SET	A

INDIAN SCHOOL MUSCAT
HALF YEARLY EXAMINATION 2022
086 SCIENCE
CLASS X

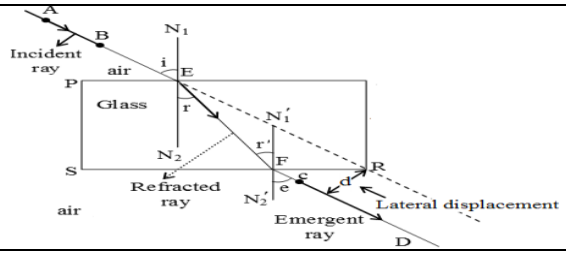
MARKING SCHEME-PHYSICS

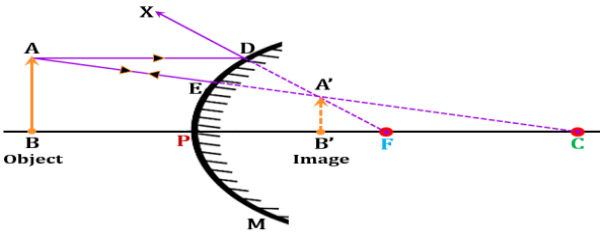
TOTAL MARKS :80

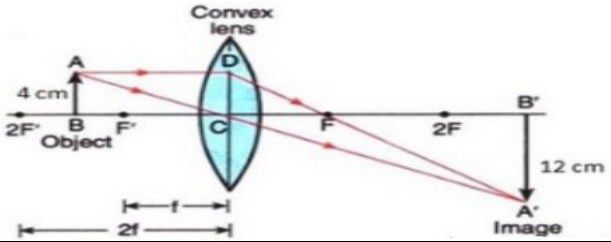
GENERAL INSTRUCTIONS:

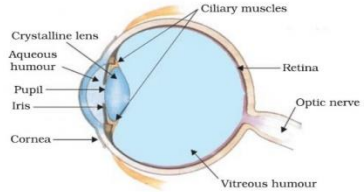
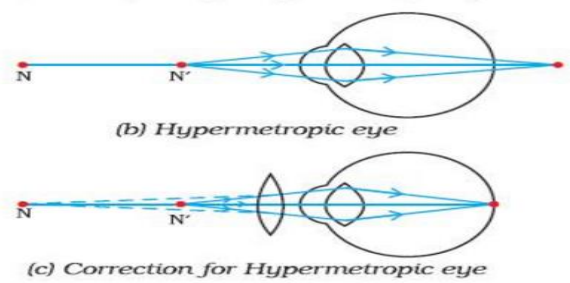
SECTION - A

1.	The ratio of the sine of the angle of incidence to the sine of the angle of refraction is a constant. This is known as Snell's law of refraction.	1
2.	The minimum distance, at which objects can be seen distinctly without strain , is called the least distance of distinct vision.	1
3.	R= 2f = 2x -50mm=-100mm=-0.1m	1
4.	Decreasing order - velocity of light through air > velocity of light through water > velocity of light through glass.	1
5.	The size of the pupil can fluctuate as the iris has tiny muscles that can either widen or narrow, depending upon surrounding light. At night, for example, the muscles will widen the pupil so there is sufficient light in the eye. When it is too bright outside, the pupil will contract to allow less light into the eyes and prevent damaging the retina.	1
6.	It is a point on its principal axis from which a beam of light rays, initially parallel to the principal axis, appears to diverge after being reflected from the convex mirror.	1
7.	Lateral displacement depends on (i) thickness of glass slab and (ii) angle of incidence.	½ + ½
8.	Calcium sulphate (or) $CaSO_4$	1
9.	Combination (or) Exothermic	1
10.	NH_4Cl	1
11.	A	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.	Why is DNA copying an essential part of the process of reproduction? DNA copying is an essential part of the process of reproduction because it carries the genetic information from the parents to their offspring.	1
16.	**Assertion:** Asexual reproduction is a primitive type of reproduction.	1

	Reason: Asexual reproduction involves only mitotic cell division. a) Both Assertion and Reason are correct and reason is the correct explanation for assertion	
17.	Physics (CBQ)	
17 i	c	1
17 ii	a, b, c	1
17 iii	d	1
17 iv	b	1
17 v	c	1
18.	Physics (CBQ)	
18 i	c	1
18 ii	d	1
18 iii	b	1
18 iv	a	1
18 v	b	1
19.	Chemistry (CBQ)	
19 i	b	1
19 ii	c	1
19 iii	c	1
19 iv	d	1
19 v	d	1
20.	Biology (CBQ)	
20 i	b	1
20 ii	a	1
20 iii	c	1
20 iv	b	1
20 v	a	1
Section - B		
21.		2
22.	Any two uses (1+1)	2
23.	OA: CuO RA:H_2 (1+1)	2
24.	Metal oxides produces bases when dissolved in water hence they are basic oxides. (1) Non-metal oxides produces acids when dissolved in water hence they are acidic oxides. (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.	a) Define excretion. Excretion is the process by which organisms expel metabolic waste products and other toxic substances from their body. (1M) (b) Name the basic filtration unit present in the kidney. Nephron (1M)	2
27.	Differentiate between binary fission and multiple fission in a tabular form.	3

	Binary Fission 1. One nucleus divides into two nuclei. 2. It occurs under normal conditions. 3. The division of cytoplasm forms two individuals. 4. Cytoplasm divides only after one karyokinesis or nuclear divisions. 5. Example: *Amoeba*. **Multiple fission** 1. A single nucleus directly divides into multiple parts. 2. It takes place only in unfavorable conditions like formation of internal cysts. 3. The division of cytoplasm directly forms multiple individuals. 4. Cytoplasm can divide only after multiple karyokinesis or nuclear divisions. 5. Example: *Plasmodium*.	
28.	The radius of curvature **(R)** of the mirror $= 30\ cm$ Focal length, $f = \frac{R}{2} = \frac{30}{2} = 15\ cm$ Distance of the object, $u = -20\ cm$ Height of the object, $h = 5\ cm$	1
	$\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$ $\Rightarrow \frac{1}{v} = \frac{1}{f} - \frac{1}{u}$ $\Rightarrow \frac{1}{v} = \frac{1}{15} - \frac{1}{-20}$ $\Rightarrow v = 8.57\ cm$	1
		1
	Or	
		1

	$u = -4$ cm $v = 12$ cm (Real image) (a) $m = \frac{v}{u} = \frac{12}{-4} = -3$ (b) Lens formula : $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$ $\frac{1}{12} - \frac{1}{-4} = \frac{1}{f}$ $\frac{1+3}{12} = \frac{1}{f}$ $f = 3$ cm  	1 1
29.	(i)Definition (1) (ii) A brown color solid Fe_2O_3 is formed and sulphur smelling gases like SO_2 and SO_3 is formed. (1) $FeSO_4.7H_2O \xrightarrow{Heat} FeSO_4 + 7H_2O$ (½) $FeSO_4 \xrightarrow{Heat} Fe_2O_3 + SO_2 + SO_3$ (½)	3
30.	i) Acid + metal hydrogen carbonate → Salt of the metal + Water + CO_2 (1) (ii) Passing the gas through lime water turns milky due to the formation of $CaCO_3$.- (Equation also to be considered).(1) (iii) On passing excess of gas will form soluble Calcium bicarbonate-$Ca(HCO_3)_2$.- (Equation also to be considered).(1) Or (i) $NaHCO_3$/Sodium bicarbonate / Sodium hydrogen carbonate. (1) (ii) Baking soda is prepared from the reaction of common salt with CO_2, NH_3 in aqueous media to give baking soda and ammonium chloride. (½ -If only statement is written) $NaCl + CO_2 + H_2O + NH_3 \rightarrow NH_4Cl + NaHCO_3$ (1) (iii) The CO_2 evolved during the reaction of tartaric acid with baking soda makes bread and cake fluffy and smooth.(1)	3
31.	What is asexual reproduction? Write the process of budding in Hydra. Asexual Reproduction is the process of producing new organisms from a single parent without the involvement of sex cells or gametes. (1M)	3

	Budding in Hydra: Budding is the process of formation of an offspring from an outgrowth or bud of a parent. In Hydra, it is usually formed in the lower half of the body. The buds separate from the parent soon after their formation or after some initial growth. A bud develops as an outgrowth due to repeated cell division at a specific site which after developing into tiny individuals detach from the body of the parent to become new individuals. (2M)	
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.	 Explanation Or 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  	2 3 1 ½ ½ 1 1 1
34.	a)(i) A chemical reaction in which both the oxidation and reduction occurs simultaneously.(1) (ii)(1)Substance Oxidized: Al, Substance Reduced:Fe_2O_3 OA:Fe_2O_3 RA :Al (½ +½ +½ +½) (2)Substance Oxidized: HCl, Substance Reduced:MnO_2 OA:MnO_2 RA: HCl (½ +½ +½ +½)	5

	(or) (b)(i)Rust is a hydrated form of iron (III) oxide during the slow oxidation of iron with moist air.(1) Formula:$Fe_2O_3.xH_2O$ (or) $Fe_2O_3.nH_2O$ (1) (ii)Rancidity: The spoilage of oily food items due to oxidation.(1) Prevention: Any two points (2)	
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