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D-C-190009

B. Tech. EXAMINATION, 2019

Semester I & II (CBS)

PRINCIPLES OF ELECTRICAL ENGINEERING

EE-101

Time : 3 Hours *Maximum Marks : 60*

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Attempt *Five* questions in all, selecting *one* question from each Section A, B, C and D. Q. No. **9** is compulsory.

Section A

1. A d.c. source has an open-circuit voltage of 30 V and an internal resistance of 1.5. State the value of load resistance that gives maximum power dissipation and determine the value of this power. **10**

2. How Voltage and Current Sources represented ? What is the difference between an ideal and practical voltage source ? **10**

Section B

3. Draw Phaser diagram and voltage triangle for an LR series circuit. Derive an expression for Instantaneous and Average power in a series LR circuit. **10**

4. What are the advantages of 3-phase system ? Compare Star and Delta Connections. **10**

Section C

5. State Ampere's Law. How do you use the law to define a flux line and flux density ? **10**

6. How do you calculate the power factor of the balanced load from wattmeter readings ? **10**

Section D

7. A transformer takes a current of 0.8 A when its primary is connected to a 240 volt, 50 Hz supply, the secondary being on open circuit. If the power absorbed is 72 watts, determine :
   (a) The iron loss current
   (b) The power factor on no-load
   (c) The magnetizing current. **10**

8. Derive expression for generated e.m.f. in armature winding of a DC machine. 10

Section E

(Compulsory Question)

9. (a) Distinguish between Apparent and Active Power.

(b) State *two* advantages and *two* disadvantages of moving coil instruments.

(c) Define Q Factor of a series resonant circuit.

(d) What are the implications of Thevenin's Theorem ?

(e) Define Relative Permability.

(f) List *three* types of damping employed in electrical instruments.

(g) State Torque equation of an Induction Motor.

(h) Define Node, Path, Branch and Mesh for Electrical Circuit. **2½×8=20(2½ marks each)**