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Roll No. ....

**3rd Sem. / Electronics & Communication**

**Subject : Electrical Machine**

Time : 3 Hrs.

M.M. : 100

**SECTION-A**

**Note:** Very Short Answer type questions. Attempt any 15 parts. (15x2=30)

- Q.1 a) Power in 3 phase system= \_\_\_\_\_  
V<sub>pl</sub> cosQ.
- b) Two wattmeters used to measure power in a 3 phase system read W1 & W2 respectively. Total power will be W1-W2. Yes/No
- c) For reducing \_\_\_\_\_ losses, transformer core is laminated.
- d) No. of parallel paths in a 6 pole wave wound armature of d.c. motor are \_\_\_\_\_.
- e) A DC series motor should not be started without load. True/False
- f) Back emf induced in a DC motor is more than applied voltage. True/False

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- g) A universal motor is operates on A.C. only. True/False
- h) What is a centrifugal switch?
- i) A ceiling fan used split phase motor. True/False
- j) How we reverse directions of rotation of single phase motor?
- k) Define motor.
- l) Iron losses in a transformer consists of \_\_\_\_\_ and \_\_\_\_\_.
- m) Write two applications of stepper motor.
- n) Name the motor used for Electric clock.
- o) Three phase induction motor is not self starting. yes/No.
- p) A transformer works on the principle of \_\_\_\_\_.
- q) Ideally, the efficiency of single phase transformer should be \_\_\_\_\_.
- r) Define the term transformation ration of a single phase transformer.

**SECTION-B**

**Note:** Short answer type questions. Attempt any ten parts 10x4=40

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- Q.2
- i) What are the advantages of 3 phase motor over single phase motor?
  - ii) Compare a core type transformer with a shell type transformer.
  - iii) Name different types of connections of 3 phase transformer.
  - iv) List various methods of speed control of DC series motor.
  - v) List the factor which affects speed of DC motor.
  - vi) How will you determine step angle of stepper motor?
  - vii) How can a synchronous motor be made self starting?
  - viii) Draw a diagram for two wattmeter method of Power measurement with star connection.
  - ix) What is the function of capacitor in ceiling fan?
  - x) Give application of Singe Phase Induction Motor.
  - xi) Can Transformer work on DC supply? Explain.
  - xii) List different parts of transformer.
  - xiii) Rotor of a Squirrel cage I.M. is skewed. Why?

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- xiv) What is a commutator? Explain its various functions.
- xv) Explain Lenz's law.

### SECTION-C

**Note:** Long answer type questions. Attempt any three questions. 3x10=30

- Q.3 Explain principle and working of a Transformer?
- Q.4 Describe various methods of speed control of Induction motor.
- Q.5 Write Advantages of 3 phase system over single phase system.
- Q.6 Explain auto transformer with diagram.
- Q.7 Explain working, construction and characteristics of a Universal motor.

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