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Uni. Roll No.............................

Program/Course:B.Tech. (Sem.-1st/2nd)
Name of Subject: Basic Electrical Engineering
Subject Code: ESC-101
Paper I.D.: 15929

Time Allowed: 3 Hours   **Max. Marks: 60**

Note:
1) **Part A and B is compulsory.**
2) Part-C has two Questions Q8 and Q9 both are compulsory, but with internal choice.
3) Any missing data may be assumed appropriately.

Part-A   **[Marks: 02 each]**

Q1.
a) What do you mean by electric resistance? Mention the factors on which it depends?
b) Distinguish between node and junction?
c) Define peak factor and form factor of an alternating quantity?
d) Define magnetic flux and give its unit?
e) Which losses occur in a dc machine?
f) Define damping torque?
g) A 50 Hz, 4 pole, 3 phase induction motor has rotor current of frequency 2 Hz. Calculate slip and speed of motor?
h) Give concept of work and energy.
i) Explain the term Earthing.
j) What is the difference between primary and secondary batteries?

Part-B   **[Marks: 04 each]**

Q2. What are different component of LT Switchgear and Protection?
Q3. Explain the working of an auto transformer. How its different from conventional two winding transformer.
Q4. Explain the BH characteristics of magnetic material.
Q5. Discuss how do you analyse series RLC circuit? Draw its phasor diagram?
Q6. What do you understand by Power factor? Also explain the different methods to improve power factor.
Q7. Explain the classification of electrical instruments.

Part-C   **[Marks: 12 each]**

Q8. (a) Derive the emf and torque equation of a dc machines.

or

(b) Explain the construction and operating principle of a Permanent magnet moving coil.

Q9. (a) Discuss construction and working of Transformer ?

or

(b) State and explain the Thevenin and Norton theorems with suitable example.

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