

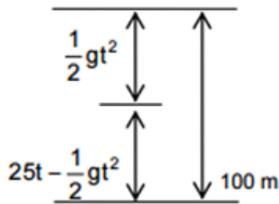
Class: 10
Subject: Science
Topic: ASK1510SUPER02
No. of Questions: 60

PHYSICS

- Q1. A body is dropped from a 100 m high cliff and at the same time another body is thrown from the ground with 25 m/s velocity in upward direction. Where the two will meet?
- (a) 50 m
(b) 40 m
(c) 20 m
(d) 10 m

Sol. (c)
$$\frac{1}{2}gt^2 + \left\{25t - \frac{1}{2}gt^2\right\} = 100$$

$$\text{Distance from ground} = 25 \times 4 - \frac{1}{2}(10)(4)^2 = 20 \text{ m}$$



- Q2. A truck and a car are moving with velocity v towards each other. They collide head in and stops after some time. If the time of collision is 1 se. which vehicle will have maximum change in momentum?
- (a) Car
(b) Truck
(c) Both will have same
(d) None of these

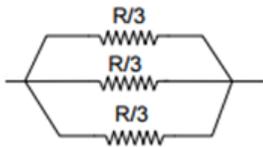
Sol. (b)

- Q3. A convex lens is made of a material ($\mu = 1.2$), both the surfaces are convex, if it is dipped in water ($\mu = 1.33$) it will behave like
- (a) Convergent lens
 - (b) Divergent lens
 - (c) A rectangular slab
 - (d) A prism

Sol. (b)
Ref. Index of medium is greater than ref. index of material of lens.

- Q4. A wire of resistance R is cut in three equal parts. If they are arranged in parallel and the equivalent resistance is R' then R/R' will be equal to
- (a) 3
 - (b) 1/3
 - (c) 9
 - (d) 1/9

Sol. (c)

$$\frac{1}{R'} = \frac{1}{R/3} + \frac{1}{R/3} + \frac{1}{R/3}$$
$$= \frac{3}{R} + \frac{3}{R} + \frac{3}{R} = \frac{9}{R} \Rightarrow \frac{R}{R'} = 9$$
$$I_{max} = ni = n \left(\frac{P}{V} \right)$$


- Q5. Several electric bulbs designed for 220V supply line are rated 10W. How many lamps can be lighted if connected in parallel with each other across the 220 V line if the maximum allowable current 5A.
- (a) 220
 - (b) 110
 - (c) 440
 - (d) 55

Sol. (b)

$$\therefore n = \frac{VI_{max}}{P} = 110$$

Q6. A body falling from rest describes distance, S_1 , S_2 and S_3 in the first, second and third seconds of its fall. Then the ratio of $S_1 : S_2 : S_3$ is :

- (a) 1 : 1 : 1
- (b) 1 : 3 : 5
- (c) 1 : 2 : 3
- (d) 1 : 4 : 9

Sol. (b)

$$S = ut + \frac{1}{2}gt^2, \quad u = 0$$

$$S = \frac{1}{2}gt^2$$

Here's is displacement.

$$\text{Distance dropped in 1}^{\text{st}} \text{ second, } S_1 = \frac{1}{2}g \times (1)^2 = \frac{1}{2}g \times 1$$

$$\text{Distance dropped in 2}^{\text{nd}} \text{ second, } S_2 = \frac{1}{2}g \times (2)^2 - \frac{1}{2}g \times (1)^2 = \frac{1}{2}g \times 3$$

$$\text{Distance dropped in 3}^{\text{rd}} \text{ second, } S_3 = \frac{1}{2}g \times (3)^2 - \frac{1}{2}g \times (2)^2 = \frac{1}{2}g \times 5$$

$$S_1 : S_2 : S_3 = 1 : 3 : 5$$

Q7. Two bodies with kinetic energies in the ratio 4 : 1 are moving with equal linear momentum. The ratio of their masses is :

- (a) 1 : 2
- (b) 1 : 1
- (c) 4 : 1
- (d) 1 : 4

Sol. (d)

$$KE = \frac{p^2}{2m}$$

$$\therefore KE \propto \frac{1}{m}.$$

- Q8. Amount of light entering into the camera depends upon:
- (a) Focal length of objective lens
 - (b) Produced of focal length & diameter of objective lens
 - (c) Distance of objective from camera.
 - (d) Aperture setting of the camera.

Sol. (d)

- Q9. A comb run through one's dry hair attracts small bits of paper. This is due to.
- (a) Comb is a good conductor
 - (b) Paper is a good conductor
 - (c) The atoms in the paper gets polarized by the charged comb
 - (d) The comb possess magnetic properties

Sol. (c)

- Q10. A wire of resistance R is stretched to twice of its original length. Its new resistance will be:
- (a) 4R
 - (b) R/4
 - (c) 2R
 - (d) R/2

Sol. (a)
 $R = \rho \ell / A$
New length $\ell' = 2\ell$
New area of cross section $A' = A / 2$
 $R' = \rho \frac{\ell'}{A'}$
 $R' = 4R$

- Q11. White colour of the cloud is due to :
- (a) Reflection of seven colors of light
 - (b) Reflection of seven colours of light
 - (c) Scattering of seven colours of light
 - (d) Absorption of seven colors of light

Sol. (c)

Large dust particles and water droplets scatter all wavelengths almost equally. Hence clouds appear white.

- Q12. An AC generator is connected to an electric appliance. In 10 revolutions of the a mature the current in
- (a) 5 times
 - (b) 10 times
 - (c) 20 times
 - (d) 40 times

Sol. (c)

- Q13. When a motorcar makes a sharp turn at a high speed, we tend to get thrown to one side because
- (a) We tend to continue in our straight line motion
 - (b) An unbalanced force is applied by the engine of the motorcar changes the direction of motion of the motorcar
 - (c) We slip to one side of the seat due to inertia of our body
 - (d) All of these

Sol. (d)
When a motorcar makes a sharp turn at a high speed, we tend to get thrown to one side because we tend to continue in our straight line motion and an unbalanced force is applied by the engine of the motorcar changes the direction of motion of the motorcar. So , we slip to one side the seat due to the inertia of our body.

- Q14. When a bus suddenly starts, the standing passengers lean backwards in the bus. It is an example of
- (a) Newton's first law
 - (b) Newton's second law
 - (c) Newton's third law
 - (d) None of Newton's law

Sol. (a)

Q15. Which of the following is the force of attraction exists between objects?

- (a) The inter molecular force of attraction
- (b) The force of buoyancy
- (c) The friction between planet and Sun
- (d) The force of attraction between objects is called the gravitational force.

Sol. (d)

The force of attraction between objects is called the gravitational force.

Q16. Buoyant force on an object due to a fluid always acts:

- (a) In the downward direction
- (b) Side ways
- (c) In the upper direction
- (d) None of these

Sol. (c)

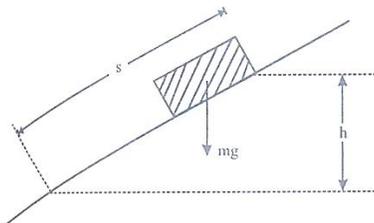
Q17. Work done by a force can be

- (a) Only positive
- (b) Only negative
- (c) Both positive and negative
- (d) None of these

Sol. (b)

Work done by a force can be both negative and positive.

Q18. The work done against gravity in moving to block a distance s up the slope is



- (a) mh
- (b) mgs
- (c) ms
- (d) mgh

Sol. (d)

- Q19. When the vibrating object moves backwards, it create a region of low pressure called
- (a) Rarefaction
 - (b) Compression
 - (c) Depression
 - (d) Hypertension

Sol. (a)
When the vibrating object moves or rarefaction is related to the number of particles of the medium in a given volume or the density of particles in the medium.

- Q20. A sound wave travels from east to west in which direction do the particles of air move?
- (a) East – West
 - (b) North – South
 - (c) Up and Down
 - (d) None of these

Sol. (a)

CHEMISTRY

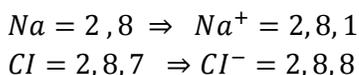
- Q21. Which of the following orders of atomic radii is correctly represented?
- (a) $B < Al < Ga$
 - (b) $B < Ga < Al$
 - (c) $Al < B < Ga$
 - (d) $B > Ga > Al$

Sol. (b)
It is due to greater screening effect in aluminum, its radii is greater than gallium.

Q22. What are the electronic configurations of Na^+ and Cl^- ions?

- (a) $\text{Na}^+ = 2, 8, 1$ and $\text{Cl}^- = 2, 8, 7$
- (b) $\text{Na}^+ = 2, 8$ and $\text{Cl}^- = 2, 8, 8$
- (c) $\text{Na}^+ = 2, 8, 2$ and $\text{Cl}^- = 2, 8, 6$
- (d) $\text{Na}^+ = 2, 8$ and $\text{Cl}^- = 2, 8, 7$

Sol. (b)



Q23. Solder is an alloy of

- (a) Cu + Zn
- (b) Pb + Sn
- (c) Pb + Sb
- (d) Cu + Sn

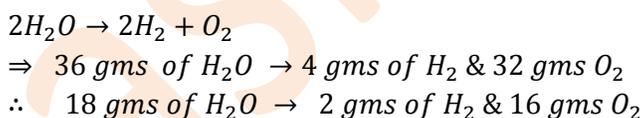
Sol. (b)

Solder is an alloy of Sn and Pb.

Q24. What mass of hydrogen and oxygen will be produced on complete electrolysis of 18 g of water?

- (a) 2g hydrogen and 32 g oxygen
- (b) 2g hydrogen and 16 g oxygen
- (c) 4 g hydrogen and 32 g oxygen
- (d) 4 g hydrogen and 14 g oxygen

Sol. (b)



Q25. Graphite is used as a lubricate in machines because it has very high melting point and also it :

- (a) Is crystalline
- (b) Has layer structure
- (c) Is a giant molecule
- (d) Is a liquid at room temperature

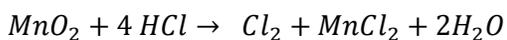
Sol. (b)

Graphite is used as a lubricant due to layer structure.

- Q26. 8.7 of pure MnO_2 is heated with an excess of HCl and the gas evolved is passed into a solution of KI . Calculate the weight of the iodine liberated ($Mn = 55, Cl = 35.5, I = 127$)
- (a) 7.77g
(b) 16.41 g
(c) 12.70 g
(d) 25.4 g

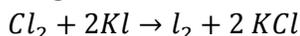
Sol.

(d)



$$87 g \rightarrow 71 g$$

$$8.7 g \rightarrow ? \quad \text{mass of } Cl_2 \text{ produced} = 7.1 g$$



$$71 g \rightarrow 254 g$$

$$7.1 g \rightarrow ?$$

$$\therefore \text{mass of } I_2 \text{ liberate} = 25.4 g$$

- Q27. The percentage of gold present in 20 carat gold is

- (a) 100
(b) 73.86
(c) 50
(d) 83.33

Sol.

(d)

$$\text{Atomic mass of gold (Au)} = 197 g (100\%)$$

$$24 \text{ carat gold} \text{ --- } 197 g (100\%)$$

$$20 \text{ carat gold} \text{ --- } ?$$

$$\therefore \text{mass of gold (Au)} = \frac{20 \times 197}{24} = 164.16g$$

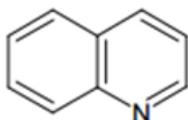
$$\% \text{ of gold present in 20 carat gold} = \frac{164.16}{197} \times 100 = 83.33\%$$

Q28. Which one of the following bases is not present in DNA?

- (a) Cytosine
- (b) Thymine
- (c) Quinoline
- (d) Adenine

Sol. (c)

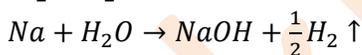
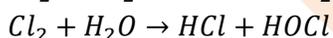
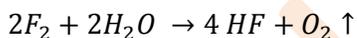
Quinoline base is not present in DNA



Q29. Which of the following evolve O_2 on treatment with water?

- (a) F_2
- (b) Cl_2
- (c) Na
- (d) P_4

Sol. (a)



P_4 doesn't react with H_2O

Q30. The number of iodine atoms present in 50 ml of a 0.1 M KI solution is

- (a) 6×10^{23}
- (b) 12×10^{23}
- (c) 3×10^{21}
- (d) 6×10^{22}

Sol. (c)

$$\text{Molarity (M)} = \frac{n}{V/(mL)} \times 1000$$

$$0.1 = \frac{n}{50} \times 1000$$

$$\therefore \text{no. of moles of KI} = 5 \times 10^{-3}$$

$$\begin{aligned} \therefore \text{No. of Iodine atoms} &= \text{No. of moles} \times 6.023 \times 10^{23} \\ &= 5 \times 10^{-3} \times 6.023 \times 10^{23} \end{aligned}$$

$$= 3.011 \times 10^{21}$$

Q31. Which of the following is a compound?

- (a) Stainless steel
- (b) Brass
- (c) Iron sulphide
- (d) Diamond

Sol. (c)
Iron sulphide (Fe_2S_3) is a compound of Iron and sulphur.

Q32. Select the one that has a defined boiling point

- (a) True solution
- (b) Compound
- (c) Colloid
- (d) All of these

Sol. (b)

Q33. Which of the following statements is incorrect for cathode rays?

- (a) They move in straight line
- (b) Their nature depends upon the nature of gas present in the discharge tube.
- (c) They cast shadow of solid objects placed in their path
- (d) They get deflected towards positive charge.

Sol. (b)

Q34. The isotopes of an element have

- (a) Same number of neutrons
- (b) Same atomic number
- (c) Same mass number
- (d) None of these

Sol. (b)

- Q35. When the gases sulphur dioxide and hydrogen sulphide mix in the presence of water, the reaction is $SO_2 + 2H_2S \rightarrow 2H_2O + 3S$. Here hydrogen sulphide is acting as
- (a) An oxidizing agent
 - (b) A reducing agent
 - (c) A dehydrating agent
 - (d) A catalyst

Sol. (b)

- Q36. A substance which oxidises itself and reduces other is known as –
- (a) Oxidizing agent
 - (b) Reducing agent
 - (c) Both of these
 - (d) None of these

Sol. (b)

- Q37. Chemical formula of baking soda is
- (a) $MgSO_4$
 - (b) Na_2CO_3
 - (c) $NaHCO_3$
 - (d) $MgCO_3$

Sol. (c)

- Q38. Plaster of Paris hardness by
- (a) $Na_2CO_3 \cdot 7H_2O$
 - (b) $Na_2CO_3 \cdot 10H_2O$
 - (c) $Na_2CO_3 \cdot H_2O$
 - (d) Na_2CO_3

Sol. (b)

- Q39. Among the following statements, the incorrect one is ____
- (a) Calamite and siderite are carbonates
 - (b) Argentite and cuprite are ores of copper
 - (c) Zinc blende and pyrites and sulphides
 - (d) Malachite and azurite are ores of copper

Sol. (b)
Cuprite (Cu_2O) and Argentite (Ag_2S)

- Q40. Which ore contains both iron and copper?
- (a) In a blast furnace
 - (b) In absence of air
 - (c) In present of air
 - (d) None of these

Sol. (c)
Among cuprite [Cu_2O], Chalcocite [Cu_2S], Chalcopyrite [CuFeS_2] and Malachite [$\text{Cu}(\text{OH})_2 \text{CuCO}_3$], only chalcopyrite is an ore which contains both Fe and Cu.

BIOLOGY

- Q41. In simple organisms, exchange of gases and excretion occur through
- (a) Osmosis
 - (b) Diffusion
 - (c) Imbibition
 - (d) All of the above

Sol. (b)

- Q42. Oxygen released during photosynthesis comes from
- (a) Water
 - (b) Carbon dioxide
 - (c) Glucose
 - (d) Dictyosomes

Sol. (a)

- Q43. Organic farming is the technique of raising crops through the use of
- (a) Manure
 - (b) Bio fertilizers
 - (c) Resistance varieties
 - (d) All of these

Sol. (d)

- Q44. Serum differs from plasma in the absence of
- (a) Fibrinogen
 - (b) Immunoglobulin
 - (c) Nutrients
 - (d) Waste products

Sol. (a)

- Q45. Muscular partition present between thorax and abdomen is
- (a) Pericardium
 - (b) Pleura
 - (c) Epiglottis
 - (d) Diaphragm

Sol. (d)

- Q46. The excretory organs in "Earthworm" is known as
- (a) Malphigian cells
 - (b) Renal cells
 - (c) Nepridia
 - (d) Flame cells

Sol. (c)

- Q47. A cell will plasmolyse, if it is placed in:
- (a) Hypertonic solution
 - (b) Hypotonic solution
 - (c) Isotonic solution
 - (d) Concentration of water molecules does not matter

Sol. (a)

- Q48. The accumulation of non – biodegradable substances in a food chain in increasing amount at each higher trophic level is known as:
- (a) Accumulation
 - (b) Eutrophication
 - (c) Pollution
 - (d) Bio magnification

Sol. (d)
The increases in concentration of non – biodegradable substance with subsequent trophic level of a food chain are called bio – magnification.

- Q49. If, in a plant, red colour of the flower is dominant over white. A cross was made between a plant containing red flower and other with white flower. The cross yielded 50% white flowered plant and 50% red flowered plant. The genotype of the parent with red flower is:
- (a) Homozygous
 - (b) Heterozygous
 - (c) Cannot be determined
 - (d) Can be homozygous or heterozygous

Sol. (b)
R = Red (Dominant)
r = white (Recessive)
Rr × rr

♀/♂	R	r
r	Rr (Red)	rr (White)
r	Rr (Red)	rr (White)

Q50. The following blood vessel does not contain deoxygenated blood:

- (a) Pulmonary artery
- (b) Vena Cava
- (c) Hepatic vein
- (d) Pulmonary Vein

Sol. (d)

Pulmonary vein carries oxygenated blood from the lungs to the left auricle of the heart

Q51. Spinal cord originates from:

- (a) Cerebrum
- (b) Cerebellum
- (c) Medulla
- (d) Pons

Sol. (c)

Spinal cord is an extension of medulla oblongata.

Q52. Photosynthesis is an important mode of autotrophic nutrition. The event which does not occur in photosynthesis is:

- (a) Conversion of light energy to chemical energy
- (b) Reduction of carbon dioxide to carbohydrate
- (c) Oxidation of carbon to carbon dioxide
- (d) Absorption of light energy by chlorophyll

Sol. (c)

During photosynthesis carbon dioxide gets reduced to carbohydrate but there is no oxidation of carbon to carbon dioxide.

Q53. Xylem and Phloem are

- (a) Parenchyma
- (b) Simple tissues
- (c) Simple permanent tissues
- (d) Complex permanent tissues

Sol. (d)

Vascular tissue is a complex found in vascular plants, meaning that it is composed of more than one cell type. The primary components of vascular tissue are the xylem and phloem. These two tissue transport fluid and nutrients internally.

Q54. Which among the following statement are true for sexual reproductive in flowering plants?

- (i) It requires two types of gametes.
 - (ii) Fertilization is a compulsory event.
 - (iii) It always results in formation of zygote
 - (iv) Offspring formed are clones.
- (a) (i) and (iv)
(b) (ii), (iii) and (iv)
(c) (iii) and (iv)
(d) (i), (iii) and (iv)

Sol. (c)

Q55. The process of detecting the input and a quick response to it is called

- (a) Impulse
- (b) Action
- (c) Sensation
- (d) Reflex arc

Sol. (d)

A reflex arc is the neural pathway that mediates a reflex action. In higher animals, most sensory neurons do not pass directly into the brain, but synapse in the spinal cord. This characteristics allows reflex actions to occur relatively quickly by activating spinal motor neurons without the delay of routing signals through the brain, although the brain will receive sensory input while the reflex action occurs.

Q56. Which one of the following does not describe formation of fossils?

- (a) Extinct species must have exist at some stage.
- (b) Bodies of organisms will decompose and be lost after their death.
- (c) Some part of the environment does not let the body or a part of it to decompose completely.
- (d) An impression of the body parts may be left on the immediate surroundings for ever

Sol. (a)

Extinct species must have existed at some stage describe evolution.

- Q57. The sequences of species through which the organic molecules in a community pass is
- (a) Pyramid or energy
 - (b) Nutrient cycle
 - (c) Food chain
 - (d) Food web

Sol. (c)

- Q58. Inflammation is the process of
- (a) Effecting swelling and pain
 - (b) Recruiting may cells to the affected tissue to kill off the diseases causing microbes.
 - (c) Activating the immune system.
 - (d) Making the specific tissues ineffective.

Sol. (d)
Non – infectious diseases do not spread in community because they are not caused by external agents or infectious agents. They are caused by internal reasons mainly due to genetic abnormalities.

- Q59. Khadins, Bundhis, Ahars and Kattas are ancient structures that are example for
- (a) Grain storage
 - (b) Wood storage
 - (c) Water harvesting
 - (d) Soil conservation

Sol. (c)

- Q60. In poultry industry, production of hatching eggs is more expensive than the production of market eggs mainly because
- (a) Cost of males and their depreciation value is high.
 - (b) Mortality among females is usually lower when they are mated with males.
 - (c) Number of eggs produced by hatchery flock is to be sold only as market eggs.
 - (d) Some of the eggs produced by hatchery flocks are not acceptable for incubation

Sol. (d)