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Physics Questions for CDS, CGL Tier 1 and 10+2

Physics Quiz 3

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

1. A ray of white light strikes the surface of an object. If all the colours are reflected the surface would appear

- A. Black B. White C. Grey D. Opaque

2. Motion of an oscillating liquid column in a U-tube is

- A. Periodic but not simple harmonic
B. Non-periodic
C. Simple harmonic and time period is independent of the density of the liquid
D. Simple harmonic and time period depends on the density of the liquid

3. Dirty cloths containing grease and oil stains are cleaned by adding detergents to water, Stains are removed because detergent

- A. Reduces drastically the surface tension between water and oil
B. Increases the surface tension between water and oil
C. Increases the viscosity of water and oil
D. Decreases the viscosity in detergent mixed water

4. Before X-ray examination (coloured X-ray) of the stomach, patients are given suitable salt of barium because

- A. Barium salts are white in colour and this helps stomach to appear clearly
- B. Barium is a good absorber of X-rays and helps stomach to appear clearly
- C. Barium salts are easily available
- D. Barium allows X-rays to pass through the stomach

5. Which one among the following correctly defines a unit magnetic pole in SI units? It is the pole which when placed in air at a distance of

- A. 1 foot from an equal and a similar poled repels it with a force of 1 pound
- B. 1 m from an equal and a similar pole repels it with a force of 1 N
- C. 1 cm from an equal and a similar pole repels it with a force of 1 dyne
- D. 1 meter from an equal and a similar pole repels it with a force of 1 N/m²

6. After rising a short distance that smooth column of smoke from a cigarette breaks up into an irregular and random pattern. In a similar fashion, a stream of fluid flowing past an obstacle breaks up into eddies and vortices which give the flow irregular velocity components transverse to the flow direction. Other examples include the wakes left in water by moving ships the sound produced by whistling and by wind instruments. These examples are the results of

- A. Laminar flow of air B. Streamline flow of air C. Turbulent flow of air
- D. Viscous flow at low speed

7. Two identical piano wires have same fundamental frequency when kept under the same tension. What will happen if tension of one of

the wire is slightly increased and both the wires are made to vibrate simultaneously?

- A. Noise B. Beats C. Resonance D. Non-linear effects

8. In SONAR, we use

- A. Ultrasonic waves B. Infrasonic waves C. Radio waves
D. Audible sound waves

9. A liquid is kept in a regular cylindrical vessel up to a certain height. If this vessel is replaced by another cylindrical vessel having half the area of cross-section of the bottom, the pressure on the bottom will

- A. Remain unaffected
B. Be reduced to half the earlier pressure
C. Be increased to twice the earlier pressure
D. Be reduced to one-fourth the earlier pressure

10. The time period of a simple pendulum having a spherical wooden bob is 2 s. If the bob is replaced by a metallic one twice as heavy, the time period will be

- A. More than 2 s B. 2 s C. 1 s D. Less than 1 s

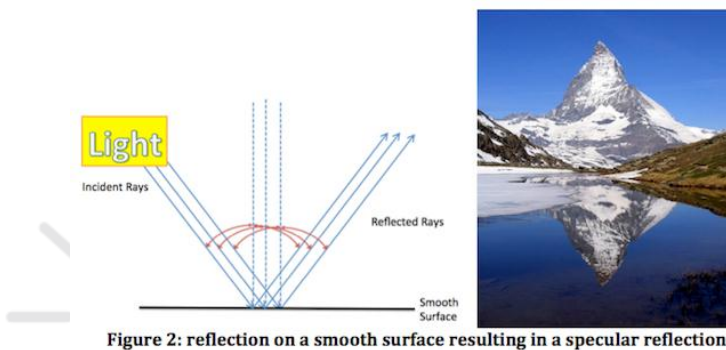
Correct Answers:

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

Explanations:

1.

When an object reflects all the colours of a white light, then it would appear white.



2.

Motion of an oscillation liquid column in a U-tube is called simple harmonic motion with time period depending on the density of the liquid.

3.

Because detergent reduces drastically the surface tension between water and oil.

4.

Barium is a good absorber of X-rays and helps stomach to appear clearly, it is because before X-rays examination of stomach, patients are given suitable slat of barium.

5.

A unit magnetic pole in SI unit is the pole which when placed in air at a distance of 1 m from an equal and a similar pole repels it with a force of 1 N..

6.

The given examples are the result of turbulent flow of air.

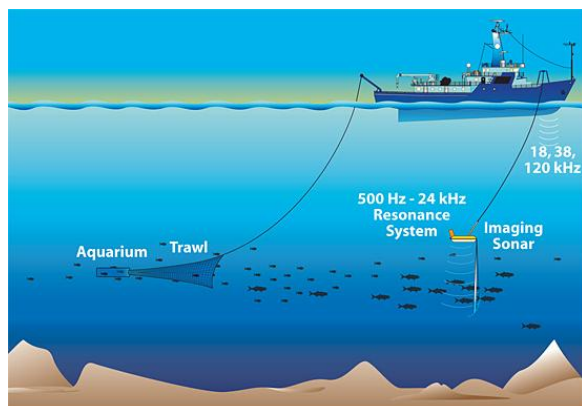
Turbulent flow, type of fluid (gas or liquid) flow in which the fluid undergoes irregular fluctuations, or mixing, in contrast to laminar flow, in which the fluid moves in smooth paths or layers. In turbulent flow the speed of the fluid at a point is continuously undergoing changes in both magnitude and direction. The flow of wind and rivers is generally turbulent in this sense, even if the currents are gentle. The air or water swirls and eddies while its overall bulk moves along a specific direction.

7.

In physics, resonance is the tendency of a system to oscillate at greater amplitude at some frequencies than at other.

8.

Sonar (sound navigation and ranging) is a technique that uses sound propagation to navigate (usually under water, as in submarine navigation), communicate with or detect objects on or under the surface of the water, such as the vessels.



9.

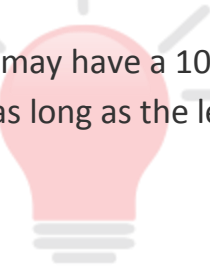
Pressure is force per unit area which clearly states that Pressure is inversely proportional to area and as the area decreases for a given force so the pressure will increase.

10.

$$T = 2\pi\sqrt{L/g}$$

As per above the formula of time period in Simple Harmonic Motion the mass of a pendulum has no effect on the time period. The time it takes for one cycle is solely dependent on the length of the string and the acceleration of gravity. Since gravity at maximum is the same here on earth, the string length is the only quality we can really play with in order to change the period of the pendulum. The mass has no effect.

Ex. You may have a 10 kg pendulum and a 1kg pendulum and they will have the same period as long as the lengths of their strings are the same.



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