Code No.: EE401ES | R20 | H.T.No. | | | 8 | R | | | | | |

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
II–B.TECH–II–Semester End Examinations (Supply) - February- 2024
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(MECH)

[Time: 3 Hours] **[Max. Marks: 70]**

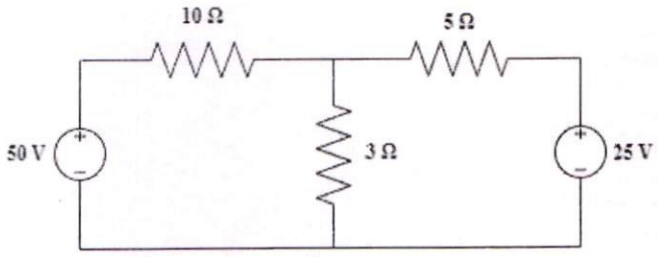
Note: This question paper contains two parts A and B.
Part A is compulsory which carries 20 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A **(20 Marks)**

1. a) What is the V-I relation of Inductance and capacitance? [2M]
   b) What is the average and r.m.s value of a sinusoidal quantity in terms of its maximum value? [2M]
   c) What is the purpose of earthing in an electrical installation? [2M]
   d) State the disadvantages of low power factor. [2M]
   e) What is the purpose of transformer? [2M]
   f) State different parts of a Synchronous generator. [2M]
   g) Define the Static resistance of P-N junction diode. [2M]
   h) What is the value of ripple factor for half wave and full wave rectifiers? [2M]
   i) Explain how a Transistor acts as an amplifier. [2M]
   j) Define pinch off voltage of a JFET. [2M]

PART-B **(50 Marks)**

2. Find the current flowing through each resistance of the given below network using Kirchhoff's laws. [10M]



OR

3. The equation of an alternating current is i(t)=200sin(318t). Find (i) Maximum value (ii) RMS value (iii) Average value (iv) Form factor (v) Peak factor. [10M]

4. Explain the construction and operation of a miniature circuit breaker (MCB). [10M]

OR

5.a) What is a fuse? Discuss the advantages and disadvantages of a fuse. [5M]
   b) A consumer uses a 10 kW geezer, a 6 kW electric furnace, and five 100 W bulbs for 15 hours. How many units (kWh) of electrical energy have been used? [5M]

6. Explain the principle of operation of a DC generator with a neat sketch. [10M]

OR

7. Explain the working of 3-phase Induction motor with constructional details. [10M]

8. What is Zener effect? Explain the function of Zener diode and draw its characteristics. [10M]

OR

9. Draw the circuit and explain the working of bridge rectifier. Why it is preferred over a full wave rectifier using centre tapped transformer? [10M]

10. Draw input-output characteristics of common base transistor configuration. Derive relation between α and β. [10M]

OR

11.a) Sketch and explain the basic structure of N-channel junction field effect transistor. [6+4M]

b) What are the basic differences between BJT and JFET?

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