Physics Science Questions for CDS, CGL Tier-1, Railways and SSC 10+2 Exams

Physics Quiz 12

Directions: Study the following question carefully and choose the right answer.

1. Which of the following is a vector quantity?

A. Distance B. Displacement C. Speed D. Kinetic energy 2. Which of the

2. Following is an example of a non- uniform accelerated motion?

A. Freely falling body B. Movement of a fan C. A roller coaster

D. Motion of a ball rolling down an inclined plane

3. According to kepler's first law, a moving planet follows which of the following paths?

A. Elliptical B. Circle C. Hyperbole D. Irregular shape

4. Which of the following has more inertia?

A. A rubber ball B. A stone of same size C. Both will have same inertia

D. Canot be determined

5. What happens to the force between you and your friend when you move away from each other?

A. Force increases B. Force decreases C. Force remains constant

D. Depends on the mass of you and your friend

6. For an object to float in water, which of the following should be true?

A. Density of water = density of object B. Density of water > density of object

C. Density of water < density of object D. Differs on a case to case basis

7. In which of the following cases convex mirror is used?

A. Torches B. Shaving mirrors C. Vehicle headlights D. Rear view mirrors in a vehicle

8. A prism splits white light into 7 colors. What happens when an inverted prism is placed alongside the previous one?

A. Each of the 7 colors further split into 7 colors

B. The 7 colors maintain their color

C. The colors are merged together into white light again

D. Cannot say, depends on the refractive index of the prism

9. The twinkling of stars is observed because of?

A. Atmospheric Reflection B. Atmospheric refraction C. Atmospheric scattering of light D. Atmospheric internal reflection

10. The least distance of distinct vision for a young adult with normal vision is about?

A. 25m B. 2.5cm C. 25cm D. 2.5m

Correct Answers:

1	2	3	4	5	6	7	8	9	10
B	C	A	B	A	B	D	B	B	C

***Explanations*:**

1.

A vector quantity is defined as the one which includes both direction and magnitude. A scalar quantity is defined as the one having only magnitude and not direction.

Here, distance is a scalar quantity as it involves only magnitude. For example, her home is 25 kms away from mine. But the direction is not known. Hence, it is a scalar quantity.

Displacement is a vector quantity as it also describes the direction. For example, 25 kms to the south.

Speed is a scalar quantity because it includes only the magnitude but velocity is a vector quantity as it also includes direction.

Kinetic energy is a scalar quantity since energy can never have directions.

Hence, option B is correct.

2.

What is acceleration? The increase in the velocity of a moving body with time is called acceleration.

Now, there are two types of acceleration. 1) Uniform acceleration- The change in velocity is constant here. For example, if starting velocity is 5m/s , next will be 10m/s, then 15m/s and so on.

Non- uniform acceleration- The change in velocity is not constant as in uniform acceleration.

Freely falling body has a uniform acceleration of 9.8 m/s. The movement of a fan just after it is started is also an example of uniform acceleration and so is motion of a ball rolling down an inclined plane.

The velocity of a roller coaster changes randomly and hence is a perfect example of on - uniform accelerated motion.

Henec, option C is correct.

3.

Kepler stated 3 laws of planetary motion. According to kepler's first law of motion, all planets move around the sun in elliptical path with sun as one of the foci.

The second law states that a radius vector joining any planet to the Sun sweeps out equal areas in equal lengths of time.

The third law states that the squares of the sidereal periods (of revolution) of the planets are directly proportional to the cubes of their mean distances from the Sun.

Hence, option A is correct.

4.

Inertia is defined as the natural tendency of an object to resist the change in its state of motion or rest. The mass of an object is a measure of its inertia.

The size of stone is more than the size of the rubber ball. Hence, stone of the same size has more inertia.

Hence, option B is correct.

5.

The force between two objects is given by $F= k m M/d^2$.

K is the force constant, m and M are the masses of two objects. d is the distance between two objects. Hence, if the distance between two objects increases the force decreases since force is inversely proportional to the square of distance.

Hence, option A is correct.

6.

For an object to float in water, the density of object should be greater than the density of water so that it does not sink down.

Hence, option B is correct.

7.

Convex mirrors are used in rear view mirrors in a vehicle. They are preferred because they always give an erect, though diminished image. Also, they have a wider field of view as they are curved outwards. Thus, the driver is able to view much larger area.
Concave mirrors are used in torches, shaving creams and vehicle headlights because they scatter light.

Hence, option D is correct.

8.

A prism splits white light into 7 different colors namely- violet, indigo, blue, green, yellow, orange and red because of refraction ad dispersion of white light. The speed of light is different in media having different refractive indices. The red light bends the least because of longest wavelength and violet bends the most because of its shortest wavelength.

Since, the velocity of all the 7 colors is different because of different wavelengths, the white light splits into 7 colors.

However, when an inverted prism is placed alongside, the colors mix up again to give white light from the other end.

Hence, option B is correct.

9.

The stars twinkle in the atmosphere because of atmospheric refraction. The starlight, on entering the earth's atmosphere undergoes refraction continuously before it

reaches the earth. Since the atmosphere bends the starlight, the apparent position of the star is slightly above from its actual position. As the path of rays of light coming from the star goes on varying slightly, the apparent position of the star fluctuates and the amount of starlight entering the eye flickers. The star appears brighter and fainter at the same time which is the twinkling effect.

Hence, option B is correct.

10.

The least distance of distinct vision for a young adult with normal vision is about 25 cm from the eye or it is the minimum distance at which human eye can look at an object comfortably. The LDDV is shifted at a far point in case of hypermetropia (where there is difficulty in seeing near by objects)

The far point of a normal eye is infinity. The far point comes near in case of a myopic eye (where there is difficulty in seeing far off objects).

Hence, option C is correct.