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Name.....

Reg. No.....

**THIRD SEMESTER B.TECH (09 SCHEME) [ENGINEERING] DEGREE
EXAMINATION, NOVEMBER 2014**

AN/ME/AM 09 305/PT ME 09 301 ELECTRICAL TECHNOLOGY

Time : Three Hours

Maximum : 70 Marks



Part A

Answer all questions.

1. State Fleming's right hand rule.
2. Distinguish between star and delta connection.
3. A permanent magnet moving coil instrument has a coil of dimensions 15 mm × 12 mm. The flux density in the air gap is 1.8×10^{-3} Wb/m² and the spring constant is 0.14×10^{-6} Nm/rad. Determine the number of turns required to produce an angular deflection of 90 degrees when a current of 5mA is flowing through the coil.
4. What is a Phasor diagram ? Mention its significance.
5. Compare DIAC and TRIAC.

(5 × 2 = 10 marks)

Part B

Answer any four questions.

6. Explain the open circuit characteristics of a DC generator.
7. Explain 3-point and 4-point starters.
8. Explain the principle of transformer. Discuss its construction and working.
9. Derive an expression for the ammeter shunt resistance.
10. Explain the parts of an electrical drive and the types of electrical drives.
11. Explain the working of an IGBT.

(4 × 5 = 20 marks)

Part C

Answer all questions.

12. (a) Discuss the load characteristics of shunt and series generators.

Or

- (b) Discuss in detail about Managerial functions for enterprise.

Turn over

13. (a) A moving coil instrument whose resistance is 25 ohm gives a full-scale deflection with a current of 1 mA. This instrument is to be used with a Manganin shunt to extend its range to 100 mA. Calculate the error caused by a 10°C rise in temperature when :
- (i) Copper moving coil is connected directly across the manganin shunt
 - (ii) A 75-ohm manganin resistance is used in series with the instrument moving-coil.

Or

- (b) Derive the expression for the steady state deflection of a d'Arsonval galvanometer. If the instrument is provided with a mirror and a light source is placed 1 m away from the galvanometer, find the expression for the deflection of light spot. Also derive the dynamic response of the galvanometer under :
- (i) Under damped motion.
 - (ii) Undamped motion ; and
 - (iii) Critically damped motion
14. (a) Discuss in detail about Alternators.

Or

- (b) Explain the losses in a 3-phase induction motor and the various starting methods.
15. (a) Derive the fundamental torque equation and speed torque convention of an Electrical Drive.

Or

- (b) Discuss in detail about the working of a MOSFET and TRIAC.

(4 × 10 = 40 marks)