SET	C

INDIAN SCHOOL MUSCAT
HALF YEARLY EXAMINATION 2022
086 SCIENCE
CLASS X

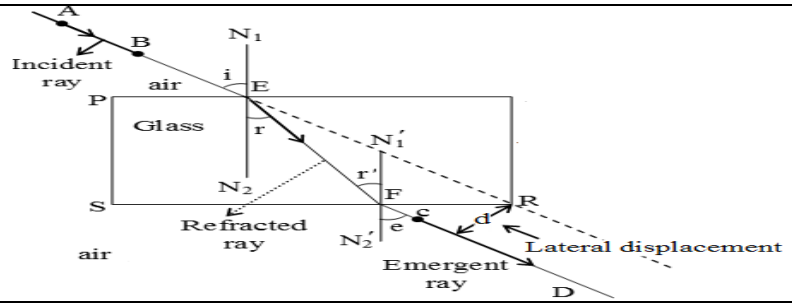
MARKING SCHEME-PHYSICS

TOTAL MARKS :80

GENERAL INSTRUCTIONS:

SECTION - A

1.	one diopter is the power of a lens of focal length one meter.	1
2.	Cataract is the defect of vision where the cornea turns milky and cloudy.	1
3.	This is because when the face is placed close to a concave mirror (so that the face is within its focus) the concave mirror produces a magnified and erect image of the face. Since a large image of the face is seen in the concave mirror, it becomes easier to make a smooth shave.	1
4.	n =c/v $1.71 = 3 \times 10^8/v$ Therefore, $v = 3 \times \frac{10^8}{1.71} = 1.75 \times 10^8$m/s	½ ½
5.	Real image can be obtained on the screen. Virtual image cannot be obtained on the screen	½ 1/2
6.	m= v/u +3= v/-2 V = -6cm	½, ½
7.	The refractive index of diamond is 2.42. This means that **the speed of light in diamond**. Will reduce by a factor of 2.42 as compared to its speed in air. In other words, the speed of light in diamond is 1/2.42 times the speed of light in vacuum	1
8.	Calcium sulphate (or) $CaSO_4$	1
9.	Silver chloride (or) AgCl	1
10.	NH_4Cl	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.	What will happen if mucus is not secreted by the gastric glands? If mucus is not released, it will lead to erosion of the inner lining of the stomach leading to acidity and ulcers.	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	a	1
17 ii	c	1
17 iii	b	1
17 iv	b	1
17 v	c	1
18.	Physics (CBQ)	
18 i	b	1
18 ii	c	1
18 iii	a	1
18 iv	b	1
18 v	d	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.	$CaSO_4$. ½ H_2O (1) Any one use (1)	2
23.	OA: CuO RA:H_2 (1+1)	2
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.	2

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)

27. Describe "double circulation" in human beings. 3

Mammals have a double circulatory system. This means that during a single cycle, the blood goes twice in the heart. There are two loops in which blood is circulated. One loop is oxygenated and the other is de-oxygenated. This double circulatory system is important because it ensures provision of oxygenated blood to the muscle and not a mixture of oxygenated and de-oxygenated blood. Hence, this system ensures efficient supply of oxygenated blood to the muscles.

28. The focal length of a convex lens, f = 18 cm.

Image distance, v = 24 cm

Object distance, u = ?

By using lens formula-

$$\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$$ ½

where, v = image distance, u = object distance, and f = focal length

Substituting the values of **f**, **v** and **u** we get,

$$\frac{1}{24} - \frac{1}{u} = \frac{1}{18}$$

$$\frac{1}{24} - \frac{1}{18} = \frac{1}{u}$$ ½

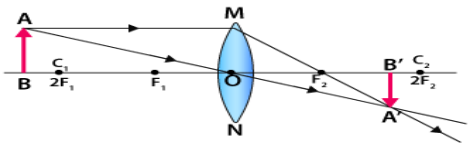
$$\frac{18-24}{24\times18} = \frac{1}{u}$$

$$\frac{6}{24\times18} = \frac{1}{u}$$

$$\frac{1}{4\times18} = \frac{1}{u}$$

$$u = -72cm$$

1



Or 1

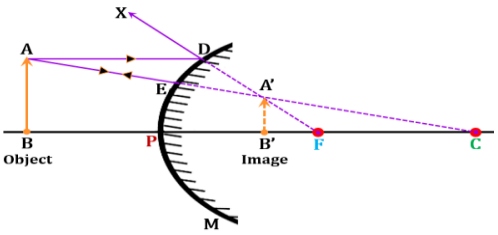
The radius of curvature **(R)** of the mirror = 30 cm

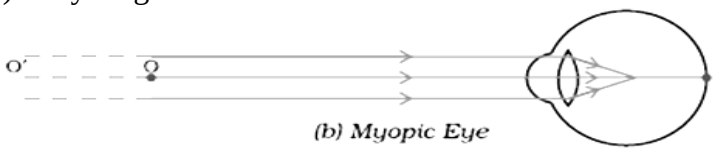
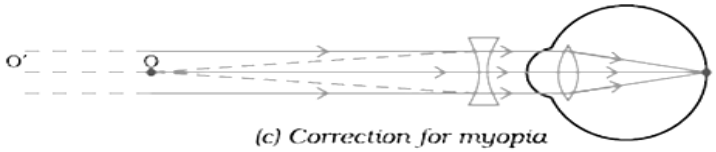
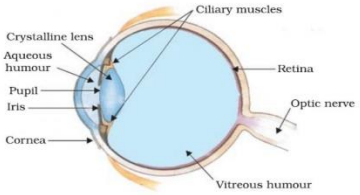
Focal length, $f = \frac{R}{2} = \frac{30}{2} = 15\ cm$

Distance of the object, $u = -20\ cm$

Height of the object, $h = 5\ cm$

½

	$\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$ $\Rightarrow \frac{1}{v} = \frac{1}{f} - \frac{1}{u}$ $\Rightarrow \frac{1}{v} = \frac{1}{15} - \frac{1}{-20}$ $\Rightarrow v = 8.57\ cm$	½
		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.	(a)(i) A (1) (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: $2NaCl + 2H_2O \xrightarrow{Electricity} H_2 + Cl_2 + 2NaOH$ (1)	3
31.	Mention the major events during photosynthesis. The three major events that occur during the process of photosynthesis are: i) Absorption of light energy by chlorophyll.(1M) ii) Conversion of light energy to chemical energy and splitting of water molecules into hydrogen and oxygen. (1M) iii) Reduction of carbon dioxide to carbohydrates.(1M)	3
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-Myopia	1

	b) Causes-excessive curvature of eye lens and elongation of eyeball c) This defect of vision can be corrected using concave lens of suitable focal length. d) Ray diagrams for defective & corrective vision  (b) Myopic Eye  (c) Correction for myopia Or  Explanation	½ + ½ 1 1 1 2 3
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) (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)	5
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.	5

	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)	