

**COMMON PRE-BOARD EXAMINATION 2017-2018**  
**SCIENCE-MARKING SCHEME**

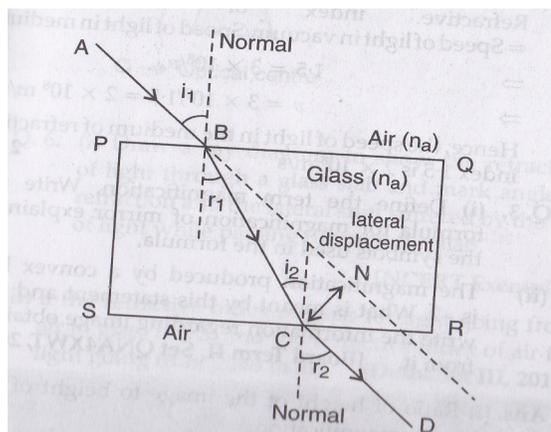
CLASS: X

Maximum Marks: 80

## SECTION A

- |   |  |        |
|---|--|--------|
| 1 | Mucus secreted by the inner lining of the stomach protects the wall .  | 1      |
| 2 | Saliva is the first digestive juice produced by the salivary glands.<br>Saliva contains amylase or ptyalin for digesting starch into sugar.  | ½<br>½ |
| 3 | Zinc reacts with sodium hydroxide to form sodium zincate and hydrogen gas is liberated.<br>$Zn + 2 NaOH \longrightarrow Na_2ZnO_2 + H_2$<br>Main product: sodium zincate ( $Na_2ZnO_2$ ) | 1<br>1 |
| 4 |  | 1      |

The emergent ray CD is parallel to the incident ray AB, but it has been laterally displaced by a perpendicular to the incident ray.



- |   |   |   |
|---|---|---|
| 5 | (i) Availability of the special grade silicon for making solar cells is limited.  | 1 |
|   | (ii) The process of manufacture is expensive, silver used for interconnections of the cells in the panel further adds to the cost.          | 1 |
| 6 | Situation in which live and neutral wire come in direct contact, abruptly increasing the current in the circuit is called short circuiting. | 1 |
|   | $P = 1.5 \times 1000W = 1500 W$   | 1 |

$$P = VI$$

$$I = \frac{P}{V}$$

$$= \frac{1500}{220} = 6.8 \text{ A} \quad 1$$

Electric current required 6.8 A is more than the current rating of the circuit. i.e 5A. Hence the fuse will melt and the electric motor will stop working.

OR 1

(i) Due to change in magnetic flux linked with the coil, the galvanometer shows deflection towards the right. 1

(ii) Due to change in magnetic flux linked with the coil, the galvanometer shows deflection towards left. 1

(iii) As it is stationary, no change in magnetic flux linked with coil, so galvanometer shows no deflection. 1

7 2

(I)  $I = \frac{Q}{t}$

$$W = VQ$$

$$W = VIt$$

From ohm's law

$$V = IR$$

$$W = I^2Rt$$

Energy supplied to the circuit gets dissipated in the form of heat

$$H = I^2Rt$$

(II) Electric fuse, Electric water heater. 1

8 Study of homologous organs-Homologous - Organs which have the same basic structural design and origin but perform different functions. They are inherited from a common ancestor 1

Study of fossils-These are the dead remains or impressions of organisms. Comparing their organ structure with present day organisms will also enable us to trace evolutionary relationship. 1

Comparing DNA-This will give us a direct estimate of how much the DNA has changed during the formation of these species.

9 a) i. Genetic drift-Random change in gene frequency by chance. 1/2

ii. Geographical isolation leads to Reproductive isolation 1/2

iii. Natural selection-Selection of the fittest by the nature itself. 1/2

b) Homologous - Organs which have the same basic structural design and origin but perform different functions. 1

Fore limbs of a human and a frog/or any other suitable example 1/2

OR

The sudden, Unconscious, involuntary and automatic responses of muscles or glands to a stimulus. Removal of hand from hot objects/thorns or other examples. Controlled by spinal cord. (1+1+1)

10 A-Seminal vesicle B- Prostate gland C- Testis D- Scrotum 1/4 x4=1

A & B-Secretes a fluid for transport and nourishment of the sperm 1

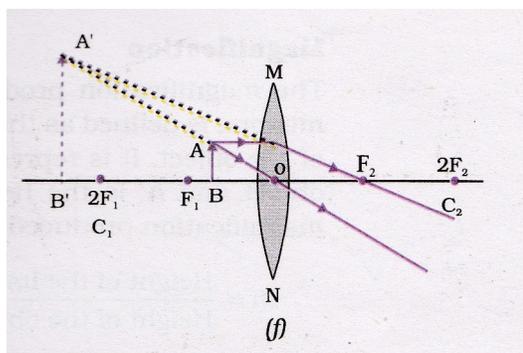
D-Helps to keep the testes at lower temperature for the production of sperms 1

- 11 a) This is a procedure used on patients whose kidneys have got damaged. In this process blood of the patient is allowed to pass through the long cellulose tubes dipped in a tank containing dialysing solution having same ionic concentration as plasma. 1  
 b) Diffusion 1  
 c) Love for mankind/Humanity or any other suitable answer. 1

- 12 Image with magnification -1 means image is inverted and of the same size. Therefore, object is at 2F and the image is also at 2F on the other side of the lens. 1  
 Therefore, distance between the object and its image is  $4f = 60$  cm  
 $f = 15$  cm

Object distance  $2f = 30$  cm, if the object is shifted towards the lens by 20 cm, the new object distance =  $30$  cm -  $20$  cm =  $10$  cm.

The distance is less than the focal length, and the image formed in this case would be virtual, erect and will form on the same side as the object.



- 13 a) NCERT activity 2.9 page 23 2  
 b)  $\text{HCl} + \text{H}_2\text{O} \longrightarrow \text{H}_3\text{O}^+ + \text{Cl}^-$  1

OR

Mendeleev's periodic table	Modern periodic table
1. Periodic law states that : properties of elements are the periodic functions of their atomic mass. 2. There are 8 groups and 6 periods. 3. No specific position for hydrogen. 4. Placing isotopes was a challenge.	1. Periodic law: properties of elements are the periodic functions of their atomic number. 2. There are 18 groups and 7 periods. 3. Separate position for hydrogen. 4. Isotopes could be easily placed.

$\frac{1}{2} \times 6 = 3$

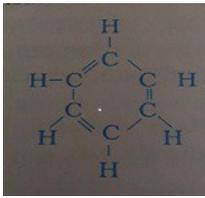
\* Any three points.

- 14 a) i) By chlor - alkali process: electrolysis of sodium chloride (brine) 1  
 $2\text{NaCl} + 2\text{H}_2\text{O} \longrightarrow 2\text{NaOH} + \text{Cl}_2 + \text{H}_2$   
 ii)  $\text{NaCl} + \text{H}_2\text{O} + \text{NH}_3 + \text{CO}_2 \longrightarrow \text{NaHCO}_3 + \text{NH}_4\text{Cl}$   
 b) Sodium hydroxide: soap detergent industry, de-greasing metals, paper making, artificial fibre. (Any two). 1  
 Baking soda: soda acid fire extinguisher, antacids, for baking cake (any two). 1

15

a) C<sub>6</sub>H<sub>6</sub>

1/2

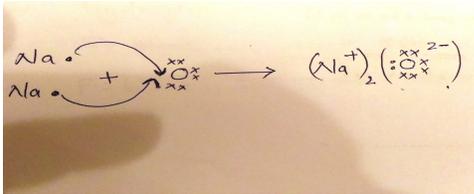


1/2

b) Na - 2,8,1

O - 2,6

1/2



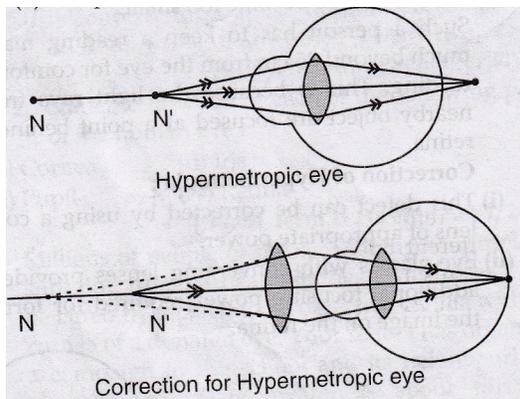
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Type of bond – ionic bond

1/2

16 (a) The person is suffering from hypermetropia.

1



2

Two possible causes

(a) Greater focal length of the lens.

(b) Eyeball becoming smaller

Use convex lens of focal length

U = -25 cm

V = -50 cm

$$\frac{1}{f} = \frac{1}{-50} - \frac{-1}{25}$$

f = 50 cm

P = 2D is required.

(b) Eye donation advertisements are important as:

(i) They make the people aware about donation of organs after their death.

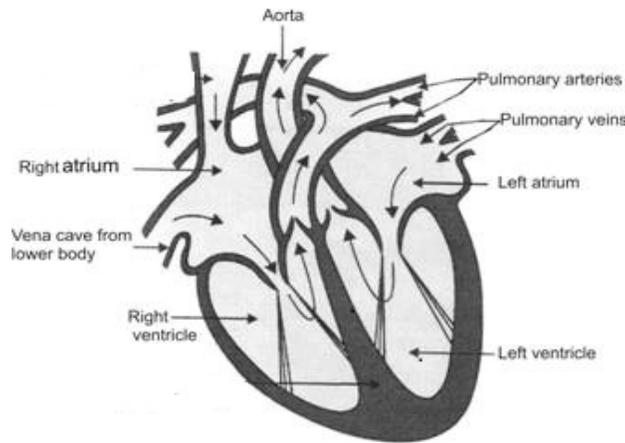
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1

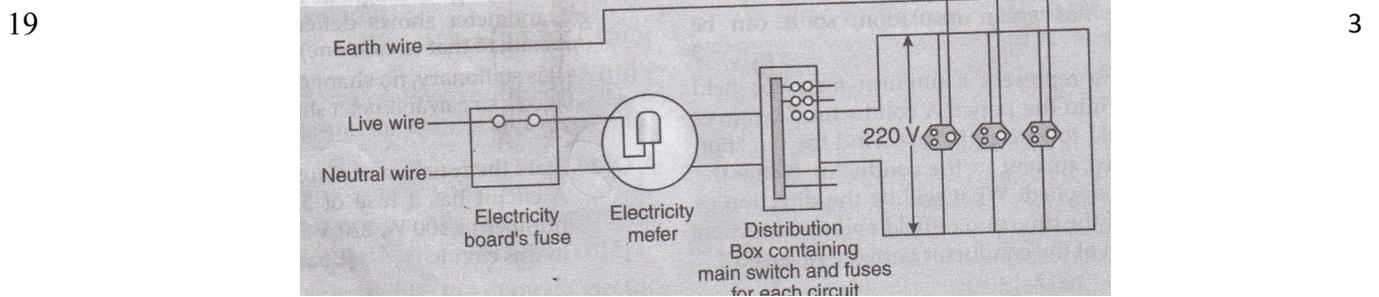
(ii) Sympathetic nature towards others.

- 17 a) Eating away of metals by the action of air, water or chemicals. 1  
 b) Silver forms silver sulphide, black colour coating  $\frac{1}{2} \times 2 = 1$   
 Iron reacts with air and moisture to form hydrated iron oxide (rust)  
 c) Painting, greasing, galvanizing, alloying, anodizing (any two)  $\frac{1}{2} \times 2 = 1$   
 d) Brass: Cu and Zn      solder : Pb and Sn 1+1=2
- 18 a) The timing and amount of hormone released are regulated by feedback mechanisms. If the sugar levels in blood rise, they are detected by the cells of the pancreas which respond by producing more Insulin. As the blood sugar level falls, insulin secretion is reduced and glucagon increases. 3  
 b) Medulla - Blood pressure and salivation or any two suitable answer 1  
 c) Cerebellum - Posture and balance of the body or any two suitable answer 1

OR



Muscular organ - 4 chambers - Right and left auricles, Right and left ventricles. 3  
 Venacava - Carries impure blood from upper and lower body parts - Pulmonary arteries -  
 Pulmonary veins - Aorta or great artery



- (b) (i) It prevents damage to appliance due to overloading or short circuiting. 1  
 (ii) Earth wire is connected to a metallic body buried deep inside the earth. 1  
 It is used as a safety measure. It provides a low resistance conducting path for the current 1

. Any leakage of current to a metallic body does not give shock to user.

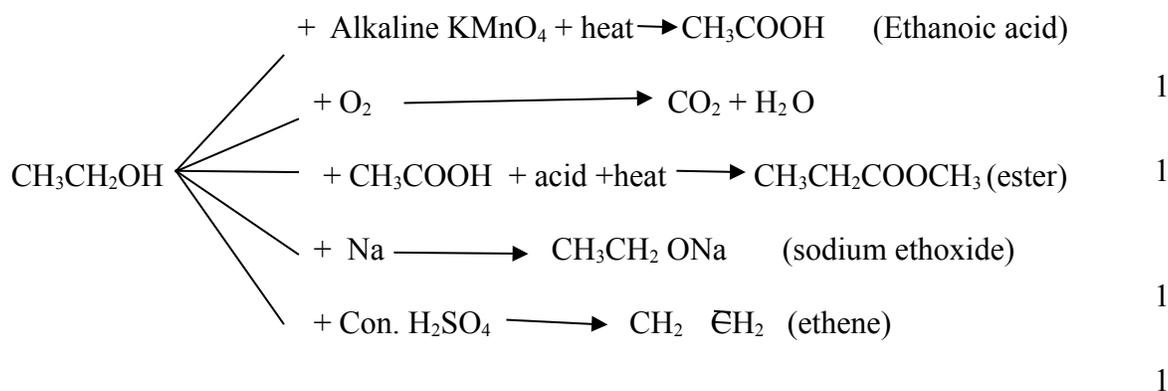
20 a) On an average, only 10% of the food available to a trophic level is transferred to the next trophic level. Since the amount of available energy keeps on becoming less as we move to higher trophic levels, so very little usable amount of energy remains after four trophic levels. So a food chain consists of 4-5 trophic levels 2

b) i). Social problems – Displaces large number of peasants and tribals 1

ii) Economic problems- Swallow up huge amount of public money without the generation of proportionate benefits 1

iii) Environmental problems- Loss of biodiversity 1

21 Complete the reaction and name the major products obtained. 1



### SECTION B

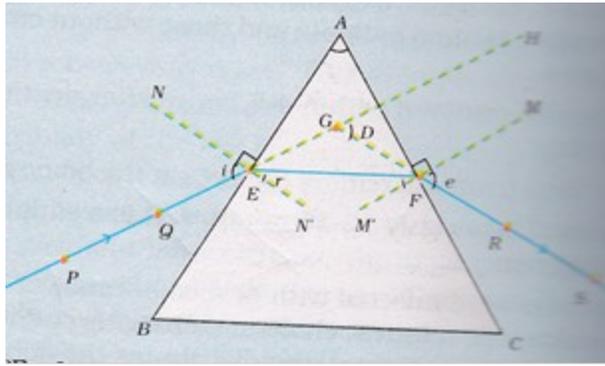
22 KOH solution helps to absorb  $\text{CO}_2$ . So not able to produce vacuum in the conical flask- No change in the initial water level. 1+1=2

23 Green colour Ferrous sulphate changes to colourless due to the formation of aluminum sulphate. As aluminum is more reactive than iron. 1+1=2

24 i) A) Micropyle B) Cotyledons C) Radicle 1 ½  
 ii) Provide nourishment to the growing embryo ½

25 Vinegar contains acetic acid. 1  
 Vinegar reacts with sodium carbonate to form salt, carbon dioxide and water. It's acidic in nature. 1

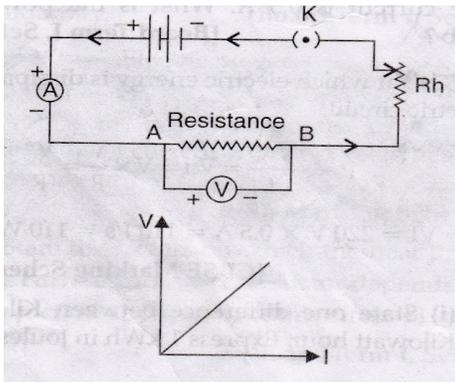
26



27 Ohm's law states that physical conditions remaining the same, the current flowing through a conductor is directly proportional to the potential difference across its two ends. 1

$$V=IR$$

R is the resistance of the conductor



1

OR

(a)The ammeter reading will decrease (becomes half).This is because with the increase in length, resistance of the circuit increases, hence current decreases. 1

(b)The ammeter reading will increase (becomes two times). This is because as area increases, resistance decreases and hence current increases.

1

