

B.TECH. SEM -II (2007 COURSE) (ALL BRANCHES) :
WINTER - 2017

SUBJECT: ELEMENTS OF ELECTRICAL AND ELECTRONICS ENGINEERING

Day: **Thursday**
Date: **23/11/2017**

W-2017-2350

Time: **10.00 AM TO 01.00 PM**
Max Marks: **80**

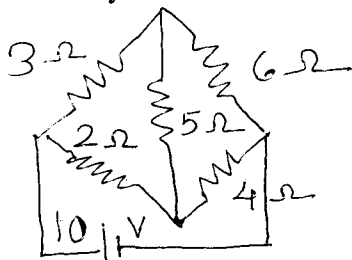
N.B:

- 1) **Q. No 1 and 5 are COMPULSORY.** Out of remaining attempt any **TWO** Question from section- **I** and **TWO** questions from Section-**II**.
- 2) Answer to **TWO** sections should be written in **SEPARATE** answer book.
- 3) Neat diagrams must be drawn **WHEREVER** necessary.
- 4) Figures to the right indicate **FULL** marks.
- 5) Assume suitable data, if necessary.

SECTION-I

- Q.1**
- a) Define & explain of i) Potential difference ii) Ohm's law (05)
 - b) Derive relations of voltage and current for line and phase value in delta connected balanced load. (05)
 - c) Compare electric & magnetic circuit. (04)

- Q.2**
- a) State & explain superposition theorem. (07)
 - b) Using mesh analysis find current through $6\ \Omega$ resistance in the circuit shown below. (06)



- Q.3**
- a) Derive the average value in terms of peak value of ac quantities. (07)
 - b) An inductive coil of $20.4\ \text{mH}$ & resistance of $10\ \Omega$ is connected in series to a $230\ \text{V}$, $50\ \text{Hz}$ supply calculate. (06)
i) Current ii) Phase angle iii) PF iv) Power consumed

- Q.4**
- a) Derive the emf equation of single phase transformer. (07)
 - b) A $60\ \text{KVA}$, $400/200\ \text{V}$, $50\ \text{Hz}$ transformer has an iron loss of $850\ \text{W}$. The resistance of primary & secondary winding is $0.005\ \Omega$ & $0.5\ \Omega$ respectively. If power factor is 0.8 leading, calculate the efficiency at 75% full load. (06)

SECTION-II

- Q.5**
- a) What are the advantages of a 3 phase ac system over a single phase ac system? (05)
 - b) Explain the basic working principle of a 3 phase induction motor. (05)
 - c) What are the applications of a digital multimeter? (04)

- Q.6**
- a) Draw and explain different waveforms for a full wave rectifier. (07)
 - b) What are the different types of earthing? Explain each in brief. (06)

- Q.7**
- a) How are resistors classified? Explain each in brief. (07)
 - b) With a neat block diagram, explain the working principle of microwaves. (06)

- Q.8**
- a) State the salient features of Moving iron instruments. Discuss its advantages and disadvantages. (07)
 - b) Draw and explain basic block diagram of a single phase energymeter. (06)