

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

ELECTRICAL & ELECTRONICS ENGINEERING

(Computer Science and Engineering)

Time: 3 hours

Max. Marks: 70

Answer all questions
All questions carry equal marks

PART – A

(Electrical Engineering)

UNIT – I

- 1 (a) Derive the EMF equation of the DC generator.
- (b) Calculate the emf generated by a 4 pole wave wound armature having 45 slots with 18 conductors per slot when driven at 1200 r.p.m, the flux per pole is 0.016 Wb.

OR

- 2 (a) Explain the principle of operation of DC motor.
- (b) Explain the operation of 3-point starter with neat diagram.

UNIT – II

- 3 (a) Derive the expression for EMF equation of a single phase transformer.
- (b) Define and explain efficiency and regulation transformer.

OR

- 4 (a) A 2000/200 V, 20 kVA transformer has 66 turns in the secondary. Calculate the primary turns and the primary and secondary full load currents, neglecting losses.
- (b) Compare core and shell type transformers.

UNIT – III

- 5 (a) Explain the constructional details of three phase induction motor.
- (b) Explain the torque-slip characteristics of three phase induction motor.

OR

- 6 Explain about the regulation of alternator by synchronous impedance method.

PART – B

(Electronics Engineering)

UNIT – I

- 7 (a) Give the comparison of N – type and P – type semiconductors
- (b) Explain about the working principle and Volt – Amp characteristics of PN junction diode with necessary diagram.

OR

- 8 Show that Zener diode acts as voltage regulator. Explain the Volt-Amp characteristics of the same with circuit diagram.

UNIT – II

- 9 Draw the CB configuration of BJT and Discuss about its I/O characteristics with waveform. Also express the relationship between I_B , I_C and I_E .

OR

- 10 (a) Describe about the construction, working principle and operation of JFET with diagram.
- (b) Differentiate between BJT and JFET.

UNIT – III

- 11 (a) Convert the following Hexadecimal number into Decimal number:
(i) A4D9. (ii) DEAB. (iii) BCD3.
- (b) Design a full adder circuit using basic gates. Verify its sum and carry output using truth table.

OR

- 12 Draw a logic circuit to implement the expression $Y = AB + A(B + C) + B(B + C)$. Simplify the function and also draw the logic circuit for the simplified function.