PSQC21 Qualification Round Key

Time and Date of competition: 7:00 PM IST, 3rd January 2021

NOTE: Bold option represents the correct answer

We are providing this key to all the participants to learn from their mistakes and improve their knowledge of Physics and Astronomy!

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1. ***What is the axial tilt of Uranus?***

Options:

A. 0 degrees
B. 90 degrees
C. 51 degrees
D. 98 degrees

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2. ***Ceres, the dwarf planet between Mars and Jupiter, comprises what percentage of the total mass of the asteroid belt?***

Options:

A. 2%
B. 10%
C. 20%
D. 25%

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3. ***Which of the following was the first proposed structure of the atom?***

Options:

A. Greek atomic model
B. Thompson's atomic model
C. Bohr atomic model
D. Rutherford's atomic model

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4. ***Our Sun is located in which spiral arm of the Milky Way?***

Options:

A. Orion Spur
B. Scutum-Centaurus Arm
C. Sagittarius Arm
D. Norma Arm

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5. ***What is the name of the Largest Moon of Venus (Include known temporary Moons)?***

Options:

A. Venus-0001
B. Centaurus-v-03
C. Ic-2986
D. None

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6. ***What is the name of the discoverer of the famous comet that appears every 75 to 76 years.***

Options:

A. Edmond Halley
B. Johannes Kepler
C. Christiaan Huygens
D. Galileo Galilei

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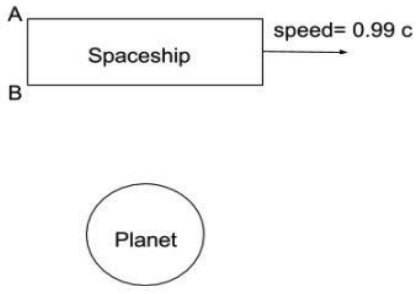
7. ***A spaceship in the shape of a cuboid (appears as a rectangle when viewed from the side- as shown in fig) is moving through space at 99% the speed of light. A person observes the spaceship from a nearby planet. What is the apparent change in AB/height as viewed by the person on the planet?***



Options:

A. Apparent height is shorter compared to what it is at rest.
B. Apparent height is longer compared to what it is at rest.
C. Apparent height remains same
D. Apparent height becomes almost 0

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8. Which of the following is a messenger particle for the weak nuclear force?

Options:

A. Z Boson
B. Superweak Boson
C. Higgs Boson
D. Hyperspace Bosonic particle

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9. What is the frequency range for Ultraviolet (UV) radiation?

Options:

A. 10^11 to 10^13 Hz
B. 10^14 to 10^16 Hz
C. 10^9 to 10^12 Hz
D. 10^17 to 10^19 Hz

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10. Which black hole was the first to be directly photographed?

Options:

A. Sagittarris A
B. Messier 216
C. Messier 87
D. Ton 618

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11. Thermonuclear Bombs work on which principle?

Options:

A. Nuclear Fission
B. Cosmic Ionization explosion
C. Violent chemical reaction
D. Nuclear Fusion

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12. What is the distance from Earth to the Sun in terms of Astronomical Units (AU)?

Options:

A. 0.197
B. 93
C. 12
D. 1

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13. Which famous principle is used on planes to make them fly (generate lift)?

Options:

A. The gaseous buoyancy principle
B. Newton's upward-lift principle
C. Modern air-lift theory
D. Bernoulli principle

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14. The core of the sun is in which state of matter?

Options:

A. Super dense solid
B. Plasma
C. Gaseous
D. Super heated solid

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15. Which is the heaviest particle in the Lepton family?

Options:

A. Electron
B. Tau
C. Muon
D. Muon-neutrino

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16. What is the time period of a chronon- the theoretical quantum of time?

Options:

A. 6.27 × 10^−24 sec
B. 5.8 × 10^−8 sec
C. 7 × 10^-50 sec
D. 0.00001 sec

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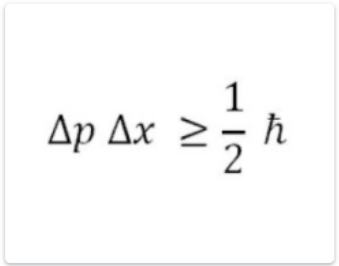
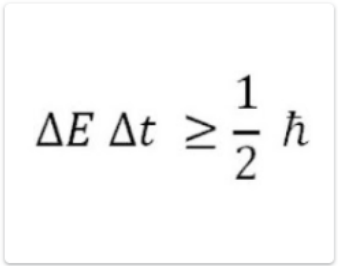
17. Which of the following is/are the correct formula for the Heisenberg Uncertainty Principle?



Option 1



Option 2

All of the above

Option 3

None of the above

Option 4

Answer: Option 3

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18. A feather and hammer are placed at the same height in a gravitational field of the Earth. Which object experiences more gravitational force?

Options:

A. The force exerted on both objects is the same
B. The hammer
C. The feather

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19. Which was the first asteroid to be discovered with its own Moon?

Options:

A. 101455 Bennu
B. 433 Eros
C. 243 Ida
D. 62173 Ryugu

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20. What is the charge by mass ratio of an electron?

Options:

A. 2.624 x 10^10 C/kg
B. 1.758 x 10^11 C/kg
C. 2.9 x 10^11 C/kg
D. 5.005 x 10^22 C/kg