

B.E. Instrumentation Engineering (MODEL CURRICULUM) Sem-V
IN503M : Industrial Drives & Control

P. Pages : 1

Time : Three Hours



GUG/W/22/14023

Max. Marks : 80

- Notes :
1. All questions carry marks as indicated.
 2. Assume suitable data wherever necessary.
 3. Illustrate your answers wherever necessary with the help of neat sketches.

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|------------|----|---|----------|
| 1. | a) | Elaborate the term thyristor. Give the list of thyristor family devices and explain diac & triac devices. | 8 |
| | b) | Describe various gate triggering methods of SCR. | 8 |
| OR | | | |
| 2. | a) | Define latching current, holding current, forward break over voltage and reverse break over voltage. | 8 |
| | b) | Examine the two transistor model of SCR and derive an expression for anode current. | 8 |
| 3. | a) | Elaborate with neat circuit diagram & waveforms the single phase half wave fully controlled converter (rectifier) operation with R load and derive the average value of output voltage and ripple factor. | 8 |
| | b) | Describe the working of Type-C two quadrant choppers. | 8 |
| OR | | | |
| 4. | a) | Define Chopper. Give classification, advantages & applications of choppers. | 8 |
| | b) | Describe the working operation of parallel inverter. | 8 |
| 5. | a) | Elaborate the construction & principle of operation of DC motor. | 8 |
| | b) | Elaborate different types of single phase induction motor with neat diagrams. | 8 |
| OR | | | |
| 6. | a) | Describe the working principle of Shaded pole motor. | 8 |
| | b) | Describe the Capacitor Start and Capacitor Run induction motor. | 8 |
| 7. | a) | Elaborate the H-Bridge control drive with neat circuit diagrams. | 8 |
| | b) | Discuss with neat diagram the typical sensorless BLDC motor drive. | 8 |
| OR | | | |
| 8. | a) | Discuss the different methods of speed control employed for DC Series Motor. | 8 |
| | b) | Describe the chopper controlled d.c. Motor with circuit diagram. | 8 |
| 9. | a) | Discuss how Solid State Relays are used for control of a. c. Motor. | 8 |
| | b) | Elaborate with block diagram & circuit diagram of Variable Frequency Drives. | 8 |
| OR | | | |
| 10. | a) | Examine different techniques of Closed Loop Control of Induction motor. | 8 |
| | b) | Elaborate the control system of a. c. motor using Firing Angle Control method. | 8 |
