Total No. of Questions : 6 Total No. of Printed Pages : 7

EI-179

B.E. (IInd Sem.) (CGPA) Civil Engg. Examination-2015

BASIC ELECTRICAL & ELECTRONICS ENGG.

Paper : CE-203

Time Allowed : Three Hours

Maximum Marks : 60

Note : Attempt all questions.
Attempt all part of a question in sequence.
Internal choice in each unit is given.

Q.I Choose the correct answer—

(i) When three coil are connected in star across 400 V supply. The each coil have resistance of 10Ω and inductance of 0.02 H. The line current will be —

(a) 5.9 A lagging

(b) 5.9 A leading

(c) $5.9\sqrt{3}$ lagging

(d) $5.9\sqrt{3}$ leading

(ii) The real power absorbed in each phase of circuit is—

(a) $\sqrt{3}\, V_p\, I_p \cos\phi$

(b) $\sqrt{3}\, V_L\, I_L \cos\phi$

(c) $V_p\, I_p \cos\phi$

(d) $\sqrt{3}\, V_L\, I_L$

(iii) The law relates to emf and voltage drops in a circuit at any closed path—

(a) $\Sigma E - \Sigma IR = 0$

(b) $\Sigma E + \Sigma IR = 0$

(c) No option is true

(iv) The unit of m.m.f. in a magnetic circuit is given by—

(a) Weber

(b) Amp

(c) Amptum

(d) Wb/m^2

(v) The power factor angle of a purely inductive circuit is—

(a) $\phi=0$ (b) $\phi=+90^0$

(c) $\phi = 45^0$ (d) $\phi=-90^0$

(vi) The hystersis loss in case of transformer is proportional to—

(a) $P_e \alpha f$ (b) $P_e \alpha \sqrt{f}$

(c) $P_e \alpha f^2$ (d) $P_e = f^{1.5}$

(vii) The condition of maximum efficiency of a transformer is—

(a) Copper losses < Iron losses

(b) Copper losses > iron losses

(c) Copper losses = iron loss

(d) Copper losses should remain constant

(viii) The Torque developed in D. C. motor is—

(a) $T \alpha \frac{1}{\phi}$

(b) $T \alpha \frac{1}{I_a}$

(c) $T \alpha \phi . I_a$

(d) $T \alpha \frac{\phi}{I_a}$

(ix) The speed of a d.c. motor is—

(a) $N \alpha \phi$

(b) $N \alpha \frac{1}{\phi}$

(c) N= constant

(d) $N \alpha \phi^{1.5}$

(x) The relation between frequency, speed and number of poles is given by—

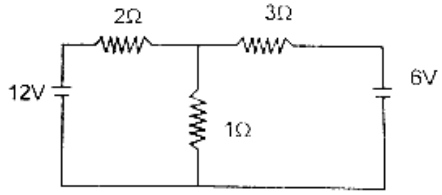
(a) $N_S = \frac{120 f}{P}$

(b) $f = \frac{P N_S}{120}$

(c) $n_S = \frac{2f}{P} rps$

(d) Any one (a), (b) or (c)

Q.II (a) Solve the network by Mesh current method—5

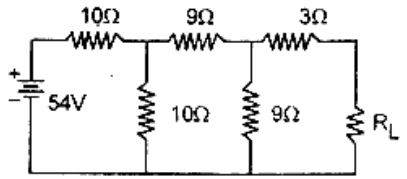


(b) State and explain KCL & KVL. 5

or

(a) State and explain superposition theorem. 4

(b) Determine the current flowing throush RL when load resistance is 3Ω. 6



Q.III (a) Define the following terms— 4

(i) Magnetic flux

(ii) m.m.f.

(iii) Permeability

(iv) Reluctance

(b) Give the analogy between electric and magnetic circuits. 6

or

(a) What do you understand by magnetic leakage and fringing. 4

(b) Define hystersis loop of magnetic material. 6

Q.IV **(a)** Derive relation between line voltage and phase voltage of three phase star connection.

(b) Define the following terms—

(i) Frequency

(ii) Amplitude

(iii) Phase and phase difference

or

(a) Explain two Wattmeter method for measurement of power in a 3ϕ circuit.

(b) A choke coil has a resistance of 10Ω and inductance of 0.05H is connected in series. with 100μF. The whole circuit is connected 200 Volts, 50 Hz supply. Calculate— 5

(i) Impedance

(ii) Current

(iii) Powerfactor

Q.V (a) Explain the working principle of a reformer. 5

(b) A transformer has a maximum efficiency of 98% at 15KVA at unity p.f. It is loaded as follows—

12 hrs	2 kw	at pf = 0.5
6 hrs	6 kw	at pf = 0.8
6 hrs	18 kw	at pf = 0.9

Calculate all day efficiency of transformer.

Q.VI (a) Explain the constructional features of a D. C. Machine. 5

(b) Explain diagram of self excited dc generator. 5

or

(a) Describe various methods of speed control of d.c. moters. 5

(b) Draw and explain characteristics of d.c., shunt motor. 5

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