1E3108

Roll No. _____ Total No. of Pages: 2

1E3108

B. Tech. I - Sem. (Main/Back/Re-back) Exam., Jan.-2026

1FY3-08 Basic Electrical Engineering

Time: 3 Hours **Maximum Marks: 70**

Instructions to Candidates:

Attempt all ten questions from Part A, five questions out of seven questions from Part B and three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing may suitably be assumed and stated clearly. Units of quantities used /calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

[10×2=20]

PART – A

(Answer should be given up to 25 words only)

All questions are compulsory

Q.1 What is Kirchhoff current law?

Q.2 What do you understand by resonance in circuit?

Q.3 Discuss efficiency of transformer.

Q.4 What is Kirchhoff voltage law?

Q.5 Discuss the regulation of transformer.

Q.6 What do you understand by MCB?

Q.7 Discuss the real power and reactive power.

Q.8 Write EMF equation of transformer.

Q.9 Discuss peak and r.m.s values in AC circuits.

Q.10 Differentiate the voltage and current sources.

PART – B

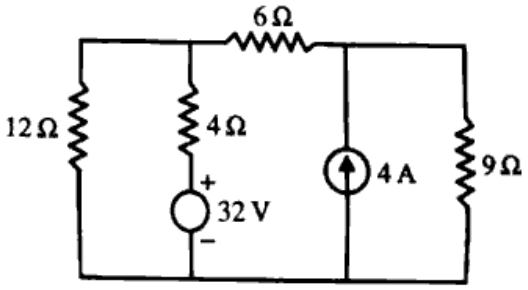
[5×4=20]

(Analytical/Problem solving questions)

Attempt any five questions

Q.1 Formulate the Maximum power transfer theorems.

Q.2 Compute the power dissipated in the 12 ohm resistor by applying the superposition theorem.



Q.3 Differentiate the Ideal and Practical transformer in detail.

Q.4 Enlighten the torque-slip characteristic of three phase induction motor with proper diagram/graph.

Q.5 Discuss the framework of the single phase rectifier with R load.

Q.6 Describe the construction and working of synchronous generators.

Q.7 A 100V, 80W lamp is to be operate on 230V, 50Hz supply. Calculate the value of a pure inductance to be connected in series with the lamp so that the lamp may run on its correct voltage. If the power factor of lamp is to be improved to unity, calculate the value of capacitor which is to be connected across the circuit.

PART – C

[3×10=30]

(Descriptive/Analytical/Problem Solving/Design Questions)

Attempt any three questions

Q.1 Formulate the voltage and current relations in star and delta connections.

Q.2 Deliberate the Single phase Inverter in detail with suitable diagram(s).

Q.3 Describe the equivalent circuit of transformer.

Q.4 Discuss the construction and working of single-phase induction motor.

Q.5 Describe the different types of earthing to protect the different electrical system/circuit(s).
