

UNIT-1: QUANTUM PHYSICS & SOLIDS

(SAMPLE OBJECTIVES FOR MID EXAMS)

FILL IN THE BLANKS

1. The process of heat transfer from a body by virtue of its temperature is known as _____
2. The product of wavelength and absolute scale of temperature is called _____
3. A moving particle is always connected with a wave known as _____
4. Uncertainty principle is not significant in case of _____
5. Photoelectric current gradually increases with the increase of potential and reaches its _____
6. The minimum energy possessed by a particle in 1-D potential box is $E_1 =$ _____
7. $|\psi^2|$ gives the _____ in a particular region
8. _____ models consist of an infinite row of rectangular potential wells separated by barriers of width.
9. Classical free electron theory was proposed by _____
10. The Value of normalized wave function of the particle is _____
11. At absolute zero temperature, the conduction band is _____
12. Light travelling in the form of small discrete particles is known as _____
13. Photoelectric current is directly proportional to the intensity of _____
14. The probability interpretation of wave function is _____
15. Photoelectric current is directly proportional to the intensity of incident _____
16. For a solid of N-atoms, each of the energy levels of an atom splits into _____ levels
17. $F(E)$ at $T > 0K$ AND $E = E_f$, shows that Fermi level is the state at which the probability of electron occupation is _____ percent.
18. A black body radiator contains simple harmonic oscillators of possible _____

19. The forbidden energy gap of Ge is _____
20. In Stefan's law, the total radiant energy is due to all frequencies, $E =$ _____
21. The solids in which the CB & VB are separated by a small energy gap of less than 2 eV are called _____
22. Davisson and Germer experiment is carried out in _____
23. According to Heisenberg's uncertainty, it is not possible to measure the exact position and _____ of a particle at the same time.
24. For a solid of N-atoms, each of the energy levels of an atom splits into _____ levels
25. $P > 0$ is a special case of _____ moving throughout the lattice in a Kronig-Penney model.

KEY

1. Radiation 2. Wien's constant ($2.898 \times 10^{-3} \text{ m K}$) 3. Matter waves or de Broglie waves
4. Macroscopic objects 5. Saturation value 6. $E_i = E_{\text{min}} = h^2/8mL^2$ 7. Probability density
8. Kronig-Penney 9. Drude and Lorentz 10. 1 11. Empty 12. Photons or Quanta
13. Incident light 14. Finite 15. Radiation 16. N 17. 50 18. Frequencies 19. 0.72 eV
20. σT^4 21. semiconductors. 22. Vacuum 23. Momentum 24. N 25. free electrons