



**MBP-003-0271003** Seat No. \_\_\_\_\_

**M. Sc. (ECI) (Sem. X) (CBCS) Examination**

**April / May - 2018**

**Industrial Electronic Devices : Paper - 39**

*(New Syllabus)*

**Faculty Code : 003**

**Subject Code : 0271003**

Time :  $2\frac{1}{2}$  Hours]

[Total Marks : 70

- Instructions :** (1) All questions carry equal marks.  
(2) Figures on right hand side indicate marks.

- 1 Answer the following : (Any seven) 14
- (i) Define an electric motor.
  - (ii) Write the working principle of generator.
  - (iii) Define a stepper motor.
  - (iv) What is an Armature Torque of DC motor ?
  - (v) Write about condition for maximum power developed by motor.
  - (vi) Write the types of position sensors.
  - (vii) Define sensor.
  - (viii) Draw the construction of PMH type motor.
  - (ix) Define inductive sensor.
  - (x) Write any two applications of capacitive sensor.
- 2 Answer the following : (Any Two) 14
- (a) Write a note on motor principle. 7
  - (b) Explain the comparison of generator and motor action. 7
  - (c) Explain the significance of Back e.m.f. and derive 7  
the voltage equation of motor with suitable diagrams.

- 3 Answer the following : 14
- (a) Write a note on characteristics of series motor and shunt motor. 7
- (b) Explain armature Torque and Shaft Torque of a motor. 7

**OR**

- 3 Answer the following : 14
- (a) A 500-V D.C. shunt motor draws a line current of 5 A on light load. If armature resistance is 0.15 ohm and field resistance is 200 ohm, determine the efficiency of the machine running as a generator delivering a load current of 40 A. 7
- (b) Describe merits and demerits of rheostatic control method of motor and merits of field control method of motor. 7
- 4 Answer the following : 14
- (a) Write a brief introduction of stepper motor and explain variable reluctance stepper motor with suitable diagram. 7
- (b) Draw and explain the construction and operation of Disc Magnet stepper motor. 7
- 5 Answer the following : (Any Two) 14
- (a) Explain the capacitive sensors and its technology fundamentals. 7
- (b) Draw and explain inductive sensors and target considerations for inductive sensors. 7
- (c) Describe limit switches and resistive position sensors and magnetic position sensors in brief. 7
- (d) Explain the photoelectric sensor and its applications. 7