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Question Paper Code: 31035

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2015.

Third Semester

Electrical and Electronics Engineering

01UEE305 - SEMICONDUCTOR DEVICES AND CIRCUITS

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. What are the functions of filters and regulators?
2. List the applications of Zener diode.
3. Calculate β of a transistor when $\alpha = 0.6$.
4. Which one is more popular among CE, CC and CB configurations? Why?
5. Mention the advantages of BJT when compared to FET.
6. Define pinch off voltage of FET.
7. State Bar Khausen criterion for sustained oscillations.
8. What are the advantages of crystal oscillator?
9. Differentiate astable and bistable multivibrators.
10. Write about intrinsic standoff ratio of UJT.

PART - B (5 x 16 = 80 Marks)

11. (a) Explain the principle of operation and characteristics of PN junction diode with necessary sketches. (16)

Or

(b) Illustrate the application of Zener diode as a voltage regulator. (16)

12. (a) Compare the input and output characteristics of CE and CC configurations of BJT with suitable diagrams. (16)

Or

(b) Discuss about the principle of operation, characteristics and applications of (i) power transistors (ii) Opto couplers. (16)

13. (a) (i) How FET works as variable voltage regulator? (8)

(ii) Explain the small signal model of JFET. (8)

Or

(b) Illustrate the current flow mechanism of Metal Oxide Semiconductor junction in detail. Also discuss about the characteristics of MOSFET. (16)

14. (a) What do you understand by the term differential amplifiers? Draw the circuit diagram and explain the working of differential amplifier at CM and DM operations. (16)

Or

(b) What is the function of oscillators? Write the condition for oscillation and enumerate the principle of operation of RC phase shift oscillator with neat sketch. (16)

15. (a) Write a detailed technical note on following:

(i) UJT based saw tooth oscillators. (8)

(ii) Diode clippers. (8)

Or

(b) Compare the operation and characteristics of astable, bistable and monostable multi vibrators. (16)