BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION MO/2023)

CLASS: BTECH   SEMESTER : VII
BRANCH: EEE   SESSION : MO/2023

SUBJECT: EE465 ELECTRICAL MACHINE DESIGN

TIME: 02 Hours   FULL MARKS: 25

INSTRUCTIONS:
1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates

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			CO	BL
Q.1(a)	Explain the design problems in case of D.C. Machines?	[2]	CO1	BL1
Q.1(b)	Outline the factors those limit the design of a D.C. Machine?	[3]	C01	BL1
Q.2(a)	Compare specific magnetic loading and specific electric loading in a D.C. Machine?	[2]	CO2	BL2
Q.2(b)	Write the expression for the design of the length of the commutator of the D.C. Machine?	[3]	CO2	BL2
Q.3(a)	Calculate the output coefficient of a D.C. Machine from the given data: B_g= 0.8 Wb/m^2, ac = 3200 amp.cond/m and Ψ=0.66 ?	[2]	C03	BL3
Q.3(b)	Show the estimation of AT/pole for the magnetic circuit at no load?	[3]	CO3	BL3
Q.4(a)	Compare weight of iron and weight of copper in terms of selecting the no. of poles in a D.C. machine?	[2]	C04	BL4
Q.4(b)	Determine the factors considered for the design of field winding of a D.C.Machine? Explain the design procedure for the field winding of a D.C.Machine?	[3]	C04	BL4, BL5
Q.5(a)	Explain the factors affecting for the selection a suitable value for armature diameter of a D.C. Machine?	[2]	CO4	BL5
Q.5(b)	Determine the rated armature current, armature mmf/pole and current in each conductor for 550 V, 275 kW, 900 rpm, 6 poles, wave wound armature winding in 180 slots with 8 conductors in each slot of a D.C. Machine?	[3]	CO4	BL5

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