

**A**

Reg. No. :

--	--	--	--	--	--	--	--	--	--	--

**Question Paper Code: 96301**

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2023

Sixth Semester

Electrical and Electronics Engineering

19UEE601 – Electric Drives and Control

(Regulations 2019)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- \_\_\_\_\_ drive is also called as Line shaft drive CO1- U  
(a) Individual drive (b) Multimotor drive (c) Group Drive (d) None of the above
- Electric drive is becoming more and more popular because \_\_\_\_\_ CO1- U  
(a) it is simple and reliable (b) it provide smooth and easy control  
(c) it is cheaper in cost (d) All of the above
- Which braking is not possible in series motor? CO1-R  
(a) regenerative (b) dynamic (c) plugging (d) All of the above
- The DC motor, which can provide zero speed regulation at full load without any controller is CO2-U  
(a) Series (b) Shunt  
(c) Cumulative Compound (d) Differential Compound
- For an IM to operate in braking region slip should be always \_\_\_\_\_ CO3-U  
(a) is equal to 1 (b) less than zero (c) greater than 1 (d) None of these
- The concept of V/f control of inverters driving induction motors results in \_\_\_\_\_ CO3- Ana  
(a) Voltage controlled current source (b) voltage controlled voltage source  
(c) Current controlled voltage source (d) current controlled current source

7. The back emf set up in the stator of a synchronous motor will depend on CO4- U
- (a) rotor speed only (b) rotor excitation only
- (c) rotor excitation and rotor speed (d) coupling angle, rotor speed and excitation
8. The maximum value of torque that a synchronous motor, can develop without losing its synchronism, is known as CO4- R
- (a) breaking torque (b) synchronizing torque (c) pull out torque (d) slip torque
9. Current limit control is employed to limit \_\_\_\_\_ CO3- R
- (a) motor current (b) converter current
- (c) both a and b (d) none of the above
10. Current is sensed by \_\_\_\_\_ CO3- R
- (a) Current sensors (b) Hall effect sensors
- (c) Tachometer (d) both a and b

PART – B (5 x 2= 10 Marks)

11. What is meant by electrical drives? CO1- U
12. Explain the function of a freewheeling diode in a phase controlled rectifier? CO2- U
13. What are the various applications of stator voltage control scheme? CO3 -U
14. Mention the two modes employed in variable frequency control CO4 -U
15. How will you select the motor rating for a specific application? CO5 -U

PART – C (5 x 16= 80Marks)

16. (a) Discuss the different classes of duty of motors and also explain the method of determination of power rating. CO1- U (16)
- Or
- (b) Discuss the different classes of duty of motors and also explain the method of determination of power rating. CO1- U (16)
17. (a) Explain the motoring and braking operation of chopper fed dc motor drive in detail with necessary waveforms and equations. CO2- U (16)
- Or
- (b) Explain the two & four quadrant operation of chopper fed dc separately excited motor drive with necessary diagrams. CO2- U (16)

18. (a) Explain the speed control scheme of induction motor drive with stator voltage control and also state the disadvantages of this method. CO3- U (16)
- Or
- (b) Explain in detail, the v/f control of induction motor drives. CO3- U (16)
19. (a) Draw the open loop volts/Hz speed control of multiple PM synchronous motors and volts/Hz speed control characteristics in torque –speed plane. CO4- U (16)
- Or
- (b) With necessary diagram explain the closed loop speed control of load commutated inverter synchronous motor drive CO4- U (16)
20. (a) Discuss the current controller design using (i) P Controller and (ii) PI controller for a separately excited dc motor drive system. CO5- U (16)
- Or
- (b) Develop the transfer function model of a speed controller. CO5- U (16)

