

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

CLASS: X

Maximum Marks: 80

## SECTION A

- 1 Sporangium 1
- 2 Mucus secreted by the inner lining of the stomach protects the wall . 1
- 3 Zinc reacts with sodium hydroxide to form sodium zincate and hydrogen gas is liberated. 1  

$$\text{Zn} + 2 \text{NaOH} \longrightarrow \text{Na}_2\text{ZnO}_2 + \text{H}_2$$
 Main product: sodium zincate (  $\text{Na}_2\text{ZnO}_2$ ) 1
- 4  $U = -20\text{cm}$ ,  $R = 30\text{cm}$  1  

$$F = \frac{R}{2} = 15 \text{ cm}$$
  $\frac{1}{2}$   
 Using mirror formula  

$$\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$$
  $\frac{1}{2}$   

$$v = \frac{60}{7} \text{ cm}$$
  
 The image will be formed at a distance of  $\frac{60}{7}$  cm behind the mirror.  $\frac{1}{2}$   
 Nature of the image is virtual and erect.  $\frac{1}{2}$
- 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  

$$P = 1.5 \times 1000\text{W} = 1500 \text{ W}$$
  

$$P = VI$$
  

$$I = \frac{P}{V}$$
 1  

$$= \frac{1500}{220} = 6.8 \text{ A}$$
  
 Electric current required 6.8 A is more than the current rating of the circuit. ie 5A. Hence the fuse will melt and the electric motor will stop working. 1

OR

- (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
- (I)  $I = \frac{Q}{t}$  2
- $W = VQ$   
 $W = VIt$   
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
- 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
- 9
- a) i) As we move from left to right tendency to lose electron decreases due to increased nuclear pull. 1
- ii) Down the group tendency to lose electron increases as number of shells increases and nuclear pull decreases. 1
- b) modern periodic law - properties of elements are the periodic functions of their atomic number. 1

OR

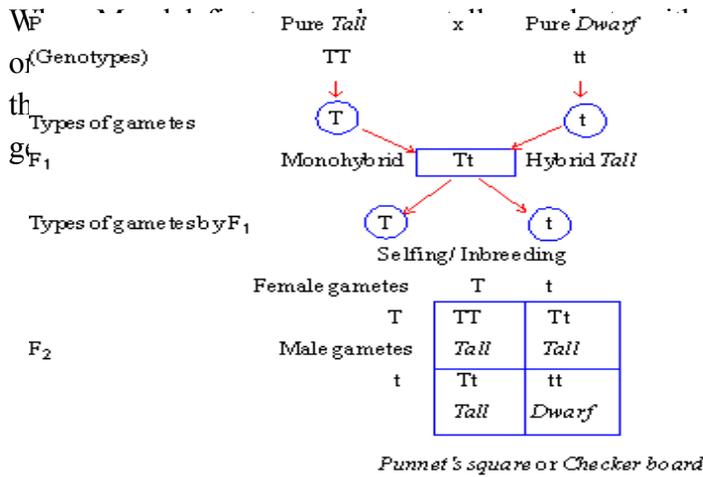
Mendeleevs periodic table	Modern periodic table
1. Periodic law states that : properties of elements are the periodic functions of their atomic mass. 2. There are 8 groups and 6 periods. 3. No specific position for hydrogen. 4. Placing isotopes was a challenge.	1. Periodic law: properties of elements 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.

½ x6=3

\* Any three points.

- 10 A-Seminal vesicle B- Prostate gland C- Testis D- Scrotum ¼x4=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



are dwarf pea plants he found that both tall and dwarf plants in  $F_2$

3

When Mendel first crossed pure tall pea plants with pure dwarf pea plants he found that only tall plants were produced in the first generation. No dwarf pea plants were obtained in the  $F_1$ . When  $F_1$  were self pollinated, Mendel got both tall and dwarf plants in  $F_2$  generation in 3:1

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)

12

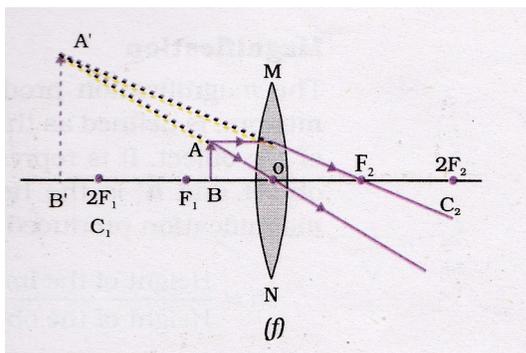
Image with magnification -1 means image is inverted and of the same size. Therefore, object is at  $2F$  and the image is also at  $2F$  on the other side of the lens.

Therefore, distance between the object and its image is  $4f = 60$  cm

$$f = 15 \text{ cm}$$

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



1

1

1

- 13 a) i. Genetic drift-Random change in gene frequency by chance. ½  
 ii. Geographical isolation leads to Reproductive isolation ½  
 iii. Natural selection-Selection of the fittest by the nature itself. ½  
 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 ½
- 14 a) i) by chlor - alkali process: electrolysis of sodium chloride(brine) 1  

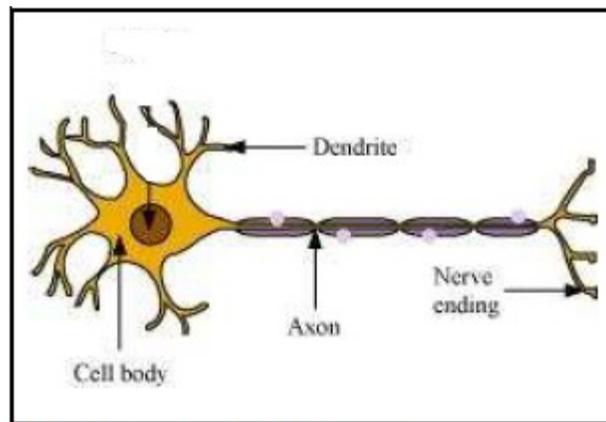
$$2\text{NaCl} + 2\text{H}_2\text{O} \longrightarrow 2\text{NaOH} + \text{Cl}_2 + \text{H}_2$$
  
 ii)  $\text{NaCl} + \text{H}_2\text{O} + \text{NH}_3 + \text{CO}_2 \longrightarrow \text{NaHCO}_3 + \text{NH}_4\text{Cl}$  1  
 b) Sodium hydroxide: soap detergent industry , de-greasing metals, paper making, artificial fibre. (Any two). 1  
 Baking soda : soda acid fire extinguisher, antacids, for baking cake(any two). 1
- 15 a. metal carbonates react with acids to form salt, water and carbon dioxide 1  

$$\text{Na}_2\text{CO}_3 + \text{HCl} \longrightarrow \text{NaCl} + \text{CO}_2 + \text{H}_2\text{O}$$
  
 b. by passing the gas formed through lime water, lime water turns milky 1  

$$\text{CO}_2 + \text{Ca}(\text{OH})_2 \longrightarrow \text{CaCO}_3 + \text{H}_2\text{O}$$
  
 When excess carbon dioxide is passed it becomes colourless due to the formation of calcium bi carbonate which is water soluble. 1  

$$\text{CaCO}_3 + \text{H}_2\text{O} + \text{CO}_2 \longrightarrow \text{Ca}(\text{HCO}_3)_2$$
 1
- 16 (a) No, a magnetic field exerts a force only on moving charges. 1  
 (b) The direction of force depends on the direction of current and direction of magnetic field. 1  
 (c) The force is maximum when the direction of current is at right angles to the direction of magnetic field. 1  
 (d) Fleming's Left Hand Rule. 1  
 According to this rule-“Stretch the thumb, forefinger and middle finger of your left hand such that they are mutually perpendicular to each other. 1  
 If the first finger points in the direction of magnetic field and the middle finger in the direction of current, then the thumb will point in the direction of motion or the force acting on the conductor”. 1
- 17 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. 2  
 So a food chain consists of 4-5 trophic levels 1
- 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

18 a)



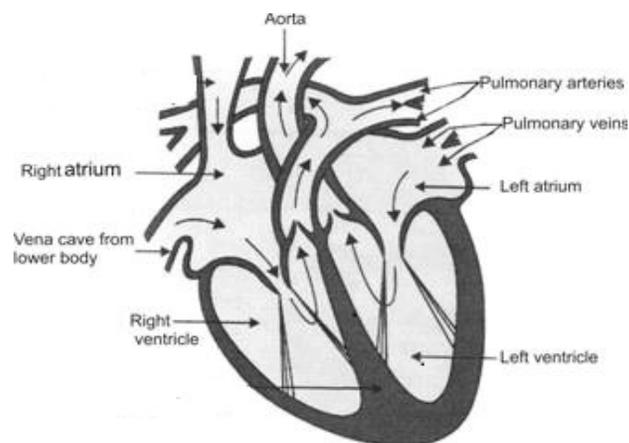
2

**Structure of a neuron**

b) A hormone called auxin is synthesised at the shoot tip to help the cells to grow longer. When light comes from one side, auxin diffuses towards the shady side of the shoot. This concentration of auxin stimulates the cells to grow longer on the side of the shoot which is away from light and the plant appears to bend towards the light.

OR

$\frac{1}{4} \times 8 = 2$

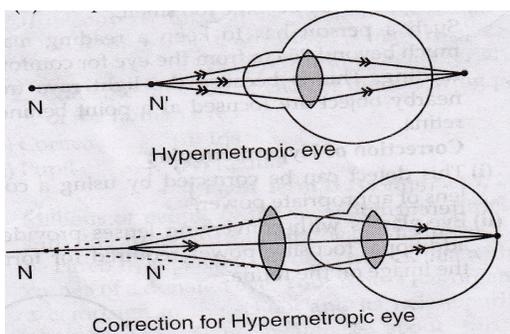


3

Muscular organ-4 chambers -Right and left auricles, Right and left ventricles. Valves-  
Functions-Septum

Venacava-Carries impure blood from upper and lower body parts-Pulmonary arteries-  
Pulmonary veins-Aorta or great artery

19



(a)The person is suffering from hypermetropia. |

1

2

Two possible causes

(a)Greater focal length of the lens.

(b)Eyeball becoming smaller

1

Use convex lens of focal length

U=-25 cm

V=-50 cm

$$\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$$

f=50 cm, P= 2 D is required

(b)Eye donation advertisements are important as:

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

1

(ii)Sympathetic nature towards others

20

a.Homologous series: a series of compounds in which the same functional group substitutes hydrogen in a carbon chain and with a difference of  $-\text{CH}_2$  unit between two consecutive members.

1

b.Chemical property remains same in a homologous series. Physical properties increase due to the increase in  $-\text{CH}_2$  unit.

1

c. $\text{C}_3\text{H}_7\text{OH}$  propanol

1+1

d.Aldehyde

1

21

a) cathode: pure copper

 $\frac{1}{2}$ 

anode : impure copper

 $\frac{1}{2}$ 

electrolyte: acidified copper sulphate solution

 $\frac{1}{2}$ 

explanation : NCERT TEXT page 52

 $1\frac{1}{2}$ 

diagram : fig 3.12 page 52

2

OR

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

**SECTION B**

22 KOH solution helps to absorb CO<sub>2</sub>. So not able to produce vacuum in the conical flask-No change in the initial water level. 1+1=2

23 When dipped in HCl blue litmus changes to red then in NaOH it changes to blue. 1+1=2

24 Acetic acid has vinegar smell and its weakly acidic in nature. 1/2

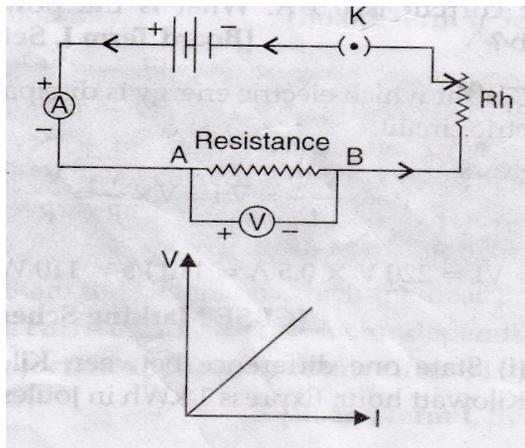
Acetic acid reacts with sodium carbonate to form carbon dioxide gas. 1/2



25 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

26 i)A)Micropyle B)Cotyledons C)Radicle 1 1/2

ii)Provide nourishment to the growing embryo 1/2

27 2

