Reg. No. : | | | | | | | | | | |

Question Paper Code: 31335

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2019

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. Define Avalanche break down.
2. What is regulator?
3. Draw the input and output characteristics of common emitter configuration.
4. State the applications of RF.
5. Draw the LF equivalent circuit of JFET.
6. What is the significance of small signal model of a device?
7. Distinguish between voltage series and voltage shunt feedback amplifier.
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) Derive the expressions for drift and diffusion currents of a semiconductor diode. (16)

Or

(b) Explain the working of bridge rectifier. Give the expressions for average current and voltage, RMS current & voltage, PIV, ripple factor and efficiency. (16)

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

Or

(b) Derive the equations for voltage gain, current gain, input impedance and output admittance for a BJT using low frequency h-parameter model for (a) CB configuration and (b) CC configuration. (16)

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

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

Or

(b) Draw and explain the construction, operation and characteristics of P-channel JFET in detail. (16)

14. (a) (i) Explain the working of single tuned voltage amplifier. (8)

(ii) Discuss the merits of transformer coupling over tank circuit. (8)

Or

(b) With a neat sketch explain the working of an RC phase shift oscillator and derive an expression for frequency of oscillation for an RC phase shift oscillator. (16)

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

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

(ii) Diode clippers. (8)

Or

(b) Explain any three clipper circuits with output waveforms. (16)