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Code No.: 1210S

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD
B.E. I Year II-Semester (Supplementary) Examinations, Dec./Jan.: 2015-16

Basic Electrical Engineering
(For CSE, ECE and IT Branches)

Time: 3 hours

Max. Marks: 70

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

Part-A (10 X 2=20 Marks)

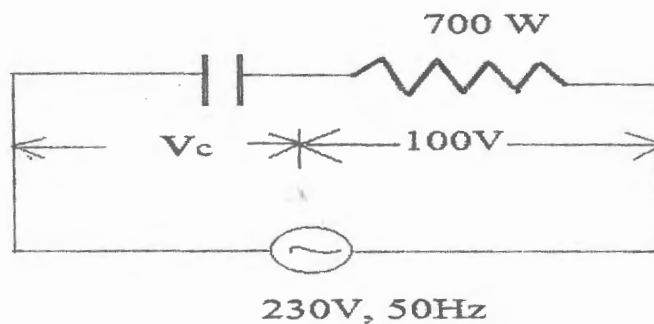
1. State Kirchoff's Current law.
2. Define average value and rms value of a sinusoidal quantity.
3. Show the relationship between line and phase voltages and currents for delta connected 3- ϕ system.
4. List out the advantages of autotransformer.
5. List out the various losses in dc generators.
6. Name the important applications of dc series motor.
7. A 4-pole, 50 Hz, 3- ϕ induction motor runs at a speed of 1440 rpm. Calculate its slip.
8. Draw speed-torque characteristics of a 1- ϕ induction motor.
9. Name few important turbines used in Hydro-electric stations.
10. Define synchronous impedance in 3- ϕ alternator.

Part-B (5 X 10=50 Marks)

11. a) Define active power, reactive power, apparent power and power factor in an ac circuit. [4]
b) The potential differences measured across three resistors connected in series are 5 V, 7 V and 10 V and the supply current is 2 A. Determine (i) the supply voltage (ii) total circuit resistance (iii) the values of three resistors. [6]
12. a) Derive an expression for rms value of induced emf in a transformer. [5]
b) A 100 kVA, 4000 V (primary) / 200 V (secondary), 50 Hz, 1- ϕ transformer has 100 turns. Determine (i) the rated primary and secondary currents (ii) the number of primary turns and (iii) the maximum value of the flux. [5]
13. a) Show schematic circuit representations of different types of dc motors and draw their speed – torque characteristics. [6]
b) A dc shunt generator is connected to a 60 Ω load with a load current is 8 A. If the armature resistance is 1 Ω , determine (i) the terminal voltage and (ii) the generated emf. [4]

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14. a) Explain briefly how speed of a 3- ϕ slip-ring induction motor can be controlled using rotor resistance control. [5]
- b) Describe the basic theory and operation of a stepper motor with a neat sketch. [5]
15. a) Discuss briefly basic idea of a thermal power plant with a neat layout. [5]
- b) Explain briefly how emf is produced in a 3- ϕ alternator. [5]
16. a) Explain how open circuit and short circuit tests can be performed on a 1- ϕ transformer. [7]
- b) Calculate capacitance from the circuit shown below [3]



17. Answer any two of the following:

- a) Field poles and commutator in dc machine. [5]
- b) Star-delta starter in 3- ϕ Induction motor. [5]
- c) Any renewable energy sources. [5]
