

B.Tech II Year I Semester (R15) Regular & Supplementary Examinations November/December 2017

ELECTRICAL & MECHANICAL TECHNOLOGY

(Civil Engineering)

Time: 3 hours

Max. Marks: 70

Answer all the questions
(Use single answer booklet only)

PART – A
(Electrical Technology)

UNIT – I

- 1 (a) State and explain ohm's law and its limitations.
(b) Derive the star-delta transformation for a resistive network.
- OR**
- 2 Define the following with respect to sinusoidal waveforms with equations:
(a) Root mean square value.
(b) Average value of sinusoidal current and voltage.

UNIT – II

- 3 (a) Explain construction and the principle of operation of DC generator.
(b) What are the advantages and disadvantages of field flux control of DC shunt motor?
- OR**
- 4 (a) How to classify the DC generator and draw simple diagrams for the types of generator?
(b) Derive the expression for torque developed in a DC motor.

UNIT – III

- 5 (a) Explain construction and the principle of operation of single phase transformer.
(b) Compare core and shell type single phase transformer.
- OR**
- 6 (a) Explain construction and the principle of operation of alternator.
(b) If the induced e.m.f in the stator of an 8-pole induction motor has a frequency of 50 Hz and that in the rotor is 1.5 Hz, at what speed is the motor running and what is the slip?

PART – B
(Mechanical Technology)

UNIT – I

- 7 (a) Explain Oxyacetylene welding process with a sketch.
(b) List the applications of soldering and brazing.
- OR**
- 8 (a) Explain Manual metal arc welding process with a sketch.
(b) Explain the functions of filler rods.

UNIT – II

- 9 (a) With a neat sketch, explain the working of 4-stroke IC engine.
(b) Explain closed and open type gas turbine.
- OR**
- 10 (a) Explain multistage reciprocating air compressor with a neat sketch and list its applications.
(b) Explain belt selection consideration and list the advantages and disadvantages.

UNIT – III

- 11 Explain any two components of a refrigeration system in brief.
- OR**
- 12 List different earth moving equipment and explain any one.
