

SECTION-D

Note: Long answer type questions. Attempt any two questions out of three questions. (2x8=16)

- Q.23 Define the resistance of a resistor. Explain the factors on which resistance of a conductor depends.
- Q.24 State superposition theorem. What are the conditions for practical and ideal current and voltage sources.
- Q.25 Write a short note on each of the followings:
- Flux
 - RMS value
 - Inductive reactance
 - Peak factor

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2nd Semester/ Instrumentation & Control Engg. Subject : Fundamentals of Electrical Engineering

Time : 3 Hrs.

M.M. : 60

SECTION-A

Note: Multiple choice questions. All questions are compulsory (6x1=6)

- Q.1 KCL
- Works on the principle of conservation of energy
 - Works on the principle of conservation of charge.
 - Works on the principle of conservation of momentum.
 - Both A & B
- Q.2 The power factor for a pure inductive circuit is
- | | |
|---------|---------|
| a) 1 | b) 0 |
| c) 0.25 | d) 0.50 |
- Q.3 IF three inductors with 3H each are connected in series then the equivalent inductance in
- | | |
|-------|--------|
| a) 1H | b) 3H |
| c) 9H | d) 27H |

- Q.4 The relation between resistance and cross-sectional area of the conductor is
- Both are proportional to each other
 - Both are same
 - Both are inversely proportional
 - None of the above
- Q.5 Energy stored in an inductor having 8H and the initial current flowing through it is 1 Amp is given by
- 1J
 - 2J
 - 1.5 J
 - 4J
- Q.6 A _____ cell is an electrochemical cell that can be recharged after being discharged.
- Primary
 - Secondary
 - Li-Ion Cell
 - None of the above

SECTION-B

- Note:** Objective/ Completion type questions. All questions are compulsory. (6x1=6)
- Q.7 Expand MPTT.
- Q.8 Define the term magnetic flux.
- Q.9 Three resistors with the resistance value of 10Ω each are connected in series, then the equivalent value of resistance is _____ Ω .
- Q.10 Expand KVL.
- Q.11 Write the SI unit of Capacitance.
- Q.12 If the amplitude of an AC signal is 1.41 amp then the RMS value of the AC signal is _____ amp.

SECTION-C

- Note:** Short answer type questions. Attempt any eight questions out of ten questions. (8x4=32)
- Q.13 State Thevenin's theorem. Also write the condition for a circuit to follow this theorem.
- Q.14 For an AC signal, $f(t) = 15 \sin (157t + 500)$ amp, calculate the values of
- Amplitude in amp
 - Frequency in Hz
 - Time period in seconds
 - Phase difference in degrees
- Q.15 Define the term active and reactive power. Write any two differences between active and reactive power.
- Q.16 Write down the principles of self and mutual induction.
- Q.17 Explain how temperature affects the value of resistance.
- Q.18 What is resistivity? Write the relation between resistance and resistivity formula.
- Q.19 Write any four differences between series and parallel resonance circuit.
- Q.20 What is electric power? Write any two units of it.
- Q.21 What is Faraday's law of electromagnetic induction? Define reluctance.
- Q.22 What is capacitance of capacitor? Write down the factors affect the value of capacitor.