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

Question Paper Code: 41427

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

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. Einstein relationship for semiconductor is

   (a) T/11,600 (b) T^2/11,600 (c) T/11,000 (d) None of these

3. The field across the depletion region becomes very high of the order of

   (a) 4×10^7 V/m (b) 2×10^7 V/m (c) 4×10^9 V/m (d) 3×10^7 V/m

4. Reverse resistance in the range of

   (a) MΩ (b) mΩ (c) KΩ (d) None of these

5. The another name of universal bias circuit is

   (a) Collector to base bias circuit (b) Emitter bias circuit

   (c) Voltage divider bias (d) Fixed bias with emitter

6. Output resistance of the transistor amplifier is highest in

   (a) CB (b) CE (c) CC (d) None of these

7. MOSFET has

(a) High input impedance (b) Low output impedance
(c) Low input impedance (d) High output impedance

8. N-channel devices are the electrons, which have a mobility of

(a) 1300 cm^2/v.s (b) 500 cm^2/v.s (c) 1200 cm^2/v.s (d) 900 cm^2/v.s

9. Power consumption in LCD is

(a) milli watts (b) micro watts (c) nano watts (d) fermi watts

10. Tunnel diode is used as

(a) ultra speed switch (b) amplifier
(c) logic memory storage device (d) all the three

PART - B (5 x 2 = 10 Marks)

11. Define mass action law.

12. What is Zener break down?

13. Give the demerits of fixed bias circuit.

14. When a reverse gate voltage of 10 V is applied to JFET, the gate current is 2 mA. Determine the resistance between gate and source.

15. State tunneling phenomenon.

PART - C (5 x 16 = 80 Marks)

16. (a) (i) Derive the expression for the carrier concentration in intrinsic semi conductor. (10)

(ii) Explain the variation in semiconductor parameter and temperature. (6)

Or

(b) (i) Explain the classification of semiconductor. (10)

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

17. (a) (i) Explain the effect of temperature on PN junction diodes. (8)

(ii) Derive the diode current equation. (8)

Or

(b) Explain the Zener diode and its characteristics. (16)

18. (a) Describe the following configuration and its characteristics (i) Common base configuration (ii) Common emitter configuration. (16)

Or

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

19. (a) With the help of suitable diagrams explain the working of different types of MOSFET. (16)

Or

(b) Explain the construction and operation of N-channel JFET. (16)

20. (a) Explain the operation and characteristics of SCR. (16)

Or

(b) Write short notes on

(i) Phototransistor

(ii) Photodiode

(iii) Photoconductive sensor

(iv) Photovoltaic sensors (16)