Option 3

*

1 point

A free particle has

a) definite energy but indefinite momentum
b) definite momentum but indefinite energy
c) definite energy and definite momentum
d) indefinite energy and indefinite momentum

Option 1

Option 3

Option 2

Option 4

Your first question? *

1 point

Option 4

Your first question? *

1 point

Heisenberg's uncertainity principle is

a) $\Delta E \Delta x \geq \frac{h}{2\pi}$

b) $\Delta E \Delta t \geq \frac{h}{4\pi}$

c) $\Delta p \Delta t \geq \frac{h}{4\pi}$

d) $\Delta x \Delta t \geq \frac{h}{4\pi}$

Option 1

Option 3

Option 4

Option 2

- Option 2

*

1 point

$\sin 2x$ is an eigenfunction of the operator

a) $-\frac{d}{dx}$ b) $+\frac{d}{dx}$ c) $-\frac{d^2}{dx^2}$ d) $\frac{d^2}{dx^2}$

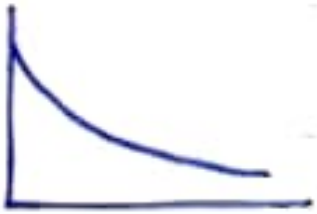
- Option 3
- Option 2
- Option 1
- Option 4

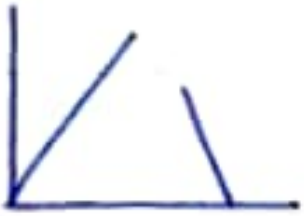
1 point

Which of the following can be a solution of schrödinger eq^n,

a) 

b) 

c) 

d) 

- Option 1
- Option 2
- Option 4
- Option 3

Option 3

1 point

Any wave function can be written as a linear combination of

a) Eigen Vectors b) Eigen Values c) Eigen functions

d) operators

- Option 3
- Option 4
- Option 1
- Option 2

1 point

Uncertainity principle states that the error in measurement is due to :

1 point

The lowest energy state of a particle of mass 'm' confined in a linear box of size L is

a) $\frac{\hbar^2}{8mL^2}$ b) $\frac{h^2}{8mL^2}$ c) $\frac{2h}{8mL^2}$ d) $\frac{h^2}{8\pi mL^2}$

- Option 4
- Option 3
- Option 2
- Option 1

1 point

The allowed eigen function must be

a) finite only b) continuous only c) single valued only

1 point

If ψ is normalized wave function, then value of $\int_{-\infty}^{+\infty} \psi^* \psi \, dz$ will be

a) 1 b) 0 c) ∞ d) none

- Option 2
- Option 4
- Option 3
- Option 1

1 point

The lowest energy state of a particle of mass 'm' confined in a linear box of size L is

a) $\frac{\hbar^2}{}$ b) $\frac{h^2}{}$ c) $\frac{2h}{}$ d) $\frac{h^2}{}$

1 point

The allowed eigen function must be

a) finile only b) continuous only c) single valued only

d) all three

- Option 2
- Option 1
- Option 3
- Option 4

1 point

Which of the following can be a solution of Schrödinger eq^n,

a) 

b) 

○ Option 1

1 point

Schrödinger time dependent wave equation for a free particle is,

a) $\nabla^2\psi + \frac{2mE}{\hbar^2}\psi = 0$

b) $\nabla^2\psi + \frac{2m}{\hbar^2}(E-V)\psi = 0$

c) $\nabla^2\psi - \frac{2mE}{\hbar^2}\psi = 0$

d) $\nabla^2\psi + \frac{2m}{\hbar^2}(V-E)\psi = 0$

○ Option 4

○ Option 3

○ Option 2

○ Option 1

1 point

1 point

The condition of normalization of wavefunction is

a) $\int_{-\infty}^{+\infty} |\psi|^2 \, d\tau = 1$

b) $\int_{-\infty}^{+\infty} |\psi| \, d\tau = 1$

c) $\int_{-\infty}^{+\infty} |\psi|^2 \, d\tau = 0$

d) $\int_{+\infty}^{-\infty} |\psi|^2 \, d\tau = 1$

- (●) Option 1
- ( ) Option 2
- ( ) Option 4
- ( ) Option 3

1 point

If ψ is normalized wave function, then value of $\int_{+\infty}^{}$

Your second question? *

1 point

1. Which of the following is not an uncertainity principle?

a) $\Delta x \Delta p \geq \frac{h}{4\pi}$

b) $\Delta J \Delta \theta \geq \frac{h}{4\pi}$

c) $\Delta E \Delta t \leq \frac{h}{4\pi}$

d) None of the above

- Option 1
- Option 3
- Option 4
- Option 2

*

1 point

The duration of a radar pulse is 10^{-6} s. The uncertainity in its energy will be :

a) 1.05×10^{-14} J b) 1.05×10^{-21} J c) 1.05×10^{-28} J d) 1.05×10^{-35} J

Option 4

Option 1

*

1 point

The probability of finding a probability particle in a distance dx and around a point x is

a) ψ^* b) $\psi^* \psi$ c) $\psi \psi^*$ d) ψ

Option 4

Option 3

Option 2

Option 1

*

1 point

1 point

A particle moving in an infinitely deep potential can have energies which are multiple of

a) n b) n^2 c) $1.5n$ d) n^3

- Option 2
- Option 3
- Option 4
- Option 1

1 point

The operator $\left(\frac{d}{dx} + x\right)\left(\frac{d}{dx} - x\right)$ will be equivalent to

a) $\frac{d^2}{dx^2} - x^2$ b) $\frac{d^2}{dx^2} - x^2 - 1$ c) $\frac{d^2}{dx^2} - x^2 + 1$

○ Option 2

*

1 point

Which of the following has more precise information about the position of a particle?

a) Energy
b) Wave function
c) Probability
d) Expectation value

○ Option 3

○ Option 2

○ Option 4

○ Option 1

*

1 point

Which of the following wave functions represent a free particle moving along +x axis?

*

1 point

The operator $\left(\frac{d}{dx}+x\right)\left(\frac{d}{dx}-x\right)$ will be equivalent to

a) $\frac{d^2}{dx^2}-x^2$ b) $\frac{d^2}{dx^2}-x^2-1$ c) $\frac{d^2}{dx^2}-x^2+1$

(d) $\frac{d^2}{dx^2}-1$

- Option 1
- Option 3
- Option 4
- Option 2

Your second question? *

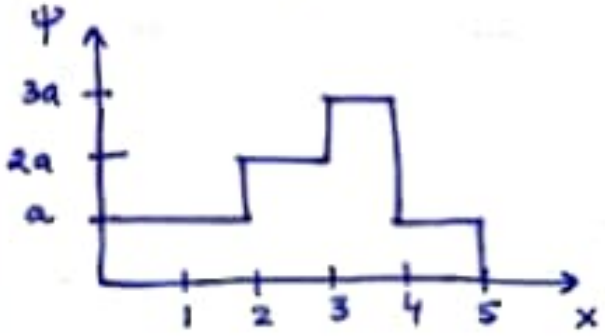
1 point

1. Which of the following is not an uncertainity principle?

You have 20 questions and time allotted is 30 minutes!!!! Each question carry 01 mark.

1 point

The wave function of a particle constrained to move in a 1-D is shown in the graph below:



The probability that the particle will be found between x=2 and x=4, will be

a) 0.80 to 0.82

b) 0.40 to 0.41

c) 0.60 to 0.64

d) 0.81 to 0.83

- Option 1
- Option 3
- Option 4
- Option 2

1 point

Which of the following wave functions represent a free particle moving along +x axis ?

a) $A \sin(kx - \omega t)$

b) $A \cos(kx - \omega t)$

c) $A e^{i(kx - \omega t)}$

d) $A e^{-i(kx - \omega t)}$

- Option 3
- Option 2
- Option 1
- Option 4

1 point

A particle moving in an infinitely deep potential can have energies which are multiple of

a) n

b) n^2

c) $1.5n$

d) n^3

1 point

For a stationary state the probability density is

a) function of time

b) independent of time

c) independent of space coord^n

d) dependent of space coord^n

- Option 1
- Option 2
- Option 4
- Option 3

1 point

A free particle has

1 point

Uncertainity principle states that the error in measurement is due to :

a) dual nature of particles
b) due to small size of particles
c) due to large size of particles
d) due to error in measuring instruments

- Option 2
- Option 3
- Option 1
- Option 4

1 point

For a stationary state the probability density is

a) function of time
b) independent of time

- Option 3
- Option 4
- Option 2

1 point

The duration of a radar pulse is 10^{-6} s. The uncertainity in its energy will be :

a) 1.05×10^{-14} J b) 1.05×10^{-21} J c) 1.05×10^{-28} J d) 1.05×10^{-35} J

- Option 3
- Option 2
- Option 4
- Option 1