

Class 10 Science Model Question Solution .  
Answer key :

Section A:

1. Multiple Choice Question:

a. Key:C ( Demodulator)

b. Key: D (It has cone instead of flower, seed is naked )

c. Key: A ( Organism A is unisexual organism B is hermaphrodite )

d. Key B (Parasitic )

e. Key B (  $4.002\text{m/s}^2$  )

Hint:

$$M = 6 \times 10^{24}\text{kg}$$

$$G = 6.67 \times 10^{-11} \text{ Nm}^2\text{Kg}^{-2}$$

$$(R+h) = 10000\text{km} = 10^7\text{m}$$

$$\therefore g = \frac{GM}{(R+h)^2} = 4.002\text{m/s}^2$$

f. Key: A (Density of sea water is more than river water)

g. Key: C (  $V_g < V_y < V_r > V_v$  )

h. Key: D ( Big Bang Theory )

i. Key: A ( Catalyst )

J. Key: C ( Statement and argument 1 is correct but argument 2 is incorrect )

### Section B:

#### 2. Very Short Type Questions:

a. Controlled variables are important to validate the experiment's conclusions and to make the results reliable.

b. Archimedes' principle states that, "When a body is partially or wholly immersed in a liquid (fluid), it experiences an upthrust (or apparent loss in weight) which is equal to the weight of the liquid (fluid) displaced by it."

c. The main cause of this problem is heredity.

d. Concave lenses should be used to remove this defect.

e. The direction of movement of the galvanometer needle does not change when bar magnet is placed inside the solenoid at rest.

g. The main ore of iron is hematite.

h. The mistake he made in this process is :

He connected impure copper to negative terminal of the cell and pure copper to positive terminal of the cell but the correct connection is opposite of the given.

i.

Fig. A ( Ethane )	Fig. B ( Ethene )
The hydrocarbon of Fig A is less active.	The hydrocarbon of Fig B is more active .

### Section C :

Short Answer Type Questions:

3. According to ohm's law :

$$V = I \times R$$

$$\text{or, } R = V / I$$

$$\text{or, } R = ( W / Q ) / I$$

$$\text{or, } R = W / ( Q \times I )$$

$$\text{or, } R = ( F \times d ) / ( I \times t \times I )$$

$$\text{or, } R = ( m \times a \times d ) / ( t \times I^2 )$$

$$\text{or, } R = ( \text{kg} \times \text{m} \times \text{s}^{-2} \times \text{m} ) / ( \text{s} \times I^2 )$$

∴  $R = \text{kg m}^2 \text{s}^{-3} \text{A}^{-2}$  . Proved

4. The two characteristics of amphibians are :

i. Their skin becomes moist .

ii. Their body is divided into two parts, head and back.

5. A = Male bee ( Drone Bee )

B= Female Bee ( Queen Bee )

6. The difference between somatic and sex chromosomes are :

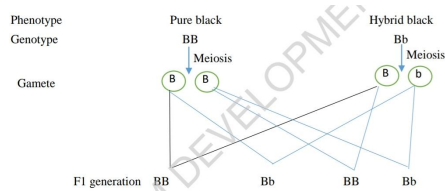
i. Somatic chromosomes reveal all the properties of the body.

Sex chromosomes determine the gender of an organism

ii. A pair of somatic chromosomes have the same structure.

A pair of sex chromosomes have the different structure.

7.



8. The possible causes of this are :

- i. Viral Infection
- ii. Bone marrow disorder / Auto immune disease.

9. Cause : Chemical drugs are cheap, easy to use .

Remedy : Aware the people about the negative effect of chemical drugs and Encourage the people to use medicinal herbs.

10. The two effects of gravity are :

- i. Falling of an objects towards centre of the earth .
- ii. Flowing of rivers from higher altitude to lowe altitude

11. Given,

Height of tower (h) = 49m

Acceleration due to gravity (g) = 9.8  
m/s<sup>-2</sup>

1st Case :

Initial velocity of first stone ( $u_1$ ) = 0  
m/s  
time taken by it to hit ground ( $t_1$ ) = ?

We know that,

$$h = u_1 \times t_1 + \frac{1}{2} \times g \times t_1^2$$
$$\text{or, } 49 = 0 \times t_1 + \frac{1}{2} \times 9.8 \times t_1^2$$
$$\text{or, } 49 = \frac{1}{2} \times 9.8 \times t_1^2$$
$$\text{or, } 49 = 4.9 \times t_1^2$$
$$\text{or, } t_1^2 = 10$$
$$\therefore t_1 = 3.16 \text{ sec}$$

2nd case :

Time taken by 2nd stone to hit ground  
( $t_2$ ) = ( $t_1 - 1$ ) = (3.16 - 1) = 2.16 sec

Initial velocity of 2nd stone ( $u_2$ ) = ?

We know that,

$$h = u_2 \times t_2 + \frac{1}{2} \times g \times t_2^2$$
$$\text{or, } 49 = u_2 \times 2.16 + \frac{1}{2} \times 9.8 \times (2.16)^2$$
$$\text{or, } 49 = u_2 \times 2.16 + 22.86$$
$$\text{or, } u_2 \times 2.16 = 49 - 22.86$$
$$\text{or, } u_2 \times 2.16 = 26.14$$
$$\text{or, } u_2 = 26.14/2.16$$

$$\therefore u_2 = 12.10 \text{ m/s}$$

Hence, the velocity with which he threw the 2nd stone is 12.10 m/s.

12. i. Step-up transformer is shown in the given figure.

ii. This type of transformer is used to transmit electricity through overhead wires with high voltage.

13. The methods to increase the rotation of the coil are :

i. The voltage should be increased.

ii. The magnetic strength should be increased.

14. The rate of chemical reaction of the conical flask C is higher than A and B.

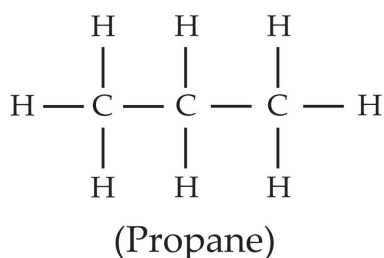
Reason:

The density and temperature of the solution is higher in C than in conical flask A and B and the surface area of the reactants in Conical flask C is also higher as reactants are in powder form. Compared to other conical flasks, the rate of collision of reactant molecules in conical flask C is higher and

when the rate of collision of molecules is higher, the rate of chemical reaction is also higher.

15. i. The IUPAC name of that compound is Propane-1,2,3-triol .

ii. The structural formula of compound formed by reacting between that compound and plenty of hydrogen is given below :



16. i. The effects seen in human health are :

a. Itchy skin Red blisters on the skin. b. Congestion in the lungs, etc.

ii. The process to ripe fruits by using traditional method is :

a. Using asura leaves wrapping in jute sack.

## Section D

Long Answer Type Questions:



17. i. The blog describes digital technology.

ii. The two disadvantages of it are :

a. For people who are busy online, there is a change in the way they interact with each other.

b. Crimes caused by social media affect personal, family and social life.

iii. The one use of AI in the technology mentioned above is :

1. Intelligent Tuition / Virtual Learning Environment / Smart Materials .

18. i. Dolly is identical to the sheep 1.

ii. " a very small piece" means cell .

iii. Yes to the first and No to the second.

19. The two symptoms of high blood pressure are :

a. Headache, shortness of breath.

b. Sweating, laziness ,etc

The two preventive measures are :

a. You should only eat less fatty foods and salt.

b. Do not smoke or drink alcohol.

20. i. The special property of water shown in the picture is called anomalous expansion of water.

ii. When water is heated from  $0^{\circ}\text{C}$  to  $4^{\circ}\text{C}$ , its density increases and when it is heated from  $4^{\circ}\text{C}$  to  $10^{\circ}\text{C}$ , its density decreases. Water has the highest density at  $4^{\circ}\text{C}$ .

iii. The one effect of this special property of water is :

a. water pipes can burst in winter.

21. i.

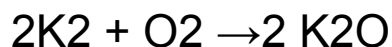
Convex lens	Concave lens
Convex lens are thicker at the center .	Concave lens are thinner at the center.
Their power is positive .	Their power is negative .

ii. The speed of light in air is higher ( $3 \times 10^8$  m/s) and the speed of light in glass is lower ( $2 \times 10^8$  m/s). A medium in which the speed of light is higher is called a denser medium and a medium in which the speed of light is lower is called a denser medium. So, air is rarer medium and glass is denser medium.

22 i. Element A belongs to group IA of the periodic table.

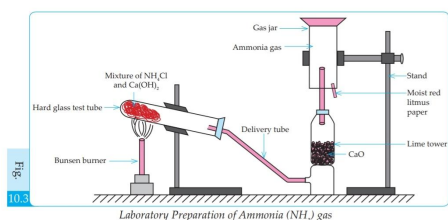
ii. Element B belongs to period 2nd of the periodic table.

iii. The molecular formula of compound formed by combination of A and B element is  $K_2O$ .



iv. Element B is kept in the p block of the periodic table because its last electron is in the p subcell.

23.



Test of ammonia gas:

i. When a moist red litmus paper is inserted in the gas jar containing ammonia, the litmus turns into blue because ammonia is basic in nature.



ii. Ammonia gas can be identified from its strong pungent odour.

iii. White fumes of Ammonium chloride ( $\text{NH}_4\text{Cl}$ ) are formed when a glass rod dipped in conc. Hydrochloric acid is kept in the gas jar containing ammonia gas.



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