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Code No. : 11012 BEE O3

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. (CBCS) I-Semester Old Examinations, May/June-2018

Basic Electrical Engineering
(CSE, ECE & IT)

Time: 3 hours

Max. Marks: 70

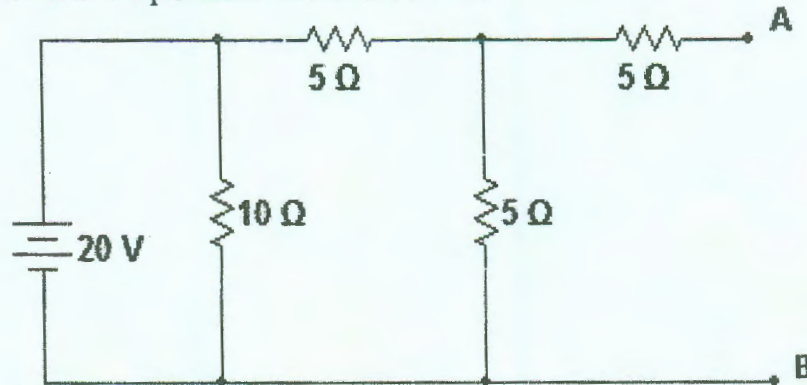
Note: Answer ALL questions in Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

1. Distinguish between series and parallel circuits.
2. Define Ohm's Law.
3. Define a) Form factor b) Peak factor of an alternating quantity.
4. An alternating current is represented by $i = 141.4 \sin 628t$. Find its maximum value RMS Value, frequency and time period.
5. What is the function of commutator in a d.c generator?
6. Which d.c motor is preferred for traction applications and why?
7. What are the various losses in a transformer?
8. What are the two types of rotors used in 3 phase alternators?
9. Write the function of super heater in thermal power plant.
10. What are the various applications of stepper motors?

Part-B (5 × 10 = 50 Marks)

11. a) Define i) Power in DC circuits ii) Superposition theorem. [4]
b) Obtain the Thevenin's equivalent circuit across AB. [6]



12. a) Derive the Average and RMS values of a sinusoidal alternating quantity. [5]
b) A series circuit consists of resistance of 50Ω and capacitance of $10 \mu\text{F}$. If the applied voltage across the circuit is 100 V at 50 Hz , find i) impedance ii) current iii) power factor iv) power consumed. [5]
13. a) Derive the torque equation of a d.c motor. [5]
b) A 4 pole lap wound, long shunt d.c compound generator supplies a 20 kW load at 500 V . The armature, series and shunt field resistances are 0.02Ω , 0.04Ω and 250Ω respectively. Determine the emf generated. [5]

Contd...2

- 14. a) Explain the construction of a 3-phase alternator. [5]
- b) A 100 kVA single phase transformer has iron loss of 1000 W and full load copper loss of 1200 W. Find its efficiency at full load, 0.8 power factor. [5]
- 15. a) What are the various types of collectors used in solar power stations? [5]
- b) Explain the construction and principle of operation of 1-phase motor used in ceiling fans. [5]
- 16. a) Classify different types of network elements and explain with examples. [5]
- b) Derive the relation between line and phase quantities in a 3-phase star connection. [5]
- 17. Write short notes on any *two* of the following:
 - a) Classification of d.c generators according to excitation. [5]
 - b) Principle of rotating magnetic field. [5]
 - c) Wind power station. [5]

