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

ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E. /B. Tech (Full Time) - END SEMESTER EXAMINATIONS, APR / MAY 2025

EE5251 –BASICS OF ELECTRICAL AND ELECTRONICS ENGINEERING

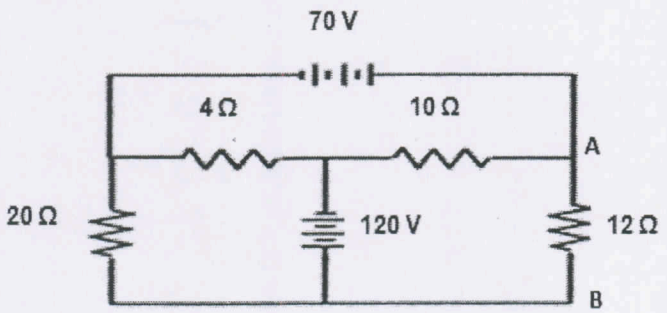
(Regulation 2019)
SEMESTER -2

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 and MCB .	2
3	Distinguish between Balanced and unbalanced three phase circuits.	2
4	Define MMF and reluctance in magnetic circuits.	2
5	Define Back Emf.	2
6	Write any four application of DC series motor.	2
7	Write about P type and N type semiconductors.	2
8	Write about zener diode act as voltage regulator in line regulation.	2
9	Define holding current and latching current in SCR.	2
10	Differentiate BJT and FET.	2

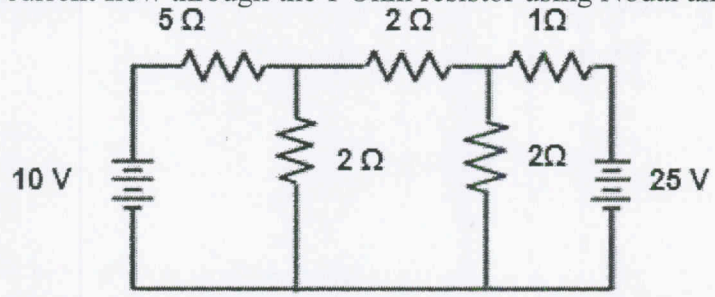
PART- B (5x 13 = 65Marks)
(Restrict to a maximum of 2 subdivisions)

Q. No.	Questions	Marks
11 (a)	(i) Using mesh analysis find a 10 Ohm branch current in the below circuit. 	10
	(ii) Write about Earthing .	3
	(OR)	
11 (b)	(i) A series circuit consisting of R=10 Ω resistor ,L=50 mH inductor and 100 μF capacitor connected to a 200 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.	10
	(ii) Write about RMS value and Average value.	3

12 (a)	(i) Derive the equation for 3φ balanced delta connection $I_L = \sqrt{3}Iph.$	5
	(ii) Three identical coils, each having resistance of 16 Ω and reactance-of 12 ohm are connected in star 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)Differentiate magnetic circuit and Electric circuit.	6
	(ii) Define magnetic flux density (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) Briefly explain the construction and working of DC machine with neat circuit diagram.	8
	(ii) Derive the transformer EMF Equation.	5
	(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 working.	13
14 (a)	(i)Explain the working of PN junction diode with its VI characteristics. Also write its applications.	7
	(ii) Explain the Bridge 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 common emitter (CE) transistor configuration also its characteristics.	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 1 Ohm resistor using Nodal analysis. 	10
	(ii) Explain the construction and working of 3 phase induction motor and write its applications.	5