

# FIITJEE

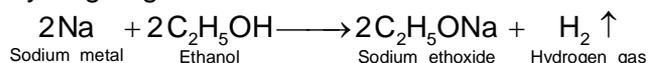
## MOCK TEST

for Class X<sup>th</sup>

Set - II

### SCIENCE (CBSE) SOLUTIONS

1. Hydrogen gas is evolved with the formation of sodium ethoxide.



2.  $P = \frac{1}{f(\text{meter})} \Rightarrow \frac{1}{-0.20} = -5D$

3.  $P = \frac{1}{f(\text{meter})} \Rightarrow \frac{1}{0.40} = +2.5D$

4.  $P = P_1 + P_2 \Rightarrow (+4.5) + (-2.5) \Rightarrow +2 D$

5.  $f = \frac{1}{P} = \frac{1}{2} \Rightarrow +0.5\text{m}$

6. A

7. C

8. Two neutral oxides are  
Carbon monoxide (CO) and Nitrous oxide(N<sub>2</sub>O)

9. D

10. D

11. Haemoglobin

12. Low hemoglobin levels

13. Anemia is usually caused by blood loss, but can also be due to poor absorption of iron.

14. Bright red

15. A

16. B

Metallic character decrease along a period & increase down the group

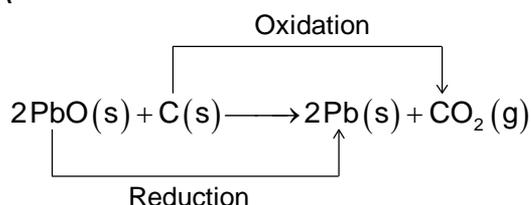
$P < Si < Be < Mg < Na$

Noble gases have stable configuration and they are gases at room temperature.

17. C

The indigestion is due to excess of acid produced in the stomach. The medicine used to neutralise it is called antacid.

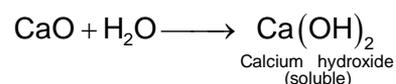
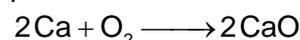
18. A



19. D

20. A

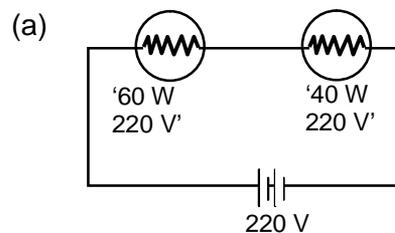
Calcium(Ca) combines with oxygen to form calcium oxide(CaO) with very high melting point. It dissolves in water to form calcium hydroxide.



21. (a) Energy =  $P \times t = 500 \times 4 = 2000 \text{ wh} \Rightarrow 2 \text{ kwh}$

(b) Difference in temperature of the upper and lower layer of the ocean is used as a source of energy to produce electricity. It is called ocean thermal energy.

OR



$$(b) R_1 = \frac{v^2}{P} = \frac{(220)^2}{60}$$

$$R_2 = \frac{(220)^2}{40}$$

$$R_{\text{eq}} = R_1 + R_2 = \frac{(220)^2}{60} + \frac{(220)^2}{40}$$

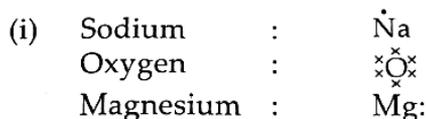
$$R_{eq} = (220)^2 \left( \frac{100}{2400} \right)$$

$$R_{eq} = \frac{(220)^2}{24} \Omega$$

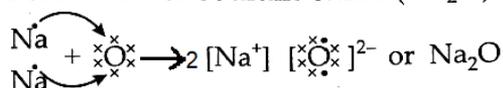
$$\text{Current} = \frac{V}{R} = \frac{220}{(220)^2} \times 24 = \frac{24}{220} = 0.109 \text{ A}$$

(c) Total energy for 1 hour =  $(i)^2 R_{eq} \times t$   
 $= \left( \frac{24}{220} \right)^2 \times \frac{(220)^2}{24} \times 60 \times 60 = 86400 \text{ J}$

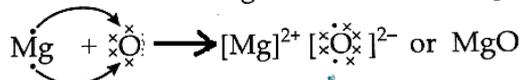
22.



(ii) Formation of sodium oxide ( $\text{Na}_2\text{O}$ )



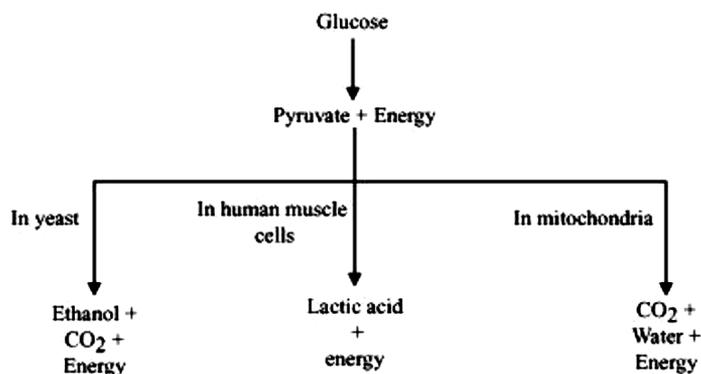
Formation of magnesium oxide ( $\text{MgO}$ )



(iii)  $\text{Na}_2\text{O}$  :  $\text{Na}^+$  and  $\text{O}^{2-}$  ions

$\text{MgO}$  :  $\text{Mg}^{2+}$  and  $\text{O}^{2-}$  ions

23.



24. We acquire knowledge and skills in our lifetime such as learning dance, music, physical fitness, etc. But these skills cannot be passed to our progeny because:

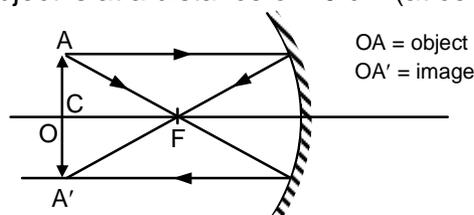
- Such characters or experiences acquired during one's lifetime do not bring any change in the DNA of the germ cell.
- Only germ cells are responsible for passing on the characters from the parents to the progeny.

25.

Test	Ethanol	Ethanoic acid
(i) Litmus test	No effect	Turns blue litmus red
(ii) Sodium metal test	$\text{H}_2$ gas evolved	$\text{H}_2$ gas evolved
(iii) Sodium bicarbonate test	No reaction	Brisk effervescence due to the evolution of $\text{CO}_2$

25. (a) Solution D is neutral (pH = 7)  
 (b) Solution C is strongly alkaline (pH = 11)  
 (c) Solution B is strongly acidic (pH = 1)  
 (d) Solution A is weakly acidic (pH = 4)  
 (e) Solution E is weakly alkaline (pH = 9)  
 (f) pH in the increasing order of hydrogen ion concentration:  
 pH = 11 < pH = 9 < pH = 7 < pH = 4 < pH = 1

26. (i) Concave mirror  
 (ii) Real, inverted, same size as the object.  
 (iii) Object is at a distance of 40 cm (at centre of curvature)  
 (iv)



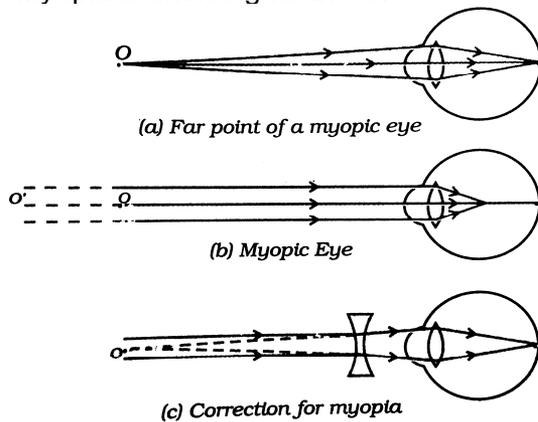
27.

Biodegradable wastes	Non-biodegradable wastes
1. These wastes can be broken down into non-poisonous	1. These wastes cannot be broken down into harmless substances by any biological processes.
2. Biodegradable substances change their form and structure over time and become harmless.	2. Non-biodegradable substances remain unchanged over a long period of time.
3. They do not pollute the environment.	3. Some of them remain inert and begin to accumulate in our surroundings, while others cannot be made less toxic easily and hence keep on polluting the environment.

28. A student should incorporate the following changes in his/her life-style to move towards a sustainable use of available resources:  
 (i) Prevent the cutting of trees and promote the planting of trees  
 (ii) Stop using plastic and polythene bags for carrying goods  
 (iii) Use recycled paper  
 (iv) Throw biodegradable and non-biodegradable wastes into separate bins  
 (v) Waste minimum amount of water while using and repair leaking taps  
 (vi) Promote rainwater harvesting.

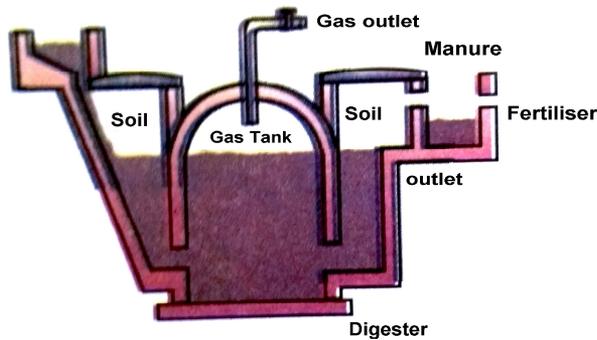
29. (a)  $2\text{KBr}(\text{aq}) + \text{BaI}_2(\text{aq}) \longrightarrow 2\text{KI}(\text{aq}) + \text{BaBr}_2(\text{s}) \rightarrow$  Double displacement reaction  
 (b)  $\text{ZnCO}_3(\text{s}) \longrightarrow \text{ZnO}(\text{s}) + \text{CO}_2(\text{g}) \rightarrow$  Decomposition reaction  
 (c)  $\text{H}_2(\text{g}) + \text{Cl}_2(\text{g}) \longrightarrow 2\text{HCl}(\text{g}) \rightarrow$  Combination reaction  
 (d)  $\text{Mg}(\text{s}) + 2\text{HCl}(\text{aq}) \longrightarrow \text{MgCl}_2(\text{aq}) + \text{H}_2(\text{g}) \rightarrow$  Displacement reaction

30. Myopia is short sightedness.



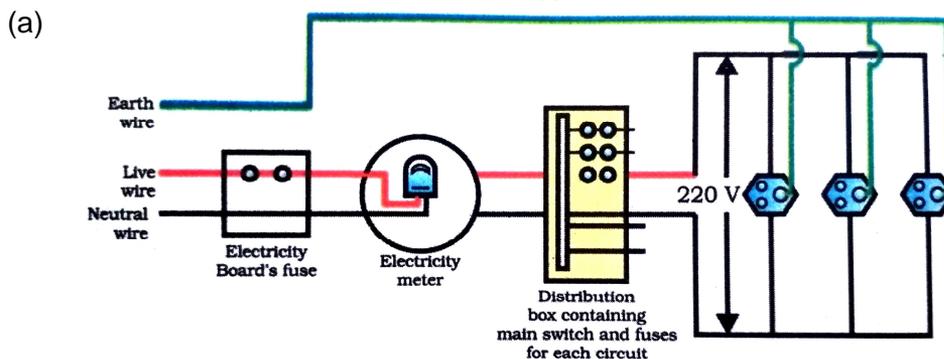
31. (a) Limitations

- (i) Wind speed is not same every place
  - (ii) Wind speed is not uniform all over the year. Minimum wind velocity required is  $15 \text{ km h}^{-1}$ .
  - (iii) Wind energy cannot be used to operate all types of machines.
  - (iv) High level of maintenance is required.
- (b)



Schematic diagram of a bio-gas plant

OR



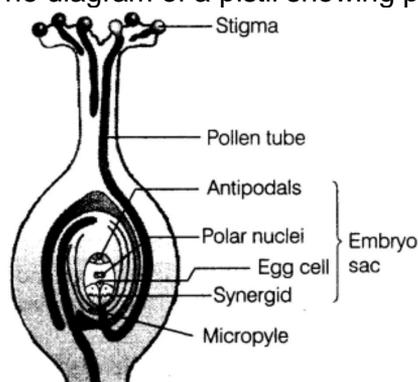
A schematic diagram of one of the common domestic circuits

- (b) It should be connected in live wire.
  - (c) Overloading can occur when the live wire and the neutral wire come into direct-contact.
- In such a situation, the current in the circuit abruptly increases. This is called short-circuiting.

32. (a) The chemical reactions which occur with the evolution of heat are called exothermic reactions.  
For example  
 $C(s) + O_2(g) \longrightarrow CO_2(g) + \text{Heat}$   
 $2H_2(g) + O_2(g) \longrightarrow 2H_2O(l) + \text{Heat}$   
The chemical reactions which occur with the absorption of heat are called endothermic reactions for example  
 $N_2(g) + O_2(g) + \text{Heat} \longrightarrow 2NO(g)$   
 $2NH_3(g) + \text{Heat} \longrightarrow N_2(g) + 3H_2(g)$
- (b) (i) Silver reacts with sulphide in air and forms undesirable compounds on their surface and thus it tarnishes and gets black coating.  
(ii) Silver sulphide( $Ag_2S$ )  
(iii) Toothpaste contains traces of hydrogen peroxide which reacts with  $Ag_2S$  formed on the surface and restores whiteness.

33. Pollination: It is a type of asexual reproduction in which the pollen grains are transferred from the anther of a stamen to stigma of a carpel. Pollination is of two types:  
(a) self-pollination  
(b) cross pollination  
Fertilisation is a mode of sexual reproduction in which the male gamete is fused with the female gamete to form zygote. This process occurs in both plants and animals. There are two types of fertilization which are as follows:  
(a) External fertilisation  
(b) Internal fertilisation

The diagram of a pistil showing pollen tube growth into the ovule is as follows:



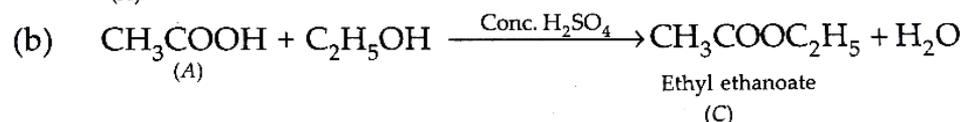
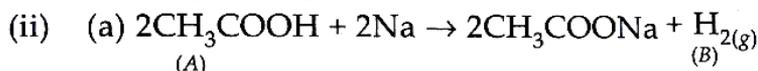
**OR**

Role of human male reproductive system is as follows:

- (i) Testis: These are the main reproductive part in male reproductive system and the formation of germ-cells or sperms takes place in testis. These are located outside at the abdominal cavity in Scrotum due to low temperature requirement than the body temperature for the sperm formation. These are responsible for secretion of hormone known as testosterone.
- (ii) Seminal Vesicles: These are the glands which add their secretions so that sperms are now in a fluid and can be easily transported and this fluid also provides nutrients.
- (iii) Vas deferens: The sperms are delivered through vas deferens which unites with a tube coming from the urinary bladder.

- (iv) Ureter: These are a pair of long, narrow, thin walled and tubular structure which starts from kidneys and open in urinary bladder. These are responsible for conducting urine from kidneys to urinary bladder.
- (v) Prostate gland: These are the glands which along with seminal vesicles, add their secretions so that sperms are now in a fluid and can be easily transported and this fluid also provides nutrients.

34. (i) A : CH<sub>3</sub>COOH, Ethanoic acid  
 B : H<sub>2</sub>  
 C : CH<sub>3</sub>COOC<sub>2</sub>H<sub>5</sub>, Ethyl ethanoate



OR



It is used in hospitals as a plaster to support fractured bones in the right position

- (b) Washing soda: Na<sub>2</sub>CO<sub>3</sub>·10H<sub>2</sub>O It is obtained by heating baking soda.



Uses: It is used in the manufacture of glass, soap and paper

- (c) HCl – Strong Acid, KOH – Strong Base

35. (a) Photosynthesis  
 (b) i. Absorption of light energy by chlorophyll.  
 ii. Conversion of absorbed light energy to chemical energy and formation of oxygen and hydrogen from water.  
 iii. Reduction of absorbed carbon-dioxide to form glucose later stored as starch (carbohydrate).  
 (c) Atmospheric nitrogen which is made available into simple nitrogen atoms by lightning and high-energy solar radiation splitting the molecular nitrogen into two simple atoms and Nitrogen present in the soil as a result of nitrogen fixation by various microorganisms.
36. (a) In parallel combination, all three bulbs glow with same brightness as potential difference is same for all.  
 But in series combination all three bulbs glow with same brightness but not as bright as in the parallel combination.  
 (b) In parallel combination even after fuse, the other two bulbs will glow.  
 In series combination, none of the bulbs will glow after fuse as the circuit breaks.