

**B.TECH. SEM -II (2007 COURSE) (ALL BRANCHES) :**  
**SUMMER - 2018**

**SUBJECT : ELEMENTS OF ELECTRICAL AND ELECTRONICS ENGINEERING**

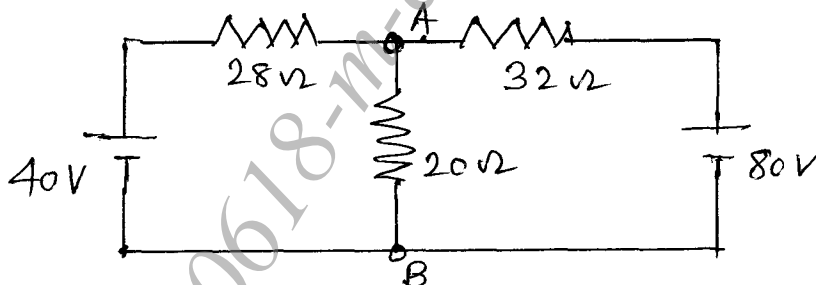
Day : **Friday**                      **S-2018-2555**                      Time : **10.00 AM TO 01.00 PM**  
Date : **08/06/2018**                      Max. Marks : **80**

**N. B. :**

- 1) **Q. No. 1 and Q. No. 5 are COMPULSORY.** Out of remaining attempt **ANY TWO** questions from each section.
- 2) Figures to the right indicate **FULL** marks.
- 3) Answers to both the sections should be written in the **SEPARATE** answer books.
- 4) Draw neat and labeled diagram **WHEREVER** necessary.
- 5) Assume suitable data, if necessary.

**SECTION - I**

- Q. 1**
- a) Define and explain Potential difference, Current, Power, Energy. **(05)**
  - b) Define following terms as applied to sinusoidal ac quantity: **(05)**
    - i) Wave form
    - ii) Maximum value
    - iii) RMS value
    - iv) Average value
    - v) Instantaneous value
  - c) Derive the emf equation of single phase transformer. **(04)**
- Q. 2**
- a) State and explain Thevenin's theorem. **(07)**
  - b) Using superposition theorem find the current flowing through the resistance connected between A-B, as shown in the fig. **(06)**



- Q. 3**
- a) Derive the relationship between the line current and phase current, line voltage and phase voltage for a balanced three phase star connected load connected across three phase supply **(07)**
  - b) voltage  $v = 141 \sin(314t + \pi/3)$  is applied to **(06)**
    - i) Resistor of  $40 \Omega$
    - ii) Inductance of  $0.4 \text{ H}$
    - iii) Capacitance of  $200 \mu\text{f}$Find in each case rms value of current and average power dissipated.
- Q. 4**
- a) With neat circuit diagram explain the direct loading test on single phase transformer for finding the voltage regulation and efficiency. **(07)**

**P. T. O.**

- b) A mild steel ring having a cross-sectional area of  $600 \text{ mm}^2$  and a mean circumference of 600 mm has a coil of 300 turns wound uniformly around it. Assume the relative permeability of mild steel to be 480. Find (06)
- i) Reluctance of ring
  - ii) Current required to produce a flux of  $900 \mu\text{wb}$  in the ring.

**SECTION – II**

- Q. 5 a) Draw a schematic diagram of basic power system showing generation, transmission, distribution. Specify voltage ratings at each stage. (05)
- b) Explain the working principle of DC motor. (05)
- c) Differentiate between moving Iron and moving coil instruments. (04)
- Q. 6 a) With help of a suitable block diagram, explain the working of a stabilizer. (07)
- b) What is earthing? Explain any one type in detail. (06)
- Q. 7 a) What is the criterion to select material for core for transformer. (07)
- b) What are the different types of DC motors? Draw characteristics-- of each of it and write down voltage and current equations. (06)
- Q. 8 a) Explain the basic working principle of a single phase energy meter. Draw a suitable diagram. (07)
- b) Draw and explain the basic block diagram of CRO. (06)

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