



SB-3781

M. Sc. (Tech.) (Part - II) (Instru.) Examination
March / April - 2011
Control System Components & Power
Electronics : Paper - I

Time : 3 Hours]

[Total Marks : 53

Instructions :

(1)

નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of signs on your answer book.

Name of the Examination :
M. Sc. (Tech.) (Part - 2) (Instru.)

Name of the Subject :
Control System Components & Power Electronics - 1

Subject Code No. : **3** **7** **8** **1** Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

- (2) Figures to the right indicate marks.
(3) Scientific calculator is permitted.
(4) Assume appropriate data if necessary.
(5) All questions are compulsory.

- 1 (a) Derive emf equation of D.C. generator. **3**
(b) Draw various characteristics of D.C. generator. **2**
(c) Explain single phase induction motor is not a self starting. **2**
(d) Draw the two transistor model of SCR and write equation of anode current. **2**
(e) Draw the symbol of MOSFET, IGBT, TRIAC, LASCR **2**
(f) State difference between inverter and rectifier. **2**

- 2 (a) Write brief note on the speed control of DC motor. **4**
(b) Explain with diagram four point starter of DC motor. **3**
(c) Explain various earthing methods. **3**

OR

- 2 (a) Synchronous motor always runs at synchronous speed while induction motor can never run at synchronous speed justify the statement. **4**

- (b) Discuss the various methods for speed control of three phase induction motor. 3
- (c) Explain the principle and operation of universal motor. 3
- 3 (a) What do you mean by interlocking ? List the electrical interlocking schemes for 3 phase induction motor and explain any one. 4
- (b) What do you mean by half stepping and micro stepping in context to stepper motor ? 3
- (c) Explain the use of synchronous motor as power factor corrector. 3
- OR**
- 3 (a) List various timing relays and discuss operation of electronic timer with an example. 4
- (b) Explain no load and block rotor test on induction motor. 3
- (c) Explain 3 wire control and compare it with 2 wire control. 3
- 4 (a) Define term Holding current, Latching current, PIV 4
- (b) Explain application of TRIAC in fan regulator. 3
- (c) Explain snubber circuit. 3
- OR**
- 4 (a) Discuss the 180 mode of three phase inverter : 4
- (b) Draw the UJT firing circuit for thyristor. 3
- (c) Define firing angle, conduction angle. 3
- 5 Attempt any four from the following : 10
- (a) State advantages of pneumatic timers.
- (b) State the criteria for selection of relays.
- (c) Explain the operation of type A chopper.
- (d) Explain dual converter.
- (e) Explain cycloconverter.
- (f) Explain starting method for induction motor.
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