

- Q.29 Derive an expression for the energy stored in the magnetic field of a coil possessing an inductance of L Henry when the current flowing through it is 1 amperes. (CO-6)
- Q.30 Write the six difference between AC and DC. (CO-7)
- Q.31 Derive an expression for the instantaneous value of alternating voltage varying sinusoidally. (CO-7)
- Q.32 Determine phase angle relationship between alternating voltage and current in a purely inductive circuit. (CO-7)
- Q.33 Define power factor and discuss the practical importance of power factor. (CO-7)
- Q.34 Write the six advantages of 3 phase system over the single phase system. (CO-8)
- Q.35 Describe the basic features of balanced 3 phase system. (CO-8)

SECTION-D

- Note:** Long answer type questions. Attempt any two out of three questions. (2x10=20)
- Q.36 Explain the self induced emf and self inductance. Drive the expression to determine the self inductance of coil with all possible methods. (CO-6)
- Q.37 Develop the expression for mean power consumed over a cycle of a single phase sinusoidal supply delivering power to a load comprising a resistance R in the series with an Inductance L. Also draw and explain the power curve, impedance triangle of the circuit. (CO-7)
- Q.38 Drive the relationship between line voltage and line current with phase voltage and phase current in Delta connected circuit. (CO-8)

(Note: Course outcome/CO is for office use only)

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3rd Sem./ Electrical Engg

Subject : Fundamental of Electrical Engineering

Time : 3 Hrs. M.M. : 100

SECTION-A

Note: Multiple choice Questions. All questions are compulsory (10x1=10)

- Q.1 The resistance of wire varies inversely as (CO-1)
 a) Area of cross-section
 b) Length
 c) Resistivity
 d) Temperature
- Q.2 The practical unit of electrical energy is (CO-5)
 a) Kwh. b) Watt-hour
 c) Watt-second d) Joule -second
- Q.3 Kirchhoff's laws are applicable for (CO-1)
 a) Passive time invariant circuits
 b) Linear circuits only.
 c) Non-Linear circuits only.
 d) Both (a) & (b)
- Q.4 Thevenin's resistance R_{TH} is determined (CO-2)
 a) By short-circuiting the given two terminals
 b) By removing the voltage sources along with their internal resistances.
 c) Between same open terminals as for V_{TH}
 d) Between any two open terminals

- Q.5 Cells are connected in series in order to increase the (CO-3)
 a) Current capacity b) Life of the cells
 c) Voltage rating d) Terminal voltage
- Q.6 The area of hysteresis loss is a measure of (CO-4)
 a) Magnetic flux
 b) Permeance
 c) Mmf per cycle
 d) Energy loss per cycle
- Q.7 The frequency of an alternating quantity is (CO-7)
 a) The speed with which the alternator runs.
 b) The number of direction reversals in per second
 c) The number of cycles completed per second
 d) The number of cycles completed per minutes
- Q.8 The peak factor is the ratio of (CO-7)
 a) Average value to rms value.
 b) Rms value to average value.
 c) peak value to average value.
 d) peak value to rms value.
- Q.9 In a 3-phase, balanced load, the power consumed is given by the relation (CO-8)
 a) $\sqrt{3} V_L I_L \cos\phi$
 b) $3 V_{ph} I_{ph} \cos\phi$
 c) Both (a) & (b)
 d) None of the above
- Q.10 In two-wattmeter method of 3-phase power measurement in balanced load having 0.5 p.f. lagging (CO-8)
 a) One wattmeter reads zero
 b) One wattmeter reads down scale.
 c) Both the wattmeters read equally.
 d) Both the wattmeters give equal but opposite readings

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SECTION-B

- Note:** Objective type questions. All questions are compulsory. (10x1=10)
- Q.11 Write two advantages of Electrical Energy (CO-1)
 Q.12 Define voltage and its unit. (CO-5)
 Q.13 Draw a parallel circuit having three resistances R_1 , R_2 and R_3 connected across a supply voltage V volt(CO-8)
 Q.14 Define Secondary cell with one example (CO-3)
 Q.15 Write the concept of Fleming's left hand rule (CO-4)
 Q.16 Define eddy current. (CO-4)
 Q.17 Define phase. (CO-7)
 Q.18 Define conductance. (CO-7)
 Q.19 Draw a phasor diagram of R-C series circuit. (CO-8)
 Q.20 Draw the star connection of 3 phase load. (CO-8)

SECTION-C

- Note:** Short answer type questions. Attempt any twelve questions out of fifteen questions. (12x5=60)
- Q.21 Write the six uses of Electrical Energy. (CO-5)
 Q.22 Explain the Kirchhoff's current Law with the help of diagram. (CO-1)
 Q.23 State the maximum power transfer theorem. Show that for maximum power transfer $R_L = R_{th}$ (CO-2)
 Q.24 Derive the necessary equations for converting a star network into an equivalent delta network. (CO-2)
 Q.25 Explain the construction and working principle of Nickel Cadmium cell. (CO-3)
 Q.26 Explain the charging method for lead acid accumulator. (CO-3)
 Q.27 Drive the expression for magnetic field around a straight current carrying conductors. (CO-4)
 Q.28 Draw and Explain the B-H loop. (CO-4)

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