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

Course Code: AEED01

INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

B.Tech II SEMESTER CIE - I EXAMINATIONS MAY - 2024

Regulation: BT23

ELEMENTS OF ELECTRICAL AND ELECTRONICS ENGINEERING

Time: 2 Hours COMMON TO CSE | CSE (DS) | CSE (CS) **Max Marks: 20**

Answer any FOUR questions

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

1. (a) Determine the equivalent capacitance of series and parallel connections of capacitor elements.

[BL: Understand| CO: 1|Marks: 2]

(b) Apply mesh analysis for the circuit shown in Figure 1 and calculate the current through each element.

[BL: Apply| CO: 1|Marks: 3]

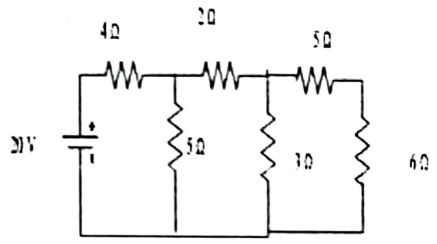

Figure 1

2. (a) Describe the method used to determine loop currents for multiple loop network with an neat example.

[BL: Understand| CO: 1|Marks: 2]

(b) A 240 volts, 50Hz, AC supply is applied a coil of of 0.08H inductance and 4ohms resistance connected in series with a capacitor of 8 micro farads. Calculate

i) Impedence

ii) current

iii) Phase angle

iv) Active power.

[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) Find out the current flowing in 3 ohm resistor in the circuit shown in Figure 3 using Reciprocity theorem

[BL: Apply| CO: 2|Marks: 3]

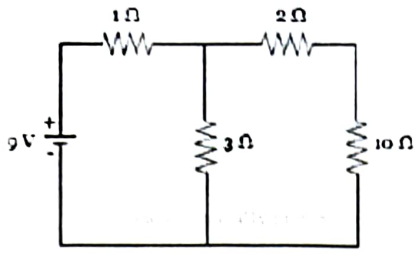

Figure 2

4. (a) What is phase sequence? Mention its significance. Differentiate between RYB phase sequence and RBY phase sequence [BL: Understand| CO: 2|Marks: 2]

   (b) A 415V, 3-phase AC motor has a power output of 12.75kW and operates at a power factor of 0.77 lagging and with an efficiency of 85 percent. If the motor is delta-connected, determine

   i) Power input ii) Line current iii) Phase current [BL: Apply| CO: 2|Marks: 3]

5. (a) Interpret the constructional features of a 3 phase induction machine with the help of neat sketch . [BL: Understand| CO: 3|Marks: 2]

   (b) A 8 pole DC shunt generator with 778 wave armature conductors and running at 500RPM, supplies a load of 12.5 ohm resistance at terminal voltage of 250volts.The armature resistance is .24ohm and the field resistance is 250ohms.Find the

   i) Armature current

   ii) Induced EMF

   iii) Flux per pole. [BL: Apply| CO: 3|Marks: 3]