

FE Sem-II 2025-26
Subject - Semiconductor Physics
Question bank for IA- 2

- 1) Explain construction & working of NPN transistor with neat circuit diagram?
- 2) Explain the application of BJT as a switch in cutoff and saturation action?
- 3) Explain different modes of operation of transistor as per biasing applied?
- 4) Explain input & output characteristics of BJT in common base configuration? Derive expression for output collector current?
- 5) Explain input & output characteristics of BJT in common emitter configuration? Derive expression for output collector current?
- 6) Define α & β in case of BJT configuration? Derive the relation between them?
- 7) Explain the construction and working N channel JFET?
- 8) With proper circuit diagram, explain the drain and transfer characteristics of N-channel JFET? Explain three distinct operating regions of output characteristics?
- 9) Draw the drain and transfer characteristics of JFET and define following parameter. A) AC drain resistance B) DC drain resistance C) Trans conductance D) Amplification factor. Derive the relation between amplification factor and trans conduction?
- 10) Distinguish between JFET & BJT?
- 11) Explain working principle and output characteristics of N channel enhancement type MOSFET?
- 12) Explain working principle and output characteristics of N channel depletion type MOSFET?
- 13) Distinguish between enhancement and depletion type MOSFET?
- 14) What is nano material? Explain the importance of surface area to volume ratio in nano material?
- 15) Distinguish between nano material & Bulk material?
- 16) Explain the approaches used for synthesis of nano material?
- 17) Explain any one (Mechanical, Electrical, Optical, Structural) properties of nano material in detail?
- 18) Write short notes on Vander Waal Forces?
- 19) Explain the term “Single Volve” and ‘Single Electron Transfer’?
- 20) Explain the basic steps involved in a typical lithography process?
- 21) Explain the photo lithography or electron beam lithography process in detail?