Hall Ticket No | | | | | | | | | | |

Course Code: AEED01

INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad - 500 043

B.TECH I SEMESTER CIE – I EXAMINATIONS, NOVEMBER – 2023

Regulation: BT23

ELEMENTS OF ELECTRICAL AND ELECTRONICS ENGINEERING

(COMMON TO AE | CSE(AI&ML) | IT | ME | CE)

Time: 2 Hours **Max Marks: 20**

Answer any FOUR questions

All parts of the question must be answered in one place only

1. (a) Summarize the following terms
   i) Peak value ii) Peak to peak value
   iii) Average value iv) RMS value
   v) Peak factor vi) Form factor [BL: Understand| CO: 1|Marks: 2]
   (b) Apply mesh analysis for Figure 1 and calculate the current through 8Ω resistance. [BL: Apply| CO: 1|Marks: 3]

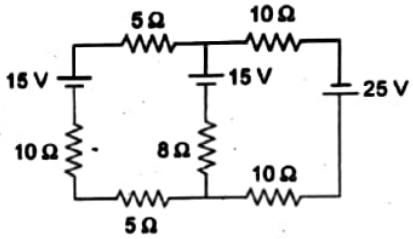

Figure 1

2. (a) State and explain Kirchhoff's voltage law and Kirchhoff's current law with neat diagram. [BL: Understand| CO: 1|Marks: 2]
   (b) A sinusoidal voltage applied to a inductor 2mH. The frequency of sine wave is 3 KHz. Determine the inductive reactance. [BL: Apply| CO: 1|Marks: 3]
3. (a) State and verify maximum power transfer theorem with an example for DC excitation. [BL: Understand| CO: 2|Marks: 2]
   (b) Determine the current flowing through 3 ohms resistor using Thevenin's theorem for the circuit shown in Figure 2. [BL: Apply| CO: 2|Marks: 3]

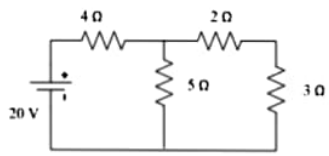

Figure 2

4. (a) Derive the relationship between line and phase voltage in a 3-phase unbalanced delta connected system. [BL: Understand| CO: 2|Marks: 2]
   (b) Three impedance each 5 +j12 Ω is connected in star are connected to a 220 V three phase, 50HZ supply. Calculate the line currents and the power drawn by the circuit. [BL: Apply| CO: 2|Marks: 3]
5. (a) State the principle of DC generator. Explain the working of DC generators with neat diagram. [BL: Understand| CO: 3|Marks: 2]
   (b) A 4 pole DC generator having wave wound armature has 50 slots and 25 conductors per slot. Find the generated emf, if it is driven at 25RPM and useful flux per pole in the machine is 0.03 Wb. [BL: Apply| CO: 3|Marks: 3]

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