

B.Tech II Year I Semester (R13) Regular & Supplementary Examinations December 2015

ELECTRICAL & ELECTRONICS ENGINEERING

(Mechanical Engineering)

Time: 3 hours

Max. Marks: 70

Answer all questions
All questions carry equal marks

PART – A
(Electrical Engineering)**UNIT – I**

- 1 (a) Explain construction and the principle of operation of DC generator.
(b) A 4 pole DC generator has a lap-wound armature with 90 slots each containing 6 conductors. If the generator runs at 1500 r.p.m. The flux per pole is 0.03 Wb, Calculate the emf generated.

OR

- 2 (a) Derive the expression for torque developed in a DC motor.
(b) Explain the speed control methods of DC shunt motor.

UNIT – II

- 3 (a) Explain the principle of operation of single phase transformer.
(b) The no load ratio of a 50 Hz, single phase transformer is 6000/250 V, estimate the number of turns in each winding if the maximum flux is 0.06 Wb in the core.

OR

- 4 (a) Explain the various features of an ideal transformer.
(b) What are the losses in a transformer? Explain them.

UNIT – III

- 5 (a) Derive the expression for maximum torque in induction motor.
(b) List out various applications of Induction motors.

OR

- 6 (a) Explain the principle of operation of alternator.
(b) Define and explain slip of 3-phase induction motor.

PART – B
(Electronics Engineering)**UNIT – I**

- 7 Explain in detail about forward bias and reverse bias characteristics of PN junction diode. Also illustrate the Volt- Amp characteristics of the same.

OR

- 8 Discuss about operation of Full wave bridge rectifier circuit and draw its input output waveform.

UNIT – II

- 9 Draw the CE configuration of BJT and discuss about its I/O characteristics with waveform.

OR

- 10 Describe about the CD configuration of JFET and illustrate its transfer characteristics with diagram.

UNIT – III

- 11 (a) (i) Convert the binary number 101101.10101 in to decimal number.
(ii) Add and subtract the binary numbers 101101.0101 and 10001.101
(b) Construct AND and OR gates by using NOR gate

OR

- 12 Simplify the following expression $Y = A[B+C(AB+AC)]$. Draw the logic circuit for the simplified function.
