VASAVI COLLEGE OF ENGINEERING *(Autonomous)*, HYDERABAD
B.E. (CBCS) I-Semester Supplementary Examinations, June-2017
Basic Electrical Engineering
(CSE, ECE & IT)

Time: **3** hours   Max. Marks: **70**

Note: Answer ALL questions in Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

1. Define electric current, voltage, power and energy.

2. In a network consists of number of sources, to determine the current in a particular element which theorem is preferred, define that theorem.

3. Define active power and reactive power.

4. Define i) self inductance ii) mutual inductance.

5. What is the function of armature core in a d.c generator?

6. What is the significance of Back emf in a d.c motor?

7. Define regulation of a transformer.

8. What are the applications of auto transformer?

9. What factors do you consider while selecting a site for thermal power station?

10. Single phase motor is not self starting motor, explain.

Part-B (5 × 10 = 50 Marks)

11. a) Define Kirchoff's current law and voltage law.   [4]

    b) Obtain the Thevevnin's equivalent circuit and also find the current in 5 Ω resistor   [6]
        connected across AB.
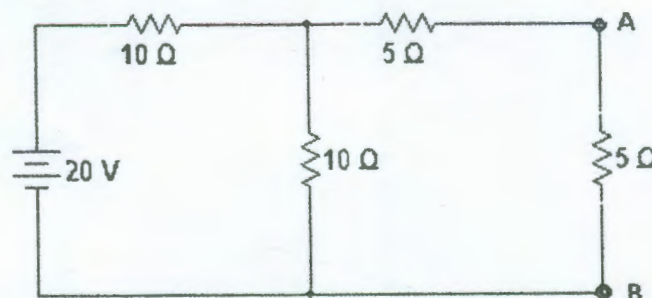
12. a) Derive the equation for energy stored in an inductance.   [4]

    b) A 3-phase balanced star connected load consisting of $5+j15\Omega$ in each phase is supplied   [6]
        from 415 V, 50 Hz 3-phase supply. Find i) phase current ii) line current iii) power factor
        iv) total power consumed.

13. a) Derive the e.m.f equation of a d.c generator.   [5]

    b) A 6 pole, 200 V lap wound d.c shunt motor armature has 600 conductors, a flux of   [5]
        40 mWb and runs at a speed of 1200 r.p.m. It draws a line current of 40 A at full load.
        Its armature and field resistances are 0.2 Ω and 50 Ω respectively. Find its armature
        torque.

14. a) Explain how equivalent circuit parameters are obtained by conducting suitable tests on a transformer. [5]

   b) Explain the construction and working principle of a 3-phase induction motor. [5]

15. a) Draw the layout of a hydro electric power plant. [5]

   b) Explain the construction of a single phase capacitor run motor. [5]

16. a) Define i) Thevenin's theorem ii) Norton's theorem. [5]

   b) Derive the relation between line and phase quantities in a 3-phase Delta connection. [5]

17. Write short notes on any *two* of the following:

   a) Characteristics of d.c compound motor. [5]

   b) Construction and principle of operation of auto transformer. [5]

   c) Nuclear power station. [5]

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