

Darshan Institute of Engineering & Technology

B.E. Semester – I • Pre GTU Examination – February 2021

Subject Code : 3110005**Date** : 15/02/2021**Subject Name** : Basic Electrical Engineering**Time** : 11:30 am to 01:30 pm**Total Marks** : 56

Instructions : 1. Attempt any **FOUR** out of **SEVEN** questions.
2. Figure to the right indicate full marks.
3. Don't do any kind of rough work or calculation in Question Paper.

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|-------------|---|-----------|
| Q. 1 | (A) Define the followings: (1) E.M.F. (2) Energy (3) Resistivity. | 03 |
| | (B) Explain KCL and KVL with neat diagram. | 04 |
| | (C) Derive the equations for Star to Delta transformations with neat diagram. | 07 |
| Q. 2 | (A) State and explain ohm's law and write its limitations. | 03 |
| | (B) Define the followings:
(1) Frequency (2) Peak factor (3) Form factor (4) Average value. | 04 |
| | (C) Derive the equation for time domain analysis of first order RC circuit during charging. | 07 |
| Q. 3 | (A) Give the Statements of Superposition theorem, Thevenin's theorem and Norton's theorem. | 03 |
| | (B) Explain the Derivation of RMS value of sinusoidal AC signal. | 04 |
| | (C) Explain purely Inductive circuit with waveforms and phasor diagrams. | 07 |
| Q. 4 | (A) Give the comparison between Core type and Shell type transformers. | 03 |
| | (B) Draw the Impedance triangle, Voltage triangle, and Power triangle for single phase R-L series circuit. | 04 |
| | (C) Derive the relationship between Phase and Line values of voltages and currents in case of 3-phase balanced Star- connection. | 07 |
| Q. 5 | (A) Draw the circuit diagram and write applications of an auto transformer. | 03 |
| | (B) Derive the E.M.F. equation of a single-phase transformer. | 04 |
| | (C) Draw the diagram and explain the construction of DC Motor. | 07 |
| Q. 6 | (A) Explain working and write applications of synchronous generator. | 03 |
| | (B) Draw and explain construction of cable with neat diagram. | 04 |
| | (C) Explain how the rotating magnetic field (R.M.F.) is produced in three-phase induction motor. | 07 |
| Q. 7 | (A) Give the comparison between Fuse and MCB. | 03 |
| | (B) Explain the Plate earthing with neat diagram. | 04 |
| | (C) Explain different methods of power factor improvement. | 07 |