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GIET MAIN CAMPUS AUTONOMOUS GUNUPUR – 765022

B. Tech Degree Examinations, June - 2021

(Sixth Semester)

BELPC6030- ELECTRIC DRIVES

(Electrical Engineering)

Time: 2 hrs

Maximum: 50 Marks

Answer ALL Questions**The figures in the right hand margin indicate marks.****PART – A: (Multiple Choice Questions)****(1 x 10 = 10 Marks)**Q.1. Answer ALL questions

[CO#] [PO#]

- | | | |
|---|-----|------|
| a. Load torque which always opposes the motion and change their sign on the reversal of motion are called | CO1 | PO 1 |
| (i) active load torques | | |
| (ii) passive load torques | | |
| (iii) semi active load torques | | |
| (iv) semi passive load torques | | |
| b. Motor operation in deceleration is required when a decrease in its speed is required. This occurs when load torque | CO1 | PO 1 |
| (i) equal to the motor torque | | |
| (ii) exceeds the motor torque | | |
| (iii) lesser than the motor torque | | |
| (iv) not equal to the motor torque | | |
| c. Single-phase full-wave drives are used for | CO1 | PO 1 |
| (i) low and high-hp applications | | |
| (ii) low and low – horse power applications | | |
| (iii) only low hp applications | | |
| (iv) low and medium-horse power applications | | |
| d. Switching frequency of chopper can be controlled by setting maximum and minimum level of current | CO1 | PO 1 |
| (i) maximum level of current | | |
| (ii) minimum level of current | | |
| (iii) equal level of current | | |
| (iv) extreme level of current | | |
| e. In v/f synchronous motor drives, to maintain the stator flux constant at its nominal value in the base speed range, the voltage to- frequency ratio is | CO1 | PO 1 |
| (i) kept varying | | |
| (ii) kept constant | | |
| (iii) kept equal | | |
| (iv) kept partly equal | | |
| f. Voltage Source Inverters are devices that convert a DC voltage to AC voltage of | CO2 | PO 1 |
| (i) same frequency | | |
| (ii) variable frequency | | |
| (iii) unequal frequency | | |
| (iv) lesser frequency | | |
| g. Cycloconverter is a single stage conversion device which provides a Variable voltage, | CO2 | PO 1 |
| (i) constant frequency supply | | |
| (ii) variable frequency supply | | |
| (iii) low frequency supply | | |
| (iv) high frequency supply | | |
| h. Commutation of thyristors by induced voltages pf load is known as | CO1 | PO 1 |
| (i) forced commutation | | |
| (ii) load commutation | | |
| (iii) current commutation | | |
| (iv) voltage commutation | | |

- i. A microprocessor based control system can also be built where a phase controlled rectifier supplies CO1 PO 1
- (i) DC motor (ii) AC motor
(iii) Stepper motor (iv) Synchronous motor
- j. Motor for reversing mills must have high starting torque, wide speed range, precise speed control, be able to withstand overload and CO1 PO 1
- (i) pull in torque (ii) pull out torque
(iii) accelerating torque (iv) decelerating torque

PART – B: (Short Answer Questions)

(2 x 5 = 10 Marks)

Q.2. Answer ALL questions

[CO#] [PO#]

- | | | |
|---|-----|------|
| a. What is meant by electrical drives? | CO1 | PO 1 |
| b. Give the disadvantages of conventional Ward-Leonard schemes? | CO1 | PO 1 |
| c. Define braking? Mention its types. | CO1 | PO 1 |
| d. Mention the main difference between the wound field and permanent magnet motors. | CO1 | PO 1 |
| e. Give the drive requirement in paper mills. | CO2 | PO 1 |

PART – C: (Long Answer Questions)

(6 x 5 = 30 Marks)

Answer ANY FIVE questions

Marks [CO#] [PO#]

- | | | | |
|---|-----|-----|------|
| 3. Discuss in detail about different modes of operation: | (6) | CO6 | PO 1 |
| 4. Explain in detail about types of electric braking. | (6) | CO1 | PO 1 |
| 5. Describe in detail about three phase fully controlled rectifier fed separately excited DC motor drive. | (6) | CO2 | PO 1 |
| 6. Write a short notes on Time Ratio Control and Current Limit Control | (6) | CO1 | PO 1 |
| 7. Describe in detail about voltage source inverter fed synchronous motor drive. | (6) | CO2 | PO 1 |
| 8. Discuss in detail about speed control modes of synchronous motor | (6) | CO6 | PO 1 |
| 9. Write in detail about Microprocessor Based DC Motor Drives | (6) | CO1 | PO 1 |
| 10. Describe in detail about the drives for specific applications. | (6) | CO2 | PO 1 |

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