

2024 Ph H1 Q23

Section: Particles and Waves

Topic: Semiconductors

Question Summary

Solids are classified as conductors, insulators, or semiconductors depending on their band structures.

Worked Solution

Conductor: overlapping valence and conduction bands (X).

Insulator: large band gap (Z).

Semiconductor: small band gap (Y).

Thus Conductor = X, Insulator = Z, Semiconductor = Y.

Final Answer: D

Revision Tips

- Conductors have overlapping bands so electrons move freely.
- Insulators have wide band gaps preventing conduction.
- Semiconductors have narrow band gaps that shrink with temperature.