SET	B

INDIAN SCHOOL MUSCAT
HALF YEARLY EXAMINATION 2022
086 SCIENCE
CLASS X

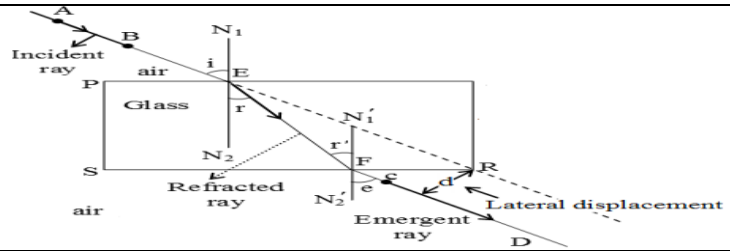
MARKING SCHEME-PHYSICS

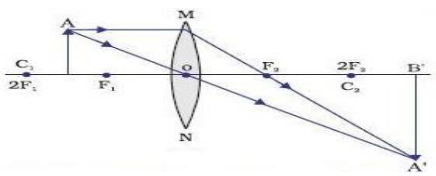
TOTAL MARKS :80

GENERAL INSTRUCTIONS:

SECTION - A

1.	The laws of reflection states that 1. the incident ray, the reflected ray, and the normal to the surface of the mirror, all lie in the same plane. 2. The angle of incidence is equal to the angle of reflection.	½ + ½
2.	The light rays that are parallel to the principal axis of a concave mirror converge at a specific point on its principal axis after reflecting from the mirror. This point is known as the principal focus of the concave mirror.	1
3.	The negative sign signifies that the image is real and inverted and so lens is convex lens. The numerical value of magnification is greater than 1 indicating that the image formed is enlarged.	½ ½
4.	We use convex mirror as a rear view mirror in the vehicles because convex mirror always forms virtual, erect and diminished images irrespective of distance of the object	1
5.	The ciliary muscle is a muscle in the ciliary body, an area of the eye which helps people focus. With the assistance of the ciliary muscle, the lens of the eye can be flattened or rounded to allow people to focus on distant and near objects.	1
6.	Lateral displacement is the perpendicular distance between the extended incident ray and the emergent ray.	1
7.	$n = c/v$ $= 3 \times 10^8 / 2.25 \times 10^8$ $= 1.33$(no unit)	½ ½
8.	Alkalis	1
9.	Silver chloride (or) AgCl	1
10.	Phenolphthalein	1
11.	B	1
12.	C	1
13.	Why does lack of oxygen in muscles often lead to cramps among cricketers? Lack of oxygen in muscles often leads to cramps among cricketers due to the conversion of pyruvate to lactic acid.	1
14.	If salivary amylase is lacking in the saliva, which event in the mouth cavity will be affected? If salivary amylase is lacking in the saliva, starch breaks down into sugar events in the mouth cavity will be affected.	1

15.	Name the respiratory organs of i) Fish ii) Earthworm i) Gills ii) Skin	1
16.	**Assertion:** Asexual reproduction is a primitive type of reproduction. **Reason**: Asexual reproduction involves only mitotic cell division. a) Both Assertion and Reason are correct and reason is the correct explanation for assertion.	1
17.	Physics (CBQ)	
17	d	1
17	c	1
17	c	1
17	a	1
17	a	1
18.	Physics (CBQ)	
18	d	1
18	a, b. c	1
18	b	1
18	b	1
18	c	1
19.	Chemistry (CBQ)	
19	b	1
19	c	1
19	c	1
19	d	1
19	d	1
20.	Biology (CBQ)	
20	b	1
20	a	1
20	c	1
20	b	1
20	a	1
	Section - B	
21.		2
22.	$CaSO_4$. ½ H_2O (1) Any one use (1)	2
23.	During digestion, large molecules of food are broken down into simpler substances such as glucose. Glucose combines with oxygen in the cells and provides energy. The special name of this combustion reaction is respiration. Since energy is released in the whole process, it is an exothermic process.	2

	$C_6H_{12}O_{6(aq)}$ + $6O_{2(g)} \longrightarrow 6CO_{2(g)}$ + $6H_2O_{(l)}$ + Energy Glucose Oxygen Carbon dioxide Water Give one mark incase equation is wriiten.	
24.	$CaCO_3 + H_2SO_4 \rightarrow CaSO_4 + H_2O + CO_2$ (1) Evolution CO_2 with brisk effervescence (or) Formation of white ppt of $CaSO_4$ (1)	2
25.	Why is small intestine in herbivores longer than in carnivores? Digestion of cellulose takes a longer time. Hence, herbivores eating grass need a longer small intestine to allow complete digestion of cellulose. Carnivorous animals cannot digest cellulose; hence they have a shorter intestine.	2
26.	Differentiate between autotrophs and heterotrophs and give one example of each. Autotrophs are known as producers because they are able to make their own food from raw materials and energy. Examples include plants, algae, and some types of bacteria. (1M) Heterotrophs are known as consumers because they consume producers or other consumers. Dogs, birds, fish, and humans are all examples of heterotrophs.(1M)	2
27.	Differentiate between binary fission and multiple fission in a tabular form. **Binary Fission** / **Multiple fission** 1. One nucleus divides into two nuclei. / 1. A single nucleus directly divides into multiple parts. 2. It occurs under normal conditions. / 2. It takes place only in unfavorable conditions like formation of internal cysts. 3. The division of cytoplasm forms two individuals. / 3. The division of cytoplasm directly forms multiple individuals. 4. Cytoplasm divides only after one karyokinesis or nuclear divisions. / 4. Cytoplasm can divide only after multiple karyokinesis or nuclear divisions. 5. Example: *Amoeba*. / 5. Example: *Plasmodium*.	3
28.	m = v/u = 3 v = 3u = 3 × 20 = 60 cm 1/v-1/u =1/f $\frac{1}{60}+\frac{1}{20}=\frac{1}{f}$ $\frac{1+3}{60}=\frac{1}{f}$ $\frac{4}{60}=\frac{1}{f}$ $\frac{1}{15}=\frac{1}{f}$ f = 15cm  	½ ½ ½ ½ 1

Or

h = 6cm

f = -30cm

u = -45

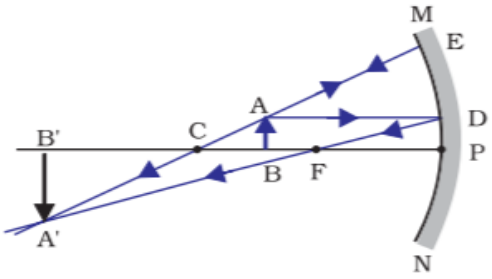
$$\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$$

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

$$\frac{1}{v} = \frac{1}{(-30)} - \frac{1}{(-45)}$$

$$\frac{1}{v} = -\frac{1}{90}$$

v = -90cm from the pole of the mirror



29. (a)Dentition. (1) — 3

(b)(i) $CuSO_4 + Fe \rightarrow FeSO_4 + Cu$ (1)

(ii)$Al_2(SO_4)_3 + Fe \rightarrow$ No reaction (1)

30. (a)(i) A (1) — 3

(ii)A→Acidic B→Basic (½ + ½)

(iii) Due to the movement of ions in aqueous solution under the influence of electricity. (1)

Or

(b)(i)Explanation (1)

(ii)At Anode: Cl_2 is liberated (½)

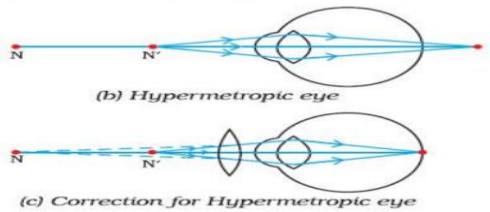
At Cathode: H_2 is liberated (½)

Overall reaction: $2NaCl + 2H_2O \xrightarrow{\text{Electricity}} H_2 + Cl_2 + 2NaOH$ (1)

31. Explain briefly the different stages of nutrition in amoeba. — 3

Amoeba shows holozoic nutrition which Is comprised of the following steps: Ingestion, Digestion, Absorption. Assimilation and Egestion

Ingestion: Amoeba makes fingerlike projections called pseudopodia. Amoeba traps food particles with the help of pseudopodia. After that, Amoeba takes in the food particle along with water.
Digestion: Amoeba makes food vacuole after ingesting the food particle. Enzymes are released in the food vacuole for digestion.
Absorption: After digestion, nutrients enter the cytoplasm through osmosis.
Assimilation: Nutrients are utilized by the cell for various purposes.

	Egestion: Food vacuole goes near the cell membrane to empty its contents outside the cell. This results in the expulsion of waste materials from the cell.	
32.	Draw a flow chart to show the breakdown of glucose by various pathways. Flow chart (3M) Or Draw a diagram of human respiratory system and label –Nasal cavity, trachea, lungs, diaphragm and alveolar sac on it. Diagram (1M) labeling (2M)	3
33.	a) Definition-Hypermetropia b) Causes: i) The focal length is too long ii) the eyeball is too small c) The lens used to correct this defect of vision is convex lens of suitable focal length. d) Ray diagrams for defective and corrective vision  (b) Hypermetropic eye (c) Correction for Hypermetropic eye Or i) Definition-Presbyopia ii) Causes-gradual weakening of ciliary muscles and diminishing flexibility of eye lens. iii) Corrected using bi-focal lens of suitable focal length. iv) The ability of the eye lens to adjust its focal length with the help of ciliary muscles without strain is called power of accommodation.	1 ½ ½ 1 1 1 1 ½ + ½ 1 1 1
	34 (a) (i) $CH_4+2O_2 \rightarrow CO_2 + 2H_2O$ (1) (ii) $Pb(NO_3)_2+ 2KI \rightarrow PbI_2 + 2KNO_3$ (1) (iii) $4NH_3+ 5O_2 \rightarrow 4NO+ 6H_2O$ (1) (iv) $C_2H_5OH + 3O_2 \rightarrow 2CO_2 + 3H_2O$ (1) (v) $Fe + 2HCl \rightarrow FeCl_2 + H_2$ (1) Or (i)Photolytic decomposition-Definition (1+1) (ii)Will change to grey color. (1)	5

	(iii) Used in black and white photography (1) (iv) $Al_2(SO_4)_{3(aq)} + 3BaCl_{2(aq)} \rightarrow 3BaSO_4 \downarrow + 2AlCl_{3(aq)}$ (1) (ppt)	
	35. Write three types of blood vessels. Give one important features of each. Different types of blood vessels are arteries, veins & capillaries (1M) Important features of blood vessels are, Arteries – They carry oxygenated blood from the heart and carry it to the organs. Veins – They carry deoxygenated blood from organs and take it to the heart. Capillaries – The exchange of various materials like oxygen, food, carbon dioxide, etc., between the blood and the body cells, takes place through it. (4M) Or Draw a neat diagram of the human excretory system and label following parts: (i) Urethra (ii) Kidney (iii) Ureter (iv) Urinary bladder Diagram (2M) Labeling (3M)	5