GALGOTIAS UNIVERSITY

ADMISSION NUMBER

School of Engineering

B.TECH Electrical Engineering
Semester End Examination - Jun 2024

Duration : 180 Minutes
Max Marks : 100

Sem VI - G2UB604C - BTEE4001 - Electric Drives

General Instructions
Answer to the specific question asked
Draw neat, labelled diagrams wherever necessary
Approved data hand books are allowed subject to verification by the Invigilator

1)	Tell the drawbacks of stator voltage controlled Induction Motor drive	K1(2)
2)	Indicate the importance of power rating & heating of electric drives.	K2(4)
3)	Explain the selection of the rating for converter based drive application.	K2(6)
4)	A 450V separately excited dc motor has an armature Resistance of 4.5Ω when driving a load at 600 r.p.m. with constant torque, the armature takes 40 A. This motor is controlled by a chopper circuit with a frequency of 400 Hz and an input voltage of 450 V. (i) What should be the value of the duty ratio if one desires to reduce the speed from 600 to 540 r.p.m. with the load torque maintained constant? (ii) Find out the value of duty ratio for which the per unit ripple current will be maximum.	K3(9)
5)	Illustrate the following (i) Write in detail about the design of controller. (ii) Derive the closed loop transfer function of Dc motor with current feedback	K3(9)
6)	Explain the Speed-Torque characteristics of three phase induction motor with neat diagrams.	K5(10)
7)	(i) Explain in detail the single phase fully controlled rectifier control of dc separately excited motor with neat waveforms. (ii) A 440 V, 1500 rpm, 10 A separately excited DC motor has an armature resistance of. It is fed from a single phase fully controlled rectifier with a source voltage of 430 V 50 Hz. Assuming continuous load current. Compute (1) Motor speed at the firing angle of 30◦ and Torque of 5 Nm. (4) Developed Torque at the firing angle of 45◦ and speed of 1000 rpm.	K4(12)
8)	Examine various methods of braking of DC Shunt Motors with neat diagrams	K5(15)
9)	Examine various methods of braking of DC Series Motors with neat diagrams.	K5(15)
10)	Compose the speed torque equation of three phase fully Controlled converter fed separately excited DC motor	K6(18)