Code No:**21ES1106** **RM21** **SET - 1**

I B.Tech - I Semester Regular Examinations, May -2022

Basic Electrical and Electronics Engineering

(Com. to CE, ME Branches)

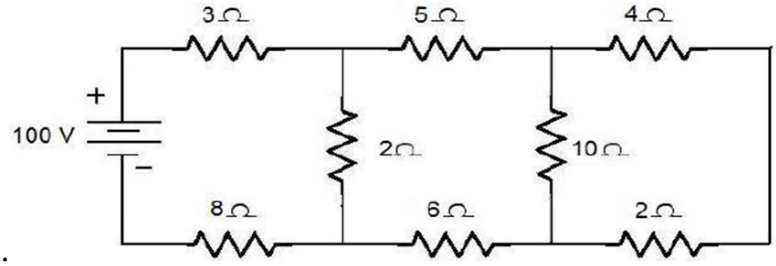
Time : 3 Hours Max.Marks:70

Answer any five Questions one Question from Each Unit
All Questions Carry Equal Marks

UNIT -I

1 A) a) Explain the following i)Network and circuit ii)Active and passive elements iii) Ideal and practical sources. 7M

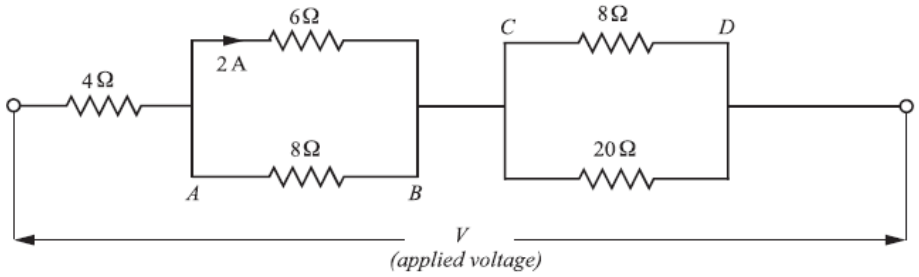
B) Estimate the current supplied by the source from the given circuit. 7M



OR

2 A) State and explain Kirchhoff's laws. 7M

B) The current in the 6Ω resistor of the network shown below is 2A. Determine the current in all branches and the applied voltage. 7M



UNIT -II

3 A) Explain the construction of a DC generator with neat sketches. 7M

B) A50KW, 220V dc shunt motor has the armature and field resistances of 0.04Ω and 80Ω respectively. Determine the armature current, back emf and power developed in armature. 7M

OR

4 A) Explain different methods of Speed control of DC shunt motor. 7M

B) A D.C. motor takes an armature current of 110A at 480V. The armature circuit resistance is 0.2ohm. The machine has 6 poles and the armature is lap connected with 864 conductors. The flux per pole is 0.05 Wb. Calculate (i) the speed (ii) the gross torque developed by the armature. 7M

UNIT -III

5	A)	Derive E.M.F. equation of a Transformer.	7M
	B)	A single phase 50 Hz transformer has 80 turns on the primary winding and 400 turns on the secondary winding. The net cross sectional area of the core is 200cm^2. If the primary winding is connected to a 240V, 50Hz supply, determine e.m.f. induced in the secondary winding	7M

OR

6	A)	Explain the construction of single-phase transformer.	7M
	B)	A 100 KVA transformer has iron losses of 1.2kW and full load copper loss of 1.2kW (i) Find KVA for maximum efficiency (ii) Maximum efficiency at unity power factor.	7M

UNIT -IV

7	A)	Explain the principle of operation of three phase induction motor.	7M
	B)	A three phase 8-pole, 50Hz induction motor has a slip of 0.15% at no-load and 2.5% at full load. Find (i) Synchronous speed (ii) No-load speed (iii) Full loads peed (iv) Frequency of rotor current at standstill.	7M

OR

8	A)	Explain in detail about the working principle of a three phase alternator?	7M
	B)	b) Explain the synchronous impedance method for determine regulation of an alternator?	7M

UNIT -V

9	A)	Sketch the energy band diagram of an open-circuited pn-junction. Explainthe terms: ‘depletion region’, ‘potential barrier’, and ‘barrier energy’.	7M
	B)	Explain the different types of feedback in amplifiers	7M

OR

10	A)	Explain the operation of a Full wave rectifier with capacitor filter and derive an expression for ripple factor.	7M
	B)	Plot the input and output characteristics of the transistor in CB configuration and explain the shape of the curves.	7M

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