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

Question Paper Code: 53035

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Third Semester

Electrical and Electronics Engineering

15UEE305 - SEMICONDUCTOR DEVICES AND CIRCUITS

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. As the temperature is increased ,the voltage across a diode carrying a constant current

   (a) Increases (b) Decreases
   (c) Remains constant (d) May increase or decrease

2. Zener diode is used as the main component in DC power supply for

   (a) Rectification (b) Voltage regulation
   (c) Filter action (d) Inversion

3. The transistor configuration which provides highest output impedance is

   (a) Common base (b) Common emitter
   (c) Common Collector (d) None of these

4. The emitter of a transistor is generally doped the heaviest because it

   (a) has to dissipate maximum power (b) has to supply the charge carriers
   (c) is the first region of the transistor (d) must posses low resistance

5. When the positive voltage on the gate of a p-channel JFET is increased, its drain current

   (a) Increases (b) Decreases
   (c) Remains same (d) None of these

6. In a JFET, drain current is primarily controlled by

(a) size of depletion region (b) channel resistance
(c) gate reverse bias (d) voltage drop across channel

7. Feedback in amplifier always helps in

(a) controlling its output (b) increasing its gain
(c) reducing its input impedance (d) stabilizes its gain

8. Negative feedback in amplifier results in

(a) reduced voltage gain (b) increased voltage gain
(c) reduced bandwidth (d) increased signal to noise ratio

9. The type of multivibrator used for generation of clock pulse is

(a) monostable (b) astable
(c) bistable (d) None of these

10. A Schmitt trigger is basically

(a) an astable multivibrator (b) a monostable multivibrator
(c) abistable multivibrator (d) an oscillator

PART - B (5 x 2 = 10 Marks)

11. What is reverse saturation current?

12. Discuss the need for biasing the transistor.

13. Define pinch off voltage for a JFET.

14. What are the classifications of power amplifiers?.

15. Define clamper.

PART - C (5 x 16 = 80 Marks)

16. (a) With a neat diagram explain the working of a PN junction diode in forward bias and reverse bias and show the effect of temperature on its V-I characteristics. (16)

Or

(b) (i) Describe the principle of operation of an LCD. (10)

(ii) What are the advantages and disadvantages of LCD? (6)

17. (a) Explain the input and output characteristics of a transistor in CB configuration. (16)

Or

(b) (i) Explain the operation of NPN and PNP transistor. (8)

(ii) Write a short note on optocoupler. (8)

18. (a) (i) Describe the small signal model of FET. (8)

(ii) Write the applications of JFET. (8)

Or

(b) (i) Using neat sketches describe the operation of depletion MOSFET. (8)

(ii) Write the comparison of MOSFET with JFET. (8)

19. (a) (i) Write the characteristics of Class-A amplifier. (8)

(ii) Write a short note on single tuned voltage amplifier. (8)

Or

(b) (i) Explain the working of RC phase shift oscillator. (8)

(ii) Explain the working of Wien bridge oscillator. (8)

20. (a) With neat circuit diagrams explain the working of: (i) positive clipper (ii) negative clipper. (16)

Or

(b) (i) Explain the working of Schmitt trigger circuit. (8)

(ii) Write a short note on bistable multivibrator. (8)

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