Reg.No

23626

Velammal College of Engineering and Technology

Viraganoor, Madurai – 625 009
(Autonomous)

B.E./B.Tech. End Semester Examinations April 2024

Second Semester | **Regulation 2021**
Time : 3 Hours | **Max. Marks 100**

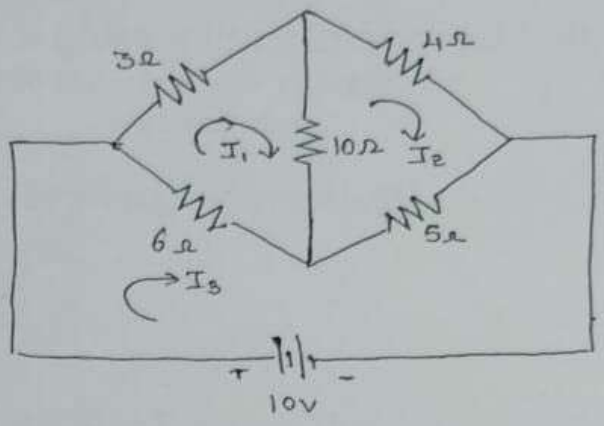
21EE104 – Basic Electrical and Electronics Engineering for Information Science
(Common to CSE,IT,AI&DS)

Answer ALL Questions
PART-A (10 x 2 = 20 Marks)

1. Define RMS value.
2. Compare active and passive network.
3. Show the EMF equation for DC Generator.
4. Explain the principle of an alternator.
5. Define Load factor.
6. Compare HT and LT wiring.
7. Compare zener breakdown and avalanche breakdown.
8. Outline the advantages and disadvantages of full wave bridge rectifier.
9. List the characteristics of an ideal Op - Amp.
10. Explain are the applications of IC 555 timer?

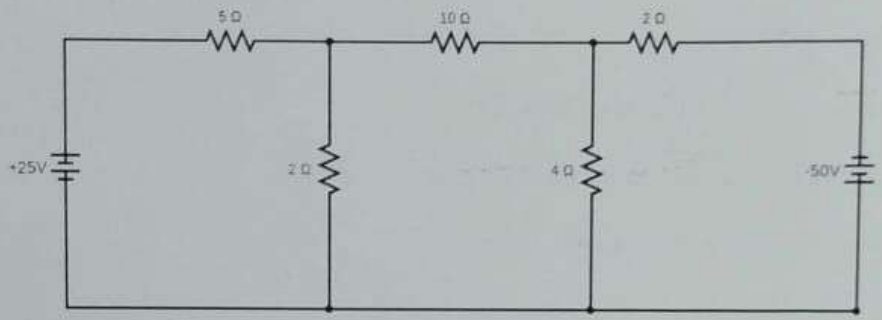
Part – B (5 x 13 = 65 marks)

11. a) Determine the current through 10 Ω resistor in the given circuit using Mesh inspection method.



OR

b) Apply Nodal analysis method to determine current through 10Ω resistor of the circuit shown in fig.



12. a) Demonstrate the construction and working principle of DC Motor with neat diagrams

OR

b) Explain the construction and operation of three phase induction motor with neat diagram

13. a) The peak load on a thermal power plant is 75MW. The loads having maximum demands of 35MW, 20MW, 15MW and 18MW are connected to the power plant. The capacity of the power plant is 90MW and the annual load factor is 0.53.

Find the (a) average load on the power plant

(b) energy supplied per year (c)demand factor (d) diversity factor

OR

b) The following data pertain to a power plant.

Installed capacity=200MW

Capital cost=Rs.$350*10^7$

Annual cost of fuel, taxes and salaries=Rs.$55*10^7$

Rate of interest=5% of the capital

Rate of depreciation=6% of the capital

Annual load factor=0.65

Capacity factor=0.56

Energy used in running the plant auxiliaries=4% of total units generated. Solve for the
(a)Cost of Power Generation

(b)Reserve Capacity

14. a) Summarize the V-I characteristics of Common Emitter transistor with neat sketch.

OR

b) Explain the working principle of half wave rectifier with necessary waveforms.

15. a) Demonstrate the operation of Astable multivibrator using IC 555 timer.

OR

b) Illustrate the Construction and working of op amp Integrator.

Part – C (1 x 15 marks)

16. a) A power plant supplies the following loads to the customers

Time in hrs	0-5	5-9	9-12	12-17	17-20	20-22	22-24
Load in MW	30	60	75	50	90	80	50

Determine for the Load curve, Load Duration curve, Load factor of the power plant and energy consumed during 24 hours

OR

b) Build the layout of Industrial wiring.