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

Physics Quiz 6

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

1. Fire fly gives us cold light by virtue of the phenomenon of

A. Fluorescence B. Phosphorescence C. Chemiluminescence D. Effervescence

2. The cat can survive fall from a height much more than human or any other animal. It is because the cat

A. Can immediately adjust itself to land on all four paws and bend the legs to absorb the impact of falling

B. Has elastic bones

C. Has thick and elastic skin

D. Also gets injury equally with other animals, but has tremendous endurance, resistance and speedy recovery

3. Viewfinders, used in automobiles to locate the position of the vehicles behind, are made of

A. Plane mirror B. Concave mirror C. Convex mirror D. Parabolic mirror

4. If a ship moves from freshwater into seawater, it will

A. Sink completely B. Sink a little bit C. Rise a little higher

D. Remain unaffected

5. Mr X was advised by an architect to make outer walls of his house with hollow bricks. The correct reason is that such walls

- A. Make the building stronger
- B. Help keeping inside cooler in summer and warmer in winter
- C. Prevent seepage of moisture from outside
- D. Protect the building from lightning

6. The blackboard seems black because it

- A. Reflects every colour
- B. Does not reflect any colour
- C. Absorbs black colour
- D. Reflects black colour

7. In scuba-diving, while ascending towards the water surface, there is a danger of bursting the lungs. It is because of

- A. Archimedes' principle
- B. Boyle's law
- C. Gay-Lussac's law of combining volumes
- D. Graham's law of diffusion

8. Half portion of a rectangular piece of ice is wrapped with a white piece of cloth while the other half with a black one. In this context, which one among the following statements is correct?

- A. Ice melts more easily under black wrap
- B. Ice melts more easily under white wrap
- C. No ice melts at all under the black wrap
- D. No ice melts at all under the white wrap

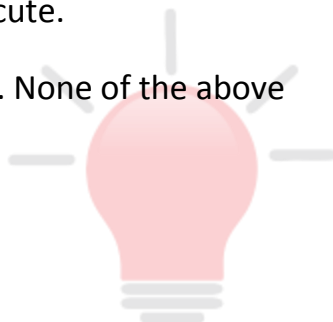
9. Why are inner lining of hot water geysers made up of copper?

- A. Copper has low heat capacity

- B. Copper has high electrical conductivity
- C. Copper does not react with steam
- D. Copper is good conductor of both heat and electricity

10. Which one of the following statements is correct?

- A. The angle of contact of water with glass is acute while that of mercury with glass is obtuse.
- B. The angle of contact of water with glass is obtuse, while that of mercury with glass is acute.
- C. Both the angle of contact of water with glass and that of mercury with glass are acute.
- D. None of the above



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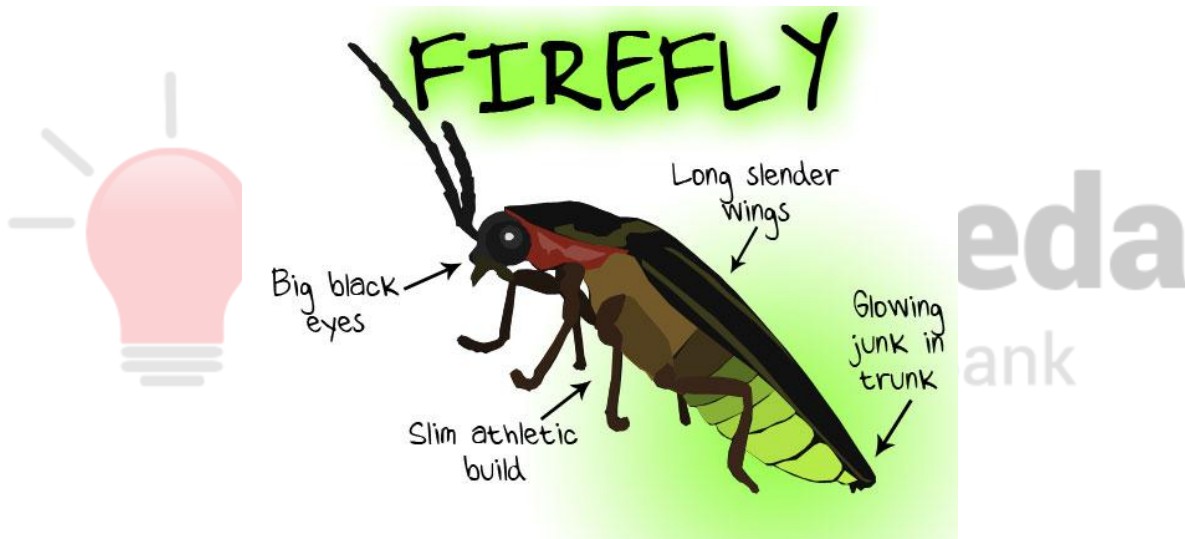
Correct Answers:

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

Explanations:

1.

Chemiluminescence is the phenomenon in which light is produced by chemical reaction. In such reaction, the energy produced is given off as light and not as heat. Fire fly gives us cold light due to chemiluminescence.



2.

As the cat falls from a height, it bends the legs to absorb the impact of falling and immediately adjust itself, as a result cat can survive even after falling from a great height in comparison to human or any other animal.

3.

In auto mobiles, convex mirror is used as a rear view mirror because convex mirror produces an erect and diminished image of a vehicle behind the automobile. Since, the image of the vehicle so formed is small in size, the field of view is increased. It means, the driver of automobile can see the traffic over large area behind his vehicle. This mirror is also known as driver's mirror.

4.

When a body is immersed in a fluid, the fluid exerts an upward force on it, which is called buoyant force. According to Archimedes' principle.

$$\text{buoyant force} = \text{weight of the displaced fluid} = V_i \rho_f g$$

Where, V_i = Volume of immersed part of body

And ρ_f = density of fluid.

So, buoyant force density of fluid.

As the density of sea water is higher than that of the fresh water, it exerts more buoyant force on ship and as a result ship will rise a little higher.

5.

By making outer walls of his house with hollow bricks. Mr X can keep inside of his house cooler in summer and warmer in winter. The hollow bricks provide thermal and sound insulations; the air in hollow of the bricks, does not allow outside heat or cold in the house. So, it keeps house cool in summer and warm in winter.

6.

The blackboard seems black because it absorbs all the light falling on it and does not reflect any colour.

7.

Boyle's law affects almost every aspect of scuba diving because it describes the role of water pressure in the dive environment. As a scuba diver ascends towards the water surface, water pressure decreases, so according to Boyle's law air in his lungs expands to occupy a greater volume.

Boyle's Law: Pressure and Volume

- Boyle's law states that for a given mass of gas at constant temperature, the volume of the gas varies inversely with pressure.
- $P_1 \times V_1 = P_2 \times V_2$
- P = pressure
- V = volume

8.

When half portion of a rectangular piece of ice is wrapped with white piece of cloth while the other half with a black one, then ice under black wrap will melt easily because dark colour (black) absorbs the majority of light energy while reflects most of it.

The more light the object absorbs, the more heat absorbed since light is energy. If you consider it a color, black absorbs the most heat. A black object absorbs all wavelengths of light and reflects none. Objects that are white, on the other hand, reflect all wavelengths of light and therefore absorb the least heat.

9.

Copper has the best electrical conductivity of any metal except silver. Copper wires allow electric current to flow without much loss of energy. Copper is also a good conductor of heat, this means that if one end of a piece of copper is heated the other end will quickly reach the same temperature. It is therefore, used in many appliances where quick heat transfer is important.

10.

The angle of contact is the angle formed by the solid surface and the tangent line to the upper surface at the end point. The angle of contact for those liquids which wet the solid is acute. It is zero for pure water and clean glass. The liquids which do not wet the solid have obtuse angle of contact.

For ordinary water and glass it is about 80° (acute angle) and for mercury and glass it is about 135° (obtuse angle).



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