Reg. No. :

Question Paper Code: 42407

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2022

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. Define Electron Volt.

    (a) 2eV   (b) 1eV   (c) 9eV   (d) 7eV

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. For every $10°C$ rise in temperature the reverse saturation current approximately

    (a) doubles   (b) halves   (c) remains the same   (d) decreases

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

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

6. Mention the application of CC configuration

   (a) low frequency circuits   (b) high frequency circuits

   (c) audio frequency circuits   (d) Impedance maching

7. When a FET acts as a voltage variable resistor?

   (a) Vgs=1   (b) Vgs=0   (c) Vgs<0   (d) Vgs>0

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. List any four advantages of FET over conventional transistors.

15. Draw the energy band diagrams to show the operation of tunnel diode.

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

42407

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

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

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

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

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

Or

(b) Draw the block diagram of switched mode power supply and explain each block (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) (i) With neat sketch explain the principle of Uni Junction Transistor (12)
(ii) Differentiate between photoconductive and photovoltaic cells. (4)

Or

(b)Write short notes on :

(i) LCD (8)

(ii) CCD (8)

42407

42407