B.Tech Even Semester Examination, May, 2025

Agricultural Engineering / Computer Science & Engineering Electronics & Communication Engineering

(2nd Semester)

Course No: ASH-204

(Basic Electrical Engineering)

Full Marks: 50

Pass Marks: 25

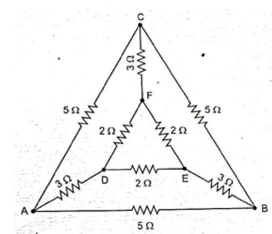
Time: 2 hours

Note:

1. Attempt any five questions.
2. Begin each answer in a new page
3. Answer parts of a question at a place
4. Assume reasonable data wherever required
5. The figure in the right margin indicates full marks for the question
6. All the mathematical symbols and abbreviations have their usual meanings.

1. (a) Define the following terms: (i) Active power (ii) Reactive power 2+2

   (b) In the network shown in the figure, find the resistance between the point A and B. 6



2. (a) State and Prove Thevenin's theorem. 4

   (b) A resistance of 24 Ω, a capacitor of 150 μF and an inductor of 0.16 H are connected in

Turn Over

series. A supply of 240 V, 50 Hz is applied to the ends. Calculate (a) the current in the circuit (b) the Resonant frequency and (c) the Current at the resonant frequency. 6

3. Explain the working principle of auto-transformer.What are its advantages disadvantages and applications? 4+6

4. (a) Distinguish among diamagnetic, paramagnetic and ferromagnetic materials. 6

   (b) What are ferrites? Give its properties and applications. 2+2

5. (a) Explain the concept of slip. 3

   (b) Draw the torque-slip characteristics of an inductor motor. Develop the necessary condition for maximum torque. 4+3

6. (a) Explain various methods of speed control in induction motors. 4

   (b) Explain the working principle of the DC motor. 6

7. (a) What is a sinusoidal pulse with modulation? Explain with the help of a neat diagram.6

   (b) Write a short note on the buck converter. 4

8. (a) What is meant by service line? What is the difference between wire and cable? 1+2

   (b) What arethe differences between primary and secondary batteries? 2

   (c) What is earthing? Explain the purpose of earthing. 2+3

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