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**Reg. No. :**

**Question Paper Code: 42047**

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

Second Semester

Electronics and Communication Engineering

14UEC207 - ELECTRONIC DEVICES

(Regulation 2014)

Duration: Three hours  Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The forbidden energy gap for Si is

(a) 1.1 eV (b) 1.5 eV (c) 1.7 eV (d) 0.92 eV

2. The energy gap decreases with the ------------ in temperature

(a) Constant (b) unity (c) decreases (d) increases

3. Mention any one application of Zener Diode.

(a) detector (b) tunnel diode

(c) For Controlling the output amplitude (d) demodulation circuit

4. In a p+n junction diode under reverse bias, the magnitude of electric field is maximum at

(a) The edge of the depletion region on the p-side (b) The edge of the depletion region on the n-side (c) The p+n junction (d) The centre of the depletion region on the n-side

5. By providing proper bias voltage ,the transistor can be made to work as an------

(a) amplifier (b) regulator (c) switch (d) diode

6. While using a BJT as an amplifier, the collector and emitter terminals get interchanged mistakenly. Assuming that the amplifier of common emitter amplifier the biasing is suitably adjusted, the interchange of terminals will result into which one of the following?

(a) Zero gain (b) Infinite gain (c) Reduced gain (d) No change in gain at all

7. The effective channel length of a MOSFET in saturation decreases with increase in

(a) Gate voltage (b) Drain voltage (c) Source voltage (d) Body voltage

8. Which mode JFET can operate-------------

(a) depletion (b) enhancement

(c) depletion and enhancement (d) normal mode

9. In a tunnel diode, the width of the depletion layer is of the order of

(a) 0.1 micron (b) 1.0 micron (c) 0.1 Armstrong (d) 100 Armstrong

10. LCD are used for display of

(a) printer (b) numeric only

(c) alphanumeric character only (d) numeric and alphanumeric character

PART - B (5 x 2 = 10 Marks)

11. Draw energy band diagram of semiconductor.

12. What is Zener break down?

13. Why CE configuration is widely used in amplifier circuits? Give reason.

14. Write the equation for drain current of JFET.

15. State tunneling phenomenon.

PART - C (5 x 16 = 80 Marks)

16. (a) (i) Explain the classification of semiconductor. (10)

(ii) Give the short notes on drift and diffusion current. (6)

Or

(b) (i) Derive expression of Drift and Diffusion current. (12)

(ii) Write short Notes on Mass action law. (4)

17. (a) With neat diagram and explain the theory of PN junction diode (16)

Or

(b) (i) With the help of a circuit diagram explain the working of a half-wave rectifier. Also draw the necessary waveforms. Also obtain the expression for the ripple factor and efficiency of rectification. (12)

(ii) Show that rectification efficiency for a half wave rectifier is 40.6%. (4)

18. (a) Explain about switch mode power supply and its operation. (16)

Or

(b) Explain the transistor characteristics in CE configurations. Explain the behavior of the transistor in active, cut-off and saturation mode. (16)

19. (a) Explain the construction and operation of N-channel JFET. (16) Or

(b) With neat diagram, explain the construction, operation of MOSFET. (16)

20. (a) (i) With neat sketch explain the principle of Uni Junction Transistor (12) (ii) Differentiate between photoconductive and photovoltaic cells. (4)

Or

(b) Draw and describe the principle of operation and characteristics of SCR. (16)