Orchids The International School

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Name:

ERP:

Grade 10 **Subject:** Natural Science **Duration:** 10 Min **Total Marks:** 40

V1_Grade 10_PA1_Science

General Instructions
All the best

Section A **Marks: 20 × 2M = 40M**

All the best

1. **When a plane mirror is rotated through a certain angle, the reflected ray turns through twice as much angle of rotation of incident ray and the size of the image** **1 marks**

   a. is doubled

   b. is halved

   c. becomes infinite

   d. remains same

2. **Four optical media A, B, C and D have refractive index- 1.35, 1.21, 1.58 and 1.002 respectively. In which optical medium will the light travel fastest?** **1 marks**

   a. A

   b. B

   c. C

   d. D

3. **Statement 1: Even when one half of a convex lens is covered with a black paper, the lens will produce a complete image.** **1 marks**

   Statement 2: Intensity of image is reduced when we cover the half of a convex lens with a black paper.

   a. Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1.

   b. Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1.

   c. Statement 1 is true but statement 2 is false.

   d. Both statements 1 and 2 are false.

4. **A student performs an experiment to form aluminium chloride from aluminium and chlorine. Which of the following options gives the chemical equation of the reaction?** **1 marks**

a. $Al + Cl_2 \rightarrow AlCl_2$	b. $2Al + Cl_2 \rightarrow 2AlCl$
c. $2Al + 3Cl_2 \rightarrow 2AlCl_3$	d. $3Al + 3Cl_2 \rightarrow 3AlCl_3$

5. **Which of the following are exothermic processes?** **1 marks**

   (i) Reaction of water with quicklime

   (ii)Burning of Coal

   (iii) Evaporation of water

   (iv) Sublimation of camphor (crystals)

   a. (i) and (ii)

   b. (ii) and (iii)

   c. (i) and (iv)

   d. (ii) and (iv)

6. **Bile is secreted by** **1 marks**

   a. Pancreas

   b. Duodenum

   c. Liver

   d. Gall bladder

7. **When air is blown from mouth into test –tube containing lime water, the lime water turned milky due to presence of** **1 marks**

   a. Water vapours

   b. Nitrogen

   c. Oxygen

   d. Carbon dioxide

8. **A part of de-starched leaf of a potted plant was covered with black paper strips on both sides and the plant was kept in sunlight for 8 hours. The leaf was the tested with iodine after boiling it in alcohol only the uncovered part of the leaf turned blue-black. The inference is that** **1 marks**

   a. Light is necessary for photosynthesis

   b. CO_2 is necessary for photosynthesis

   c. Chlorophyll is necessary for photosynthesis

   d. Water is necessary for photosynthesis

9. **With neat diagram explain the rules to draw ray diagrams for Convex lens.** **2 marks**

   OR

   List two possible ways in which a concave mirror can produce a magnified image of an object placed in front of it. State the difference if any between these two images.

10. **“The magnification produced by a spherical mirror is -3”. List four information you obtain from this statement about the mirror/ image.** **2 marks**

11. Write which of the following substance is oxidised, is reduced, is the oxidising agent and the reducing agent for the following reaction: **2 marks**

$H_2S + I_2 \rightarrow 2HI + S$

OR

A compound 'A' is used in the manufacture of cement. When dissolved in water, it evolves a large amount of heat and forms compound 'B'.
(i) Identify A and B.
(ii) Write chemical equation for the reaction of A with water.

12. Balance the following equations: **2 marks**

a. $FeS_2 + O_2 \rightarrow Fe_2O_3 + SO_2$

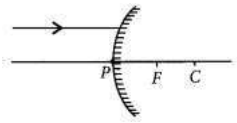
b. $C_2H_5OH + O_2 \rightarrow CO_2 + H_2O$

13. **What are the differences between the transport of materials in xylem and phloem?** **2 marks**

14. **What are the functions of digestive enzymes?** **2 marks**

15. **a. Draw the ray diagram and also state the position, the relative size and the nature of image formed by a concave mirror when the object is placed at the centre of curvature of the mirror** **3 marks**

b. A ray of light is incident on a convex mirror as shown. Redraw the diagram and complete the path of this ray after reflection from the mirror. Mark angle of incidence and angle of reflection on it.



16. **3 marks**

a. The refractive index of a medium 'A' with respect to 'B' is $\frac{4}{2}$ and the refractive index of 'B' with respect to 'C' is $\frac{3}{4}$. Find the refractive index of medium 'C' with respect to medium 'A'. If the speed of light in medium 'A' is 3×10^8 m/s, calculate the speed of light in medium 'B'.

b. With a neat diagram explain Lateral displacement.

17. **Translate the following statements into chemical equations then balance the equations and also identify the type of reactions:** **3 marks**

(i) Aluminium metal replaces iron from ferric oxide, giving aluminium oxide and iron.

(ii) Carbon disulphide burns in air to give carbon dioxide and sulphur dioxide.

(iii) Barium chloride reacts with zinc sulphate to give zinc chloride and barium sulphate

18. **Give reasons:** **3 marks**

a) Veins have valves whereas arteries do not.

b) Nostrils are lined with mucus

c) Stomata remain closed in desert plants during daytime.

19. **Read the following and answer the questions:** **4 marks**

Redox reactions are those reactions in which oxidation and reduction occur simultaneously, A redox reaction is made up of two half reactions. In the first half reaction, oxidation takes place and in the second half reaction, reduction occurs. Oxidation is the addition of Oxygen, whereas reduction is the loss of Oxygen in a reaction.

(i) In the following reaction, which substance is reduced?

$PbS + 4H_2O_2 \rightarrow PbSO_4 + 4H_2O$

a. H_2O	b. H_2O_2
c. PbS	d. $PbSO_4$

(ii) Identify the reaction in which H_2O_2 is acting as a reducing agent.

a. $H_2SO_3+H_2O_2 \rightarrow H_2SO_4 + H_2O$	b. $2HI + H_2O_2 \rightarrow 2H_2O + I_2$
c. $Cl_2 + H_2O_2 \rightarrow 2HCl + O_2$	d. $2FeCl_2+2HCl+H_2O_2 \rightarrow 2FeCl_3+H_2O$

(iii) Identify the correct oxidising and reducing agent in the following reaction

$Fe_2O_3 + 2Al \rightarrow 2Fe + Al_2O_3$

a. Al - Oxidising agent F_2O_3 - Reducing agent	b. Fe_2O_3 - Oxidising agent Al - Reducing agent
c. Fe - Oxidising agent Al_2O_3 - Reducing agent	d. Fe_2O_3 - Oxidising agent Al_2O_3 - Reducing agent

(iv) For the following reaction, identify the correct statement

$ZnO + CO \rightarrow Zn + CO_2$

a. CO is being reduced	b. CO_2 is being oxidised
c. ZnO is being reduced	d. ZnO is being oxidised

20. **Read the following and answer the given questions:** **4 marks**

The small intestine is a tubular structure within the abdominal cavity that carries the food in continuation with the stomach up to the colon from where the large intestine

carries it to the rectum and out of the body. The main function of this organ is to aid in digestion. All nutrients are usually absorbed into blood across the mucosa of the

small intestine. In addition, the small intestine absorbs water and electrolytes, thus playing critical role in maintenance of body water and acid –base balance.

1) Which of the following is incorrect regarding intestinal villi?

a. They finger like projections

b. They increase the surface area for

absorption.

c. They are supplied with blood

capillaries

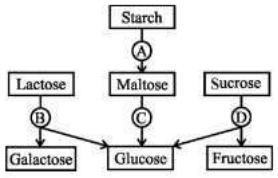
d. They only participate in digestion

of fats

2)	Which enzymes are likely to act on the baked potatoes eaten by a man, starting from the mouth as they move down the alimentary canal?	
	a. Pancreatic amylase→ Salivary amylase → Lipases	b. Disaccharidase like maltase → Lipases→ Nucleases
	c. Salivary amylase→ Pancreatic amylase → Disaccharidases	d. Salivarymaltase→ Carboxypeptidase → Trypsinogen

3)	After surgical removal of an infected gall bladder, a person must be especially careful to restrict dietary intake of	
	a. Starch	b. Protein
	c. Sugar	d. Fat

4)	The given flow chart shows the fate of carbohydrates during digestion in the human alimentary canal. Identify the enzymes acting at stages indicated as A, B, C and D and select the correct option.



a. A- Amylase, B - Maltase, C - Lactase, D- Invertase

b. A - Amylase, B - Maltase, C - Invertase, D- Lactase

c. A- Amylase, B - Invertase, C - Maltase, D- Lactase

d. A- Amylase, B - Lactase, C - Maltase, D - Invertase

-End of Question Paper-