

Question paper

Program: BEME / BENT / MCEC / DNS / OTHERS

Form No. **FEX - 2**

Revn. 00

Session: 2015-16 Year: 2nd Semester: 1st Examination: Mid sem2
Course: Elect. Machinery Course Code: METIZC282 Durn: 75 min Max. Marks: 30 Date: 6/11/15
ID No. _____

Instructions:

1. All questions are compulsory.
2. Figures to the right indicate full marks.
3. Draw neat sketches wherever required.
4. Assume any suitable additional data wherever required.

Section A

- Q1. a) A 220 volt, shunt motor develops an output of 18.25 kW when taking input of 20.25 kW. The field resistance is 55 ohm and armature resistance 0.05 ohm. What is the efficiency when the output is 7.5 kW? (6)
- b) The following readings were obtained when doing brake test on dc shunt motor: spring balance readings = 10,000 g and 35,000 g, outer cross sectional area of pulley = 138600 sq.mm. Speed = 16 revolutions/second, voltage = 200 volt, line current = 30 amp. Calculate efficiency. Neglect belt thickness. (4)

Section B

- Q2. a) Derive the torque equation for a dc machine. (4)
- b) A wave wound dc generator has 4 poles. It is driven at 1200 rpm. Each pole produces 34mWb flux. The armature has 120 slots with 3 conductors per slot. If each conductor has 0.01 ohm resistance, i) Calculate the open circuit emf, ii) Calculate the resistance of the armature winding. (6)

Section C

- Q3. a) Define % voltage regulation of transformer and list the factors affecting % voltage regulation. (4)
- b) Draw equivalent circuit & phasor diagrams of transformer when connected to capacitive load. (6)