resistor using Nodal analysis. 	10
	(ii) Explain the construction and working of 3 phase induction motor also write its application.	5