(3 Hours) **Total Marks: 80**

N.B: (1) Question No. 1 is compulsory.
(2) Attempt any three from the remaining questions.
(3) Figures to the right indicate full marks.
(4) Each question is of 20 Marks.

Q.1	Attempt any 4 questions	**Marks**
A	Explain hysteresis loss. How can hysteresis loss be reduced?	**5**
B	Explain MMF and RMF. in distributed wind	**5**
C	Explain phenomenon of Back emf in D.C. motors what is its significance.	**5**
D	What is difference between PMMC and MI ?	**5**
E	Explain the working principle of thermo couple and thermistor.	**5**
F	What is MEMS technology and its applications in electrical field.	**5**
Q.2		**Marks**
A	Explain the concept of doubly excited machines and derive the expression for the electromagnetic torque.	**10**
B	Draw and explain armature reaction in D.C. motor what are the methods to overcome the same and derive the expression for the ampere turns required.	**10**
Q.3		**Marks**
A	Explain the working of Dynamo type Wattmeter with neat diagram and derivation.	**10**
B	Explain rheostatic braking and plugging of DC shunt motor.	**10**
Q.4		**Marks**
A	Give brief classification of transducers with examples how is the selection of transducers is made?	**10**
B	Explain working principles and features of Digital Tachometer,	**10**
Q.5		**Marks**
A	What is Energy and co energy, derive expression for these two energies	**10**
B	Compare between Series and parallel magnetic circuit.	**10**
Q.6		**20 Marks**
A	Explain the static and dynamic characteristics of measuring instruments.	**10**
B	How measurement for R is done using Kelvin's double bridge, Draw diagram and derive the expression for the Kelvin's double bridge.	**10**

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