A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 53324

B.E./B.Tech. DEGREE EXAMINATION, APRIL 2019

Third Semester

Chemical Engineering

15UEE324-ELECTRICAL DRIVES AND CONTROL

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. High braking torque produced in CO1 R

   (a) plugging. (b) dynamic braking.

   (c) regenerative braking. (d) none of above.

2. The basic elements of a electric drive are CO1- R

   (a) Electric motor (b) Control system

   (c) Electric motor and control system (d) None of these

3. The concept of V/f control of inverters driving induction motors results in CO2- R

   (a) constant torque operation (b) speed reversal

   (c) reduced magnetic loss (d) hormonic elimination

4. The motor used in household refrigerators is CO2- R

   (a) Dc series motor (b) Dc shunt motor

   (c) Universal motor (d) Single phase induction motor

5. For the protection of DC series motor, which starter is commonly used? CO3- R

   (a) Two point starter (b) Three point starter (c) Four point starter (d) None of these

6. While using stator resistance starter with 3 phase induction motor, the resistances of the starter are kept at CO3- R

(a) Maximum (b) Minimum

(c) Half of the maximum value (d) Both a & b

7. When smooth and precise speed control over a wide range is desired, the motor preferred is CO4- R

(a)) Synchronous motor (b) Squirrel cage induction motor

(c) Wound rotor induction motor (d) DC motor

8. Speed control of DC series and shunt motors CO4- R

(a) Flux control method (b) Rheostatic control method

(c) Voltage control method (d) All of these

9. A 4-pole three-phase induction motor has a synchronous speed of 1500 rev/ minute. The frequency of supply to the stator is CO5- R

(a) 50 Hz (b) 100 Hz (c) 12.5 Hz (d) 25 Hz

10. No load speed of which of the following which motor will be highest? CO5- R

(a) Shunt Motor (b) Series Motor

(c) Compound Motor (d) All the above

PART – B (5 x 2= 10 Marks)

11. What are the classes of duties? CO1-R

12. Draw the speed armature current characteristics of DC series motor. CO2- R

13. State the necessity of starter for DC motors. CO3- R

14. What are the main applications are of ward Leonard system ? CO4- R

15. Point out the salient features of Voltage /frequency control. CO5- R

PART – C (5 x 16= 80 Marks)

16. (a) What is an electrical drive system? How are electric drive classified? List its advantage and disadvantages. CO1- App (16)

Or

	(b)	For a typical motor, analyze the heating and cooling curves and also derive an expression for maximum temperature rise of the motor.	CO1- App	(16)
17.	(a)	List out the advantages and disadvantages of electrical braking over mechanical braking. Discuss any one method of electrical braking of DC machines. Braking of D.C. Motors	CO2- App	(16)
		Or		
	(b)	With neat diagrams and derivations, construct the speed torque characteristics of Induction Motor.	CO2-Ana	(16)
18.	(a)	Describe the working of a three point starter with a neat diagram. Explain the significance of various protective circuits used in this starter.	CO3- U	(16)
		Or		
	(b)	What is the necessity of starter? Explain what are the different types of dc motor starters? With neat diagram, explain the working of a three point starter.	CO3- U	(16)
19.	(a)	Explain with neat sketches about the DC Shunt Motor speed control by using single phase fully controlled brid ge converter.	CO4- U	(16)
		Or		
	(b)	A typical DC motor is fed with single phase fully controlled rectifier circuit. Explain the operation of this circuit to control the speed of the DC motor. Draw the required control circuit.	CO4- U	(16)
20.	(a)	Describe in detail about the different methods of speed control used in three phase induction motors.	CO5- U	(16)
		Or		
	(b)	Draw the circuit diagram for an inverter- fed induction motor drive. Explain how speed control can be achieved for this inverter fed three phase induction motor drive.	CO5- U	(16)