

Seat
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BBI1308

Electrical Machines & Industrial Electronics
(New) (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. Black figures to the right indicate full marks.
6. Use of non - programmable calculator is allowed.
7. Neat diagrams must be drawn wherever necessary.
8. Assume suitable data if necessary.
9. Attempt **any two** from each questions.

1. a) i) Draw the cross - section of 4 - pole D.C. machines ? and - state the function and material used for 6
- i) Yoke ii) Pole
iii) Field coil iv) Commutator
v) Brushes.
- ii) What is Back emf ? Explain the significance of Back emf in D.C. motor. 4
- b) i) A 250 volt, short - shunt compound Generator is delivering 80 Amp. The armature, series and shunt field Resistances are 7
0.05 Ω , 0.03 Ω , and 100 Ω respectively calculate.
i) Voltage Induced allowing a brush drop of 2 volt.
ii) Output power.
- ii) State the Applications of D. C. motors ? 3
- c) Draw and Explain three - point starter ? Explain the Electric braking used for D. C. shunt motor. 10
2. a) Draw and Explain power stages in 3 - ϕ I.M. Also Explain Torque - slip characteristics. 10

- b) Write the short note on : 10
 i) Stepper motors & it's Applications.
 ii) Rotor Resistance starter.
- c) State and Explain various methods of speed control for 3 - ϕ I. M. ?
 Also state it's Applications. 10
3. a) State and Explain the types of Rotor used for 3- ϕ - Alternator.
 Also Derive the Relation between synchronous speed, frequency of induced emf and No. of poles. 10
- b) Define the term Relay ? Draw and Explain Electro mechanical control Relays and Compare it with solid state Relays. 10
- c) Write a detail note on : 10
 i) Hunting - in case of synchronous motors.
 ii) Methods of starting - synchronous motors.
4. a) What are mechanically operated switches ? State and Explain various types of mechanically operated switches. 10
- b) Explain with neat figures the following types of sensors. 10
 i) Hall effect sensors &
 ii) Ultrasonic sensors.
- c) What is transducer ? Explain construction, working & Applications of LVDT ? 10
5. a) Draw the block diagram of Data acquisition system and Explain each block in detail. 10
- b) i) Explain the block diagram of PLC ? 5
 ii) Write short note on Robotics. 5
- c) Explain process control system with neat figure and compare open loop and closed loop systems. 10
