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CODE NO:- Z-246

FACULTY OF ENGINEERING & TECHNOLOGY
S.E (EC/ECT/IEC/E&C) Year Examination - June – 2015
Electrical Machines & Instrumentation
(Revised)

[Time: Three Hours]

[Max. Marks:80]

“Please check whether you have got the right question paper.”

- i) Attempt any three from each section.
- ii) Q No 1 and Q No. 6 are compulsory.
- iii) Attempt any two questions from remaining four questions from each section

SECTION-A

- Q.1 Attempt any five : 10
- a) What is the principle of DC machine?
 - b) What are the applications of DC motor and Generators?
 - c) What is armature reaction?
 - d) What is working principle of 3- ϕ I.M?
 - e) Draw the neat sketch representing power stages in 3- ϕ I.M.
 - f) List the types of starters used for 3- ϕ .I.M.
 - g) Explain working principle of repulsion motor.
 - h) List the applications of stepper motor.
- Q.2 a) A shunt wound motor runs of 600rpm from a 230V supply when taking a total current of 50A. Its armature and shunt field resistances are 0.4Ω and 105Ω respectively .Neglecting the effect of armature reaction and allowing 2V total brush drop, Calculate . 10
- 1) No load speed if the no-load current is 5A .
 - 2) The resistance to be placed in armature circuit to reduce speed to 500rpm when motor is taking 50A.
- b) Explain 3.point starters with neat circuit diagram . 05
- Q.3 a) State and explain speed control methods of 3- ϕ I.M. 08
- b) Derive the expression for running torque of 3- ϕ .I.M .State the conditions. For maximum starting and running torques . 07
- Q.4 a) Write a note on effects of changing field excitation of constant loads . 07
- b) Describe the constructional details of 3- ϕ squirrel cage and phase wound I.M 08
- Q.5 a) Explain the construction and types of servo motors. 08
- b) Explain the construction and working of hysteresis motor. 07
- SECTION-B**
- Q.6 Attempt any five 10
- a) Describe any five points to be considered while selecting a transducer .
 - b) Define optocoupler ?
 - c) Define thermistor?
 - d) What is fire defector ? e) Explain the principle of position telemetry Systems.
 - e) How the display units may be classified on the basis of formats used ?
 - f) Give the classification of displays .
 - g) What are the applications of power spectral density.

- Q.7 a) Explain Interfacing techniques of transducers with microprocessor 08
b) With a suitable diagram explain the working of LVDT. List its applications. 07
- Q.8 a) Define thermistor ? Explain thermistors with advantages ,disadvantages and applications. 08
b) With a neat block diagram explain sound level meter . 07
- Q.9 a) With the help of block diagram explain workingof x-y recorders . 08
b) Explain photoo voltaic cell in detail 07
- Q.10 Write any three 15
a) Vibration measurement .
b) Digital signal conditioning system
c) Optical oscillograph .
d) Alpha Numeric display