

Seat  
No.

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मठ - 011

**Electrical Machines & Industrial Electronics**  
**(1120,1110,1100)**

P. Pages : 2

Time : Three Hours

Max. Marks : 100

Instructions to Candidates :

1. Do not write anything on question paper except Seat No.
2. Answersheet should be written with blue ink only. Graph or diagram should be drawn with the same pen being used for writing paper or black HB pencil.
3. Students should note, no supplement will be provided.
4. All questions are compulsory.
5. Figures to the right indicate full marks.
6. Use of non-programmable calculator is allowed.
7. Assume suitable additional data if necessary.

**UNIT - I**

1. a) Why starter is necessary for motor ? Explain three point starter with neat diagrams. 10  
b) Give the method for speed control for D.C. shunt motor with it's application.  
i) Above normal speed.  
ii) Below normal speed. 10  
c) Draw the magnetic circuit of a 4-pole d.c. machine and state the function of each part. 10

**UNIT - II**

2. a) Explain the construction and principle of operation of any one type servomotor with applications. 10  
b) Derive the torque equation of a three phase induction motor and also derive the condition for maximum torque. 10  
c) Sketch and explain torque-slip characteristics of three phase induction motor and also mention the applications of three phase induction motor. 10

**UNIT - III**

3. a) Explain synchronous impedance method for determining voltage regulation of an alternator. 10
- b) Explain timing and latching relays with a neat diagram. 10
- c) Explain any two methods of starting synchronous motor with it's applications. 10

**UNIT - IV**

4. a) Explain construction of working of LVDT transducer with neat diagram. 10
- b) What do you mean by mechanically operated switches and explain any two of them with neat figure. 10
- c) Explain strain guage pressure sensors. 10

**UNIT - V**

5. a) Write a short note on computer numerical control and robotics. 10
- b) Explain how heat produced in resistance heating, dielectric heating, induction heating and arc heating. 10
- c) Explain with neat figure the major components of data acquisition system. 10

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