

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY WAKNAGHAT

T-1 EXAMINATION (FEBRUARY 2020)

B.Tech 8th Sem. (ECE)

COURSE CODE: 13B1WEC834

MAX. MARKS: 15

COURSE NAME: Quantum Effects in Semiconductor Physics

COURSE CREDITS: 3

MAX. TIME: 1 Hr.

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.

Q1. An electron is moving in a rigid box that has a width of 0.3nm. Find- [1+1+1+1+2]

- Amplitude of the wave produced.
- Minimum energy of the electron.
- Minimum velocity of the electron.
- Expression for wave function.
- Plot wave function for $n = 1, 2 \& 3$.

Q2. Write a note on the following-

[2+2+2]

- Wave- particle duality.
- Crystal lattice.
- Elemental and Compound Semiconductors with example.

Q3. With proper explanation show that, in an infinite potential well at a particular point probability of finding the particle is different for different energy states.

[3]