

Course | Introduction to Comput... x End Semester Examination, 20th x Meet - psh-zhcr-hkh x describe the working principle of x +

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University of Engineering & Management, Kolkata  
End Semester Examination, February 2021  
Course: B.Tech Semester: 1<sup>st</sup>  
Paper Name: Basic Electronic Engineering  
Paper Code: ESC102

Full Marks: 100 Time: 3 hours

Answer all the questions. Each question is of 10 marks.

- A. What are the properties of crystalline and non-crystalline materials? With proper diagram explain the properties. 5+5  
OR  
B. What is a Zener diode? How does it differ from normal p-n junction diode? Draw the forward and reverse bias characteristic of Zener diode.
- A. Define with conduction band, valence band and forbidden energy gap? Explain the formation Of Energy bands are formed? 5+5  
OR  
B. Draw the reverse bias circuit of Zener diode and describe the mechanism.
- A. Distinguish between conductor, insulator and semiconductor with respect to energy band. Graphically Show how the conductivity of conductor, semiconductor varies with temperature. 5+5  
OR  
B. Describe the line and load regulation with proper circuit diagram.
- A. Give example and define intrinsic and extrinsic semiconductor. Show with diagram and explain the variation of Conductivity of intrinsic semiconductor with respect to temperature. 5+5  
OR  
B. Draw the circuit diagram of half wave rectifier and explain the working procedure.
- A. Explain doping? Why an intrinsic semiconductor need to be doped? How conductivity of semiconductor Changes with doping? 5+5

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B. Draw the circuit diagram and describe the working principle of CE mode bipolar junction transistor.

7. A. Draw and compare the energy band of P-type and N-type of material. Explain what do you Mean by acceptor level and donor level. 5+5

OR

B. Draw the circuit diagram and describe the working principle of CB mode bipolar junction transistor.

8. A. What is Fermi energy level? Explain significance of Fermi energy level in intrinsic semiconductor. Briefly describe how this energy level changes its position with temperature. What is the position of fermi Level in extrinsic semiconductor. 5+5

OR

B. Draw the circuit diagram and describe the working principle of CC mode bipolar junction transistor.

9. A. Compare between: -i) intrinsic and extrinsic semiconductor ii) two different type (P-type & N-type) of semiconductor. 5+5

OR

B. Draw the output and transfer characteristic of CE mode transistor and write down the equation for current amplification factor and explain whether its value is greater, equal, or less than one.

10. A. What are the main disadvantages of intrinsic semiconductor. Explain, to overcome these disadvantages how Extrinsic semiconductor helps? 5+5

OR

B. Draw the output and transfer characteristic of CB mode transistor and write down the equation for current amplification factor and explain whether its value is greater, equal, or less than one.

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5. A. Explain doping? W... Open with Google Docs ...d to be doped? How conductivity of semiconductor Changes with doping? 5+5  
OR  
B. Calculate the ripple factor and efficiency of half wave rectifier.  
6. A. Explain how N-type and P-type semiconductor is formed using Silicon as substrate material. Draw required diagram also. 5+5  
OR  
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7. A. Draw and compare the energy band of P-type and N-type of material. Explain what do you Mean by acceptor level and donor level. 5+5  
OR  
B. Draw the circuit diagram and describe the working principle of CB mode bipolar junction transistor.  
8. A. What is Fermi energy level? Explain significance of Fermi energy level in intrinsic semiconductor Briefly describe how this energy level changes its position with temperature. What is the position of fermi Level in extrinsic semiconductor. 5+5  
OR  
B. Draw the circuit diagram and describe the working principle of CC mode bipolar junction transistor.  
9. A. Compare between: -i) intrinsic and extrinsic semiconductor ii) two different type (P-type & N-type) of semiconductor. 5+5  
OR  
B. Draw the output characteristics of common emitter transistor and write down the equation for current amplification factor and explain whether its value is greater, equal,  
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