QP Code: RN23BTECH051 | Reg. No | | | | | | | | | | | AR 23

Gandhi Institute of Engineering and Technology University, Odisha, Gunupur
(GIET University)

B. Tech (Third Semester - Regular) Examinations, November – 2024

23BELPC23001/23BEEPC23001 – Electrical Machines - I

EEE

Time: 3 hrs | Maximum: 60 Marks

Answer ALL questions

(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

		CO #	Blooms Level
Q.1.	Answer ***ALL*** questions		
a.	Discuss the purpose of yoke in dc machine.	CO1	K2
b.	List the application of various types of DC Motor.	CO2	K2
c.	List the losses in a transformer?	CO3	K4
d.	Compose the advantages and applications of auto transformer.	CO4	K4
e.	List the types of drone motors.	CO5	K3

PART – B **(10 x 4 = 40 Marks)**

	Answer ***All*** the questions	Marks	CO #	Blooms Level
2.a	Explain the effect of armature reaction in a dc generator. How are its demagnetizing and cross magnetizing calculated	10	CO1	K2
	(OR)			
b.	A four pole lap wounded shunt generator supplies 60 lamps of 100W, 240V each; the field and armature resistances are 55ohm and 0.18ohm respectively. If the brush drop is 1volt for each brush formulate (i) armature current (ii) current per path (iii) generated emf (iv) power output of dc machine	10	CO1	K2
3.a	With a neat sketch explain in detail about DC three point starter.	10	CO2	K2
	(OR)			
b	Describe Plugging, dynamic and regenerative braking in DC Motor.	10	CO2	K2
4.a.	In a Hopkinson's test on a pair of 500V, 100kW shunt generators, the following data was obtained: Auxiliary supply: 30A at 500V Generator output current: 200A, Field Currents: 3.5A (Generator) and 1.8A (Motor). Armature circuit resistances: 0.075Ω each machine. Voltage drop at the brushes: 2V. Calculate the efficiency of the machine acting as a generator.	10	CO3	K4
	(OR)			
b.	Develop the equivalent circuit of a single phase transformer referred to primary and secondary.	10	CO4	K4
5.a.	How can three-phase transformation be accomplished using only two transformers?	5	CO4	K2
b.	What types of connections can be used in three phase transformer? What are their advantages and disadvantages?	5	CO5	K3
	(OR)			
c.	Explain Scott connection of three phase transformer and its application.	5	CO4	K2
d.	Draw and explain the vector group of three-phase transformers with Dy11 and Dy06.	5	CO5	K3
6.a.	Explain in detail about construction and principle of operation of BLDC motor.	10	CO6	K3
	(OR)			
b.	Explain in detail about energy efficient motors.	10	CO6	K3

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