DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Supplementary End Semester Examination – Summer 2022

Course: B. Tech. **Branch: Electrical Engineering** **Semester: VII**

Subject Code & Name: Electrical Drives (BTEEC703)

Max Marks: 60 **Date: 22/08/2022** **Duration: 3.45 Hrs.**

Instructions to the Students:

1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Mark
Q.1	**Solve Any Two of the following.**		
A)	**Explain in detail the various types of electric drives**	Understanding	**06**
B)	**Draw block diagram of electrical drives and explain its different parts.**	Understanding	**06**
C)	**Explain four quadrant operation of motor driving hoist load.**	Applying	**06**
Q.2	**Solve Any Two of the following.**		
A)	**Explain the choice of selection of the motor for different loads.**	Understanding	**06**
B)	**Write a brief note on classes of duty for on electric motor in on electric drive**	Understanding	**06**
C)	**Explain closed loop speed control of multi motor drives.**	Understanding	**06**
Q.3	**Solve Any Two of the following.**		
A)	**A 200 V, 875 rpm, 150 A separately excited de motor has an armature resistance of 0.06 Ω. It is fed from a single phase fully-controlled rectifier with an ac source voltage of 220 V, 50 Hz Assuming continuous conduction, calculate (1) firing angle for rated motor torque and 750 rpm (2) firing angle for rated motor torque and (-500) rpm.**	Understanding	**06**
B)	**Explain the single-phase full wave-controlled rectifier control of DC separately excited drive with waveforms.**	Applying	**06**

C)	**Explain breaking technique of DC motor in detail :** **1) dynamic breaking 2) Regenerative breaking**	Applying	**06**
Q.4	**Solve Any Two of the following.**		
A)	**Explain slip power recovery scheme for induction motor drive** **1) Static scherbius drive** **2) Static Kramer drive**	Understanding	**06**
B)	**Explain operation of VSI fed induction motor drive.**	Understanding	**06**
C)	**Discuss variable frequency control of induction motor drive. Draw relevant speed torque character sties.**	Understanding	**06**
Q.5	**Solve Any Two of the following.**		
A)	**Draw the block diagram of variable frequency control of multiple synchronous motor drive and explain in brief.**	Understanding	**06**
B)	**Explain in detail drives for cement mills application.**	Understanding	**06**
C)	**Explain in brief drives required for various stages in textile mills**	Applying	**06**

***** End *****

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Winter Examination 2022

Course: B. Tech. Branch: Electrical Engineering Semester :7th

Subject Code & Name: BTEEC703/ Electrical Drives

Max Marks: 60 Date: 01-02-2023 Duration: 3 Hr.

Instructions to the Students:

1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		**12**
A)	What is an Electrical Drive system? Explain Basic structure of electrical drives.	**Understand**	**6**
B)	Derive the fundamental torque equation of electric drive.	**Evaluate**	**6**
C)	Explain Multi-Quadrant operation of Electrical Drive with suitable example.	**Remember**	**6**
Q.2	**Solve Any Two of the following.**		**12**
A)	Explain the working of close loop speed control scheme of electric drive with inner current loop.	**Understand**	**6**
B)	Discuss the various modes of operation of electric drives along with drive classification.	**Remember**	**6**
C)	Explain in detail the "Classes of motor duty".	**Knowledge**	**6**
Q. 3	**Solve Any Two of the following.**		**12**
A)	Explain the working of dual converter fed DC drive system.	**Understand**	**6**
B)	Explain the working of single-phase full converter fed DC motor drive. Draw the speed torque characteristic for different firing angles.	**Evaluate**	**6**
C)	Explain basic characteristics of DC Motor.	**Remember**	**6**
Q.4	**Solve Any Two of the following.**		**12**
A)	How does a "Slip power recovery scheme" works in three phase Induction motor.	**Knowledge**	**6**
B)	Discuss the multiquadrant operation of Induction motor drives fed from voltage source inverters.	**Understand**	**6**
C)	Why starters are used in three phase Induction motors? Explain different type of starters used in three phase Induction motors.	**Knowledge**	**6**

Q. 5 Solve Any Two of the following. **12**

A)	Explain the working of load commutated inverter fed synchronous motor drive in detail.	**Remember**	**6**
B)	Discuss the close loop control of synchronous motor drive.	**Understand**	**6**
C)	Amongst the following industries explain the working of drives used for specific applications for any one industry in detail: (i)Textile mill (ii) Steel Rolling mill (iii) Cement mill (iv) Sugar mill	**Knowledge**	**6**

***** End *****