

9039

Sample Question Paper

Course Name :- Diploma in Electronics Engineering

Course code :- EJ/EN/ET/EX/IS/IE/IC/DE

Semester :- Third

Subject :- Electrical Engineering

Duration :- 3 hours

Marks : 80

Instructions:

- 1) All the questions are compulsory
- 2) Figures to the right indicate full marks
- 3) Assume suitable additional data if necessary
- 4) Illustrate your answer with neat sketches wherever necessary
- 5) Preferably write the answer in sequential order

Q.1 Attempt any Eight of the following

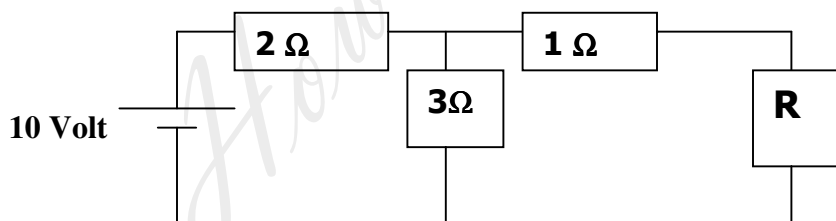
(Marks 16)

- a. State Ohms law.
- b. What is a Bilateral network
- c. What is Dual network
- d. Define RMS and Average value
- e. State the line and phase relationship in a star connected load
- f. Define regulation & all day efficiency
- g. Why are thin stampings used in core of a transformer
- h. What happens to a dc motor on over loading
- i. How much starting current is approximately drawn by a 3 phase Induction motor at start
- j. State any two applications of stepper motor.

Q.2 Attempt any Three of the following

(Marks 12)

- a. Draw a loop and a node, apply KVL & KCL and write equations
- b. Convert a delta network comprising of 3 ohms resistance each into a star network
- c. Calculate the value of resistance R so that maximum power is transferred to the load

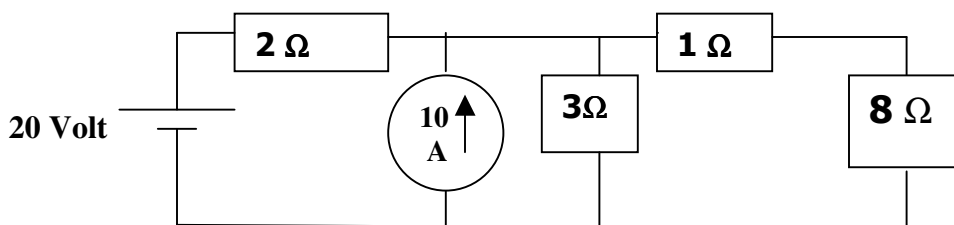


- d. Define the following terms
 - 1) Linear and Non Linear networks
 - 2) Active and Passive networks.

Q.3 Attempt any Three of the following

(Marks 12)

- a. Using Nortons theorem find the current in 8 ohm resistance



- b. Define and explain following terms
1) period 2) frequency 3) phase difference
- c. A capacitive reactance of 4 ohm is connected in series with a resistance of 5 ohm. The series circuit is connected across a 200 Volt, 50 Hz, supply.
Find 1) capacitance 2) Impedance and 3) Power Factor
- d. Explain the variation of capacitive reactance & Inductive reactance with frequency.

Q.4 Attempt any Four of the following

(Marks 16)

- a. State the three types of power & their units in an ac circuit. Draw power triangle for a inductive load & capacitive type of load.
- b. Explain the term admittance, conductance & susceptance as applied to ac parallel circuit.
- c. What are the conditions of a RLC series resonating circuit.
- d. Three inductive coils each with resistance of 15 ohm & inductance of 0.03 H. are connected in star to a 3 phase 400 Volt supply. Calculate the phase current line current & total power absorbed.
- e. What is the effect of unbalanced load on a 3 phase system, represent it with a vector diagram.
- f. A single phase transformer has 350 primary & 1050 secondary turns. The net cross sectional area of core is 55 cm² If primary winding is connected to a 400 Volt, 50 Hz 1 phase supply, calculate 1) maximum value of flux density in the core & 2) voltage induced in the secondary.

Q.5 Attempt any Three of the following

(Marks 12)

- a. What is the efficiency of a transformer & why is it high.
- b. Why does a D C motor draw heavy current at starting when started directly on line.
- c. Draw characteristic of a DC shunt & series motor & state any two applications of each.
- d. List the advantages of a 3 phase squirrel cage induction motor.

Q.6 Attempt any Three of the following

(Marks 12)

- a. A 4 pole three phase induction motor runs at 1440 rpm. Calculate slip, frequency of rotor current, & synchronous speed.
- b. Why is capacitor start induction motor better than a split phase motor.
- c. Where and why do we use universal motor.
- d. State the construction and working of a servo motor.