Code No: R19ES1206 **R19** SET - 1

I B. Tech II Semester Supplementary Examinations, July/August - 2021
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(Com. to ME, Auto E, Min E)

Time: 3 hours Max. Marks: 75

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

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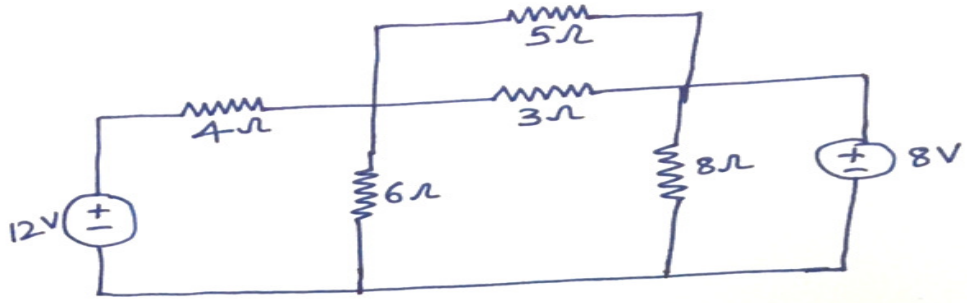
1. a) Explain the following: (8M)
(i) Ohms law (ii) Dependent and Independent sources

b) An incandescent light bulb rated at 100 W dissipates 100 W as heat and light when connected across a 220V ideal voltage source. If four such bulbs are connected in series across the same source, determine the power each bulb will dissipate. (7M)

Or

2. a) List and explain the basic types of network Elements. (8M)

b) Apply Kirchhoff's laws to determine the current through 4Ω and the power consumed in the 6Ω resistor for the circuit shown below: (7M)



3. a) Give the classification of DC Generators and explain in brief about each type. (7M)

b) A 4-pole shunt generator with lap connected armature having field and armature resistances of 50 Ω and 0.1 Ω respectively supplies sixty 100 V 40 watt lamps. Calculate the total armature current, the current per armature path and the generated emf. Allow a contact drop of 2 volts. (8M)

Or

4. a) Draw and explain the working of a Three Point Starter. (8M)

b) An 8-pole lap connected armature has 960 conductors, a flux of 40 mWb per pole and a speed of 400 rpm. Determine the emf generated. (7M)

5. a) Explain the construction and working principle of a transformer. (7M)

b) Find the primary and secondary turns of a 2200/200 V, single phase, 50 Hz, 25 KVA transformer if the flux in the core is to be about 0.08Wb. Also determine the primary and secondary currents if the losses are to be neglected. (8M)

Or

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6. a) Explain the constructional features and principle of operation of a Three phase Induction motor. (8M)

   b) A three phase star connected alternator is rated at 1500 KVA, 12000 V. The armature effective resistance and synchronous reactance are 2.5Ω and 40Ω respectively per phase. Calculate the percentage regulation for a load of 1500 KW at power factor of (i) 0.85 lagging and (ii) 0.85 leading. (7M)

7. a) Sketch and explain in detail about the V – I characteristic of the p – n junction diode. (8M)

   b) Draw and explain the equivalent circuit of a Dual input operational amplifier. (7M)

Or

8. a) Distinguish between Intrinsic Semiconductors and Extrinsic Semiconductors. (8M)

   b) Explain the basic application of operational amplifier as an Integrator amplifier. (7M)

9. a) What is a Transistor and give its significance. (7M)

   b) Explain in detail about Common base circuit configuration with a neat diagram. (8M)

Or

10. a) Explain in detail about the correct biasing of a PNP Transistor with a neat connection diagram. (8M)

    b) Draw and explain in detail about the Input and output characteristics of a common Collector NPN transistor. (7M)