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TEE–201

B. TECH. (SECOND SEMESTER)
END SEMESTER EXAMINATION, 2019
(ALL BRANCHES)
BASIC ELECTRICAL ENGINEERING

Time : Three Hours

Maximum Marks : 100

Note : (i) This question paper contains five questions.

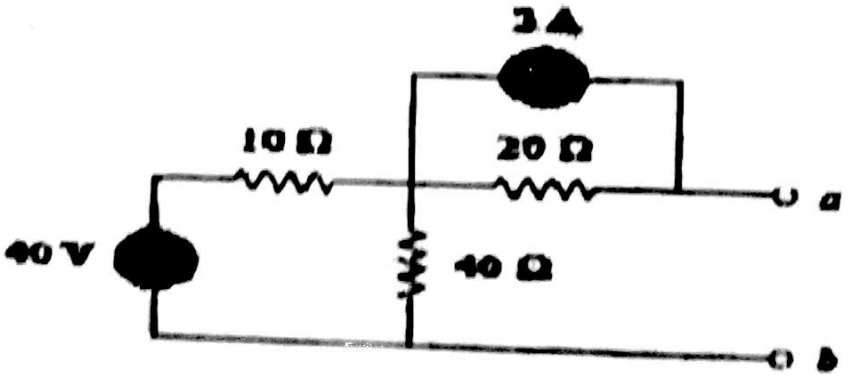
(ii) All questions are compulsory.

(iii) Instructions on how to attempt a question are mentioned against it.

(iv) Total marks assigned to each question are twenty.

1. Attempt any *two* questions of choice from (a), (b) and (c). (2×10=20 Marks)

(a) Find the Thevenin's equivalent at terminal *a-b* of the circuit :



(b) Describe about independent and dependent energy sources.

(c) State and explain the superposition theorem. Illustrate the application of this theorem with reference to an appropriate circuit.

2. Attempt any *two* questions of choice from (a), (b) and (c). (2×10=20 Marks)

(a) Describe the resonance condition in series RLC circuit and draw phasor diagram to illustrate relation between V and I in series RLC circuit.

(b) A circuit consist of two coils in series connected to a 200 V a.c. supply. The first coil has a resistance of 5 ohm and inductive reactance of 10 ohm. The second coil has a resistance of 6 ohm and inductive reactance of 8 ohm.

Calculate :

(i) total impedance of the circuit, (ii) the current flowing in circuit, (iii) circuit phase angle, (iv) voltage drop in each coil.

(c) Derive the relationship between line and phase quantities for star and delta connections.

3. Attempt any *two* questions of choice from (a), (b) and (c). (2×10=20 Marks)

(a) Explain in detail, different types of losses accruing in single-phase transformer.

(b) In a 25 kVA, 2000 V/ 200 V transformer the iron and copper losses are 200 W and 400 W respectively. Calculate the efficiency at half-load and 0.8 power factor lagging. Also determine the maximum efficiency and corresponding load.

(c) Explain the working of single-phase transformer. Also derive its EMF equation.

4. Attempt any *two* questions of choice from (a), (b) and (c). (2×10=20 Marks)

(a) Why is earthing essential ? Explain its advantages.

(b) Write short notes on MCBs & ELCBs.

(c) Why is power factor correction necessary ? Describe any *one* method with circuit diagram.

5. Attempt any *two* questions of choice from (a), (b) and (c). (2×10=20 Marks)

(a) Draw and explain characteristics of series and shunt D.C motors.

(b) A 250 V d. c. shunt motor takes 30 A current while running at full-load. The resistance of motor armature and field windings are 0.1 Ω and 200 Ω respectively. Determine :

(i) shunt field current

(ii) armature current

(c) Explain the working of three-phase Induction motor.