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Question Paper Code: 31035

B.E. / B.Tech. DEGREE EXAMINATION, OCTOBER 2014.

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. State the condition for oscillation.
8. List different types of amplifiers.
9. State the uses of UJT.
10. Draw the circuit diagram of clamper.

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 with neat sketch, the operation of a full wave rectifier and derive the expression for average output voltage and ripple factor. (16)

12. (a) Explain the method of evaluating h-parameters for a transistor in CE configuration. (16)

Or

(b) Explain the construction, switching characteristics and operation of power transistor. (16)

13. (a) Explain the structure and working principle of JFET with its VI characteristics. (16)

Or

(b) (i) Draw and explain the operation of Darlington connection. (10)

(ii) Compare the enhancement and depletion type MOSFET. (6)

14. (a) Explain the working principle of

(i) Single tuned amplifiers (8)

(ii) Voltage and current Feedback amplifiers. (8)

Or

(b) Discuss with neat diagram, the working principle of Colpitts oscillator and crystal oscillator. (16)

15. (a) (i) Explain with neat sketch the operation of a bi-stable multi vibrator. (10)

(ii) Write in detail about RC wave shaping circuit. (6)

Or

(b) (i) Describe the operation of Schmitt trigger with neat diagram. (8)

(ii) Explain with neat sketch, the operation of a clipper. (8)