ADAMAS UNIVERSITY PURSUE EXCELLENCE	**ADAMAS UNIVERSITY** **END-SEMESTER EXAMINATION : MAY 2021** (Academic Session: 2020 – 21)		
Name of the Program:	B.Tech	**Semester:**	VI
Paper Title :	Elective II (Electrical Machine Design)	**Paper Code:**	EEE43112
Maximum Marks :	**40**	**Time duration:**	3 Hrs
Total No of questions:	8	**Total No of Pages:**	2
(Any other information for the student may be mentioned here)	**1.** At top sheet, clearly mention Name, Univ. Roll No., Enrolment No., Paper Name & Code, Date of Exam. **2.** All parts of a Question should be answered consecutively. Each Answer should start from a fresh page. **3.** Assumptions made if any, should be stated clearly at the beginning of your answer.		

Answer all the Groups

Group A

Answer all the questions of the following $5 \times 1 = 5$

1. a) What is Carter's Co-efficient?
b) What is the effect of salient poles on the air gap mmf?
c) What is real and apparent flux density?
d) How will you minimize the leakage flux?
e) In which way the air gap length influence the design of machines?

GROUP –B

Answer *any three* of the following $3 \times 5 = 15$

2. Where and how does core loss occur in electrical machine? [5]

3. What is leakage flux? Define leakage coefficient. [5]

4. What are "main dimensions" in machine design? What do you mean by specific loading? [3+2]

5. Why do small machines have lower specific magnetic loading? [5]

GROUP –C

Answer *any two* of the following $2 \times 10 = 20$

6. The ratio of flux to full load mmf in a 400 KVA, 50 Hz, single phase core type power transformer is 2.4 x 10^{-6} calculate the net iron area and the window area of the transformer. Maximum flux density in the core is 1.3 wb/m^2,Current density 2.7 A/mm^2 and window space factor 0.26. Also calculate the full load mmf. [10]

7. A single phase, 400v, 50Hz, transformer is built from stampings having a relative permeability of 1000.The length of the flix path is 2.5m, the area of cross section of the core is 2.5×10^{-3} m^2 and the primary winding has 800 turns. Estimate the maximum flux and no load current of the transformer. The iron loss at the working flux density is 2.6 w/kg.Iron weighs 5.8×10^3 kg/m^3.Stacking factor is 0.9. [10]

8. A 5 kw,250v, 4 pole, 1500 r.p.m shunt generator is designed to have a square pole face. The loadings are: Average flux density in the gap = 0.42 wb/m^2 and ampere conductors per metre = 15000 Find the main dimensions of the machine. Assume full load efficiency = 0.87 and ratio of pole pitch = 0.66. [10]
