

CLASS TEST-03

Answer All Questions.

Assume the suitable missing data if any
Symbols have usual meanings

Total Marks = 20

Time = 50 Mins

- ① Using WKB Approximation, Find an expression for energy levels of spinless particles of mass 'm' moving in one dimensional box with rigid walls at $x=0$ and $x=L$.
- ② A particle at time $t=0$ in the ground state ($n=1$) of an infinite potential box with walls at $x=0$ and $x=L$ is subjected to time dependent perturbation $V(t) = x^2 e^{-t/c}$. Find out the probability of the particle in the first excited state ($n=2$).
- ③ Find the allowed energies of the Harmonic Oscillator using WKB method.
- ④ Explain the meaning of Transition Probability and establish an expression of Fermi Golden Rule using time dependent ~~probabi~~ perturbation theory. Point out the physical significance of Fermi Golden Rule.

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