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Question Paper Code : 51433

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2014.

Third Semester

Electrical and Electronics Engineering

EE 2203/EE 35/080280018/10133 EE 305 A — ELECTRONIC DEVICES AND CIRCUITS

(Regulation 2008/2010)

(Common to PTEE 2203 – Electronic Devices and Circuits for B.E. (Part-Time) Second Semester Electrical and Electronics Engineering and Computer Science and Engineering – Regulation 2009)

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Relate voltage and current of forward biased pn junction diode.
2. Differentiate LED and LCD.
3. What are the operating modes of BJT with reference to junction biasing?
4. What are opto-couplers and list its applications.
5. Draw the drain characteristics of FET and indicate important operating regions.
6. Compare BJT, FET and MOSFET.
7. Define CMRR of differential amplifier.
8. State the conditions to obtain sustained oscillations in oscillator circuit?
9. What is meant by hysteresis in Schmitt trigger?
10. Mention few applications of multi-vibrators.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the VI characteristics of pn junction diode in forward and reverse bias. (8)
(ii) Discuss the switching characteristics of pn diode. (8)

Or

- (b) (i) Explain the operation of Zener diode as voltage regulator. (6)
(ii) Derive ripple factor, PIV, efficiency and TUF of Bridge rectifier with circuit diagram and input / output waveforms. (10)

12. (a) (i) Explain the input / output characteristics of BJT in common base configuration. (11)
- (ii) Compare CE, CB and CC configurations of BJT. (5)

Or

- (b) (i) Draw the hybrid- π model of BJT and obtain expressions for various parameters. (12)
- (ii) Compare Bipolar Junction Transistors and Power Transistors. (4)
13. (a) (i) Explain the construction, working and static drain characteristics of enhancement MOSFET. (10)
- (ii) Cascode Amplifiers have high bandwidth. Validate this statement suitably. (6)

Or

- (b) (i) For a CS amplifier, draw the small signal equivalent circuit and determine expression for gain, input impedance and output impedance. (8)
- (ii) Prove that Darlington Amplifier offers very high input impedance. (8)
14. (a) Derive common mode gain, differential mode gain and CMRR of differential amplifier.

Or

- (b) (i) Obtain expression for gain and frequency of oscillation of RC phase shift oscillator.
- (ii) Write short notes on crystal oscillator.
15. (a) (i) With schematic and waveform explain a two way clipper circuit. (8)
- (ii) Why is clamper called dc restorer? Explain. (8)

Or

- (b) Draw saw tooth oscillator and explain its operation with its circuit diagram and output waveforms.
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