| Reg. No. | | | | | | | | | | | | | | | |
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| Question Paper Code | 12810 |
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**B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024**

Second Semester

**Computer Science and Business Systems**

**20BSPH205 - PRINCIPLES OF ELECTRONICS**

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

**PART - A (10 × 2 = 20 Marks)**

Answer ALL Questions

| | | Marks | K – Level | CO |
|---|---|---|---|---|
| 1. | List out any four properties of semiconducting materiel. | 2 | K1 | CO1 |
| 2. | Differentiate between n-type and p-type semiconductor. | 2 | K2 | CO1 |
| 3. | Define Knee voltage of the diode. | 2 | K1 | CO2 |
| 4. | What is the difference between ordinary diode and zener diode? | 2 | K2 | CO2 |
| 5. | Distinguish between PNP and NPN transistors. | 2 | K2 | CO3 |
| 6. | What is cut off region for FET? | 2 | K2 | CO3 |
| 7. | What are the advantages of negative feedback? | 2 | K1 | CO4 |
| 8. | Define band width stability. | 2 | K1 | CO4 |
| 9. | What are input terminals of an operational amplifier? | 2 | K1 | CO5 |
| 10. | What is comparator in Op-amp? | 2 | K1 | CO5 |

**PART - B (5 × 13 = 65 Marks)**

Answer ALL Questions

| | | | Marks | K – Level | CO |
|---|---|---|---|---|---|
| 11. | a) | Explain the concept of hole current and doping in a semiconductor with a note essential requirements of doping and its methods. | 13 | K2 | CO1 |
| | | **OR** | | | |
| | b) | With neat sketch classify conductors, semiconductors and insulators based on band theory of solids. | 13 | K2 | CO1 |
| 12. | a) | Explain with neat sketch the **V-I** (volt-ampere) characteristic of a p-n junction diode. | 13 | K2 | CO2 |
| | | **OR** | | | |
| | b) i) | Explain in detail the working of a full wave rectifier and derive the expression for its efficiency. | 6 | K2 | CO2 |
| | ii) | Write a short note on zener breakdown and avalanche breakdown. | 7 | K2 | CO2 |
| 13. | a) | Explain an experiment to determine the characteristics of a Field effect transistor in C-S configuration. Explain how transistor parameters can be evaluated. | 13 | K2 | CO3 |

**OR**

b) What is CB configuration? Explain an experiment to determine the characteristics of a transistor in CB configuration. *13 K2 CO3*

14. a) Write down the various characteristics of feedback amplifier topology and also explain the input and output impedance. *13 K3 CO4*

**OR**

b) What is oscillator? Mention its types and also explain Barkhausen criteria conditions. *13 K2 CO4*

15. a) Describe an operational amplifier. Explain its action as (i) Inverting amplifier (ii) Non inverting amplifier. *13 K2 CO5*

**OR**

b) With neat sketch, explain the Half adder and Full adder circuit and also explain Half subtraction and Full subtraction. *13 K2 CO5*

**PART - C (1 × 15 = 15 Marks)**

16. a) What is flip flop? Explain any two flip flop and its truth table and its modification. *15 K2 CO6*

**OR**

b) Explain AND, OR, NOT and EXOR gates. Write its truth table and draw the logic diagram. *15 K2 CO6*