GANPAT UNIVERSITY
B.TECH SEM-III (MECHANICAL)
REGULAR EXAMINATION NOV-DEC-2014
2EE303:-ELECTRICAL TECHNOLOGY

Time: 3 Hours   Total Marks:-70

Instructions: - 1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Answer to two sections must be written in separate answer books.
4. Figures to the right indicate full marks.

SECTION-I

Que.-1	(A)	Explain characteristic of DC Series motor with graphical representation.	[06]
	(B)	A 4 pole DC generator has wave wound armature with Z=792. The flux is 0.0121 Wb/pole. Determine the speed at which it should be run to generate 240V on No Load.	[06]

OR

Que.-1	(A)	Classify DC Generator and explain each type with neat sketch.	[06]
	(B)	A DC Generator generates an EMF of 520 V. It has 2000 armature conductors, flux per pole of 0.013 Wb. Speed of 1200 RPM and the armature winding has 4 parallel paths. Find the number of poles.	[06]
Que.-2	(A)	What is arc? How it can be utilized in electric heating? Also, explain direct arc heating.	[05]
	(B)	Which factors affects the power which converted into heat in dielectric heating. Explain it with proper mathematical derivation.	[06]

OR

Que.-2	(A)	What is welding? Give the name of resistance welding methods and explain any one of them in detail.	[05]
	(B)	List out the types of electrical drives and explain it in detail.	[06]
Que.-3		**Attempt any three:**	[12]
	(A)	A 4 pole, 3 Phase induction motor operates from supply whose frequency is 50Hz. Calculate: 1) The speed at which the magnetic field of the stator is rotating. 2) The speed of the rotor when the slip is 0.04 and 3) The frequency of the rotor current at standstill.	
	(B)	Describe relation between torque and rotor power factor. Also derive equation for torque under starting condition.	
	(C)	How single phase induction motor is differ from three phase induction motor? And why it is not self-starting?	
	(D)	Write a short note on permanent magnet type stepper motor.	

SECTION-II

Que.-4 (A) How can we differentiate Core type and Shell type transformer? [04]

(B) List out the losses in transformer with their equation. [02]

(C) What are the connections possible for three phase transformer? Discuss any two types of connection of Three Phase Transformer. [06]

OR

Que.-4 (A) What is Auto-Transformer? Derive Equation for weight Ratio of Ordinary transformer to Auto transformer. [06]

(B) The maximum flux density in the core of a 250/3000 volts, 50 Hz 1-phase transformer is 1.2 Wb/m². If the EMF per turn is 8 volt, determine, (a) Primary and secondary turns, (b) area of a core. [06]

Que.-5 (A) Explain the synchronous impedance method for determine the voltage regulation. [05]

(B) What is Hunting in a synchronous machine? Explain causes and effect of Hunting. [06]

OR

Que.-5 (A) Three phase, 50Hz, single layer, 4 pole synchronous machine has 36 slot. The short pitch angle is 30⁰. Number of coils are 200 and flux per pole is 20Wb.Find out Induced EMF per phase. [05]

(B) Compare different types of rotor for synchronous machine. [03]

(C) Explain the 'V' curve with proper graphical representation. [03]

Que.-6 **Attempt any three:** [12]

(A) Explain Typical AC Power Supply Scheme with neat sketch.

(B) Compare Overhead Versus Underground system.

(C) Draw and Explain any one Distribution System.

(D) Define drives and explain its advantages and disadvantages.

END OF PAPER