



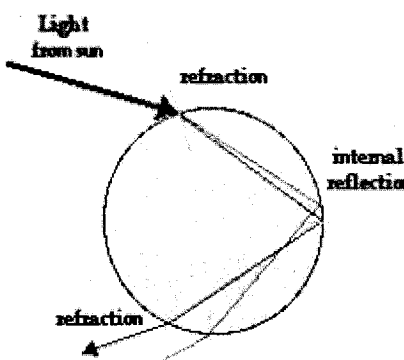
# COMMON PRE-BOARD EXAMINATION 2022-23

## SCIENCE-086 CLASS - X MARKING SCHEME [Max.Marks: 80]



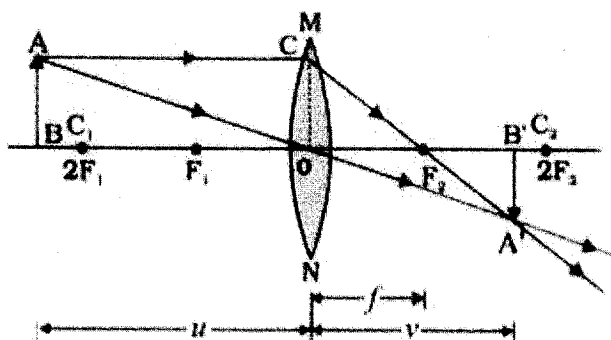
Qn. No.	Questions	Marks
SECTION – A		
1.	(a) $N_2 + 3H_2 \rightarrow 2NH_3$	1
2.	(c) Vanilla essence	1
3.	(a) black copper oxide	1
4.	(d) It is a decomposition reaction and endothermic in nature	1
5.	(c) $H_2SO_4$	1
6.	(c) Ethane	1
7.	(b) Electrical conductivity in the solid state	1
8.	(d) 0%, 25%	1
9.	(d) IV	1
10.	(b) B and D	1
11.	(c) Gustatory receptor	1
12.	(d) Cytoplasm and mitochondria	1
13.	(c) volt-ampere	1
14.	(b) Element in heater has high melting point and fuse wire has low melting point	1
15.	(d) $4R$	1
16.	(d) Out of the page	1
17.	(a) Both A and R are true and R is the correct explanation of A	1
18.	(d) A is False but R is true	1
19.	(b) Both A and R are true and R is not the correct explanation of A	1
20.	(a) Both A and R are true and R is the correct explanation of A	1

## SECTION B

21.	<p>The reaction in which iron oxide is heated with aluminium powder and thereby iron oxide get reduced to iron metal with the evolution of heat. (1 mark)</p> $\text{Fe}_2\text{O}_3 + 2\text{Al} \longrightarrow 2\text{Fe} + \text{Al}_2\text{O}_3 + \text{Heat} \quad (1 \text{ mark})$ <p style="text-align: center;">OR</p> $2\text{HgS} + 3\text{O}_2 \xrightarrow{\text{heat}} 2\text{HgO} + 2\text{SO}_2 \quad (1 \text{ mark})$ $2\text{HgO} \xrightarrow{\text{heat}} 2\text{Hg} + \text{O}_2 \quad (1 \text{ mark})$	2
22.	<p>(Any two – 1 mark each)</p> <p>(a) Veins are closer to the surface of your body, and arteries are deep inside our muscles.</p> <p>(b) The walls of a vein are thinner than an artery.</p> <p>(c) Veins carry blood towards your heart. Arteries carry blood away from heart.</p> <p>(d) Valves are present in veins and absent in arteries.</p>	2
23.	<p>Due to deficiency of iodine in diet. (1 mark)</p> <p>Thyroid gland and thyroxine hormone. (½ + ½ mark)</p>	2
24.	<p>(a) Due to transpiration water is released out through stomata. (1 mark)</p> <p>(b) Phloem and translocation is the process involved in transport of food in plants. (½ + ½ mark)</p>	2
25.	<p>The refraction of light by earth's atmosphere having different layers of air with varying optical density is called atmospheric refraction. (1 mark)</p> <p>Twinkling of stars. (½ mark)</p> <p>Advanced sunrise and delayed sunset. (½ mark)</p> <p style="text-align: center;">OR</p> <p>Conditions for observing rainbow:</p> <p>1. The presence of water droplets in the atmosphere. (½ mark)</p> <p>2. The Sun must be at the back of the observer. (½ mark)</p> <div style="text-align: center;">  </div> <p style="text-align: right;">(1 mark)</p>	2

26.	<p><b>(Any two - 1 mark each)</b></p> <p>(a) Plastic is non-biodegradable so will not be degraded by microbes</p> <p>(b) Plastic will settle in the ocean bed and can cause suffocation to some animals and cause their death</p> <p>(c) They may be converted to micro plastics which will accumulate in the organs of aquatic animals</p> <p>(d) It can be ingested by aquatic animals and cause diseases to them.</p>	2
<b>SECTION C</b>		
27.	<p>(a) Yellow coloured <math>PbI_2</math>. <span style="float: right;">(½ mark)</span></p> <p><math>Pb(NO_3)_2 + 2KI \rightarrow PbI_2 + 2KNO_3</math> <span style="float: right;">(1 mark)</span></p> <p>Double displacement reaction or Precipitation reaction. <span style="float: right;">(½ mark)</span></p> <p>(b) Reducing agent – CO and Oxidizing agent - <math>Fe_2O_3</math> <span style="float: right;">(½ + ½ mark)</span></p>	3
28.	<p>(a) <math>Ca(OH)_2 + Cl_2 \rightarrow CaOCl_2 + H_2O</math> <span style="float: right;">(1 mark)</span></p> <p>(b) The process of dissolving an acid in water is highly exothermic. If water is added to a concentrated acid, the heat generated may cause the mixture to splash out and cause burns. <span style="float: right;">(1 mark)</span></p> <p>(c) Quick lime and Slaked lime or CaO and <math>Ca(OH)_2</math> <span style="float: right;">(½ + ½ mark)</span></p>	3
29.	<p>(a) Reflex arc is an immediate response. <span style="float: right;">( ½ mark)</span></p> <p>(b) Spinal cord is a part of central nervous system which is involved in reflex action. <span style="float: right;">( ½ mark)</span></p> <p>(c) Flowchart. <span style="float: right;">( 2 marks)</span></p> <div style="text-align: center;"> <p>Stimulus → Sense organ → Sensory neuron → Spinal cord</p> <p style="margin-left: 100px;">(Receptor) <span style="margin-left: 100px;">(CNS)</span></p> <p style="margin-left: 200px;">↓</p> <p>Response ← Effector ← Motor neuron ← Relay neuron</p> <p><b>OR</b></p> <p>(a) It affects digestion, absorption and assimilation. <span style="float: right;">(1 ½ marks)</span></p> <p>(b) It is a mixed gland- exocrine and endocrine in function. <span style="float: right;">(½+ ½ + ½ marks)</span></p> <p>Exocrine as it secretes digestive juices for digesting protein, carbohydrate and lipids.</p> <p>Endocrine as it produces hormones like insulin and glucagon which regulate blood sugar.</p> </div>	3
30.	<p>(a) 15 cm <span style="float: right;">(½ mark)</span></p> <p>(b) <math>(v)^{th}</math> is wrong <span style="float: right;">(½ mark)</span></p> <p>Object is at 70 cm ; it indicates that the object is beyond <math>2F_1</math>. Then image should be between <math>F_1</math> and <math>2F_1</math> (btw 15cm and 30 cm.) <span style="float: right;">(½ mark)</span></p>	3

(c)



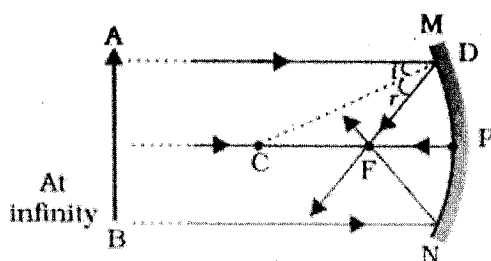
(1 mark)

(d)  $m = \frac{v}{u} = \frac{30}{(-30)} = -1$  (½ mark)

31.

- (a) Concave mirror (½ mark)  
 (b) To burn the paper, Raju should move the mirror in such a way that paper is positioned at the focus of the mirror. (½ mark)  
 (c) Yes (½ mark)  
 The Sun's image is formed at the focus of the mirror. The distance between the Sun's image (paper on which it falls) and concave mirror will give the approximate focal length of the mirror. (½ mark)

Ray diagram



(1 mark)

3

32.

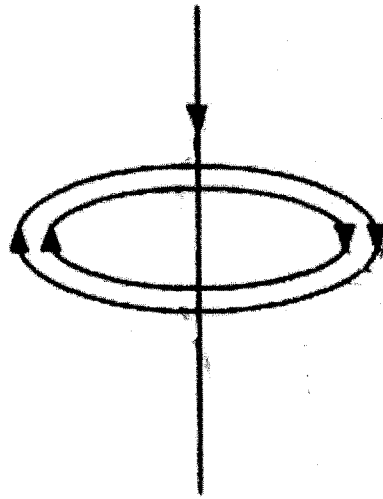
(a)

Solenoid	Bar magnet
<ul style="list-style-type: none"> <li>Strength of the magnetic field can be changed by changing the current</li> </ul>	<ul style="list-style-type: none"> <li>Strength cannot be changed</li> </ul>
<ul style="list-style-type: none"> <li>Direction can be reversed by changing the direction of current through it.</li> </ul>	<ul style="list-style-type: none"> <li>Direction is fixed and cannot be reversed</li> </ul>
<ul style="list-style-type: none"> <li>Magnetic field disappear on stopping the current</li> </ul>	<ul style="list-style-type: none"> <li>No effect of current on magnetic field</li> </ul>

Any two differences (1 + 1 = 2 marks)

3

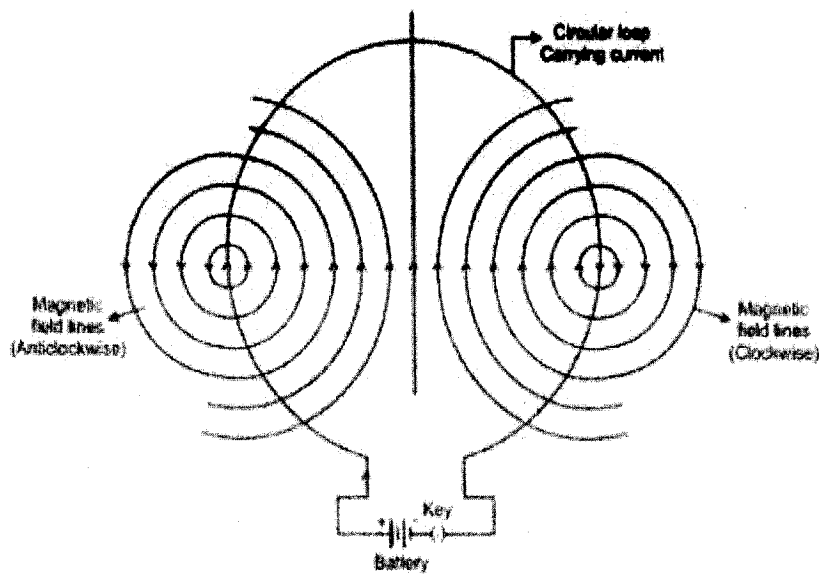
(b)



(1 mark)

OR

The pattern of magnetic field lines near the wires of the coil are concentric circles. By the time we reach the centre of the circular loop the arcs of these circles would appear as straight lines. At the centre of the loop the field lines are nearly straight. (1 mark)



(1 mark)

- (i) More the radius weaker the field at the centre.
- (ii) Strength of magnetic field increases as the number of turns increases.

(½ + ½ mark)

33.

Definition: The entry of pesticide or toxic chemical from one trophic level to next in succession is called bio magnification. (1 mark)

Eg: Phytoplankton → zooplankton → small fishes → large fishes → man (1 mark)

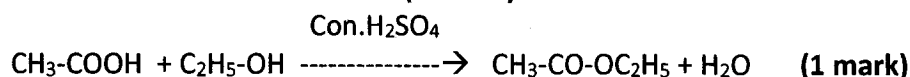
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- (a) The pesticides applied to agricultural crops leach to the nearby water bodies during rain. (½ mark)
- (b) The concentration of pesticide is low in producers and it increases up the trophic level hence the concentration of pesticide will be highest in the last trophic level that is human who consume the fishes. (½ mark)

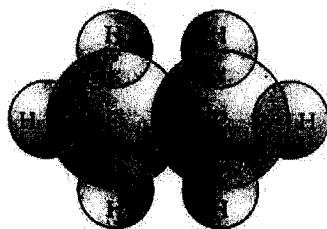
#### SECTION D

34.

- (a) Compound 'X' is Ethyl ethanoate. (½ mark)  
Esterification reaction (½ mark)



- (b) Electron dot structure of Ethane [C<sub>2</sub>H<sub>6</sub>] molecule. (1 mark)

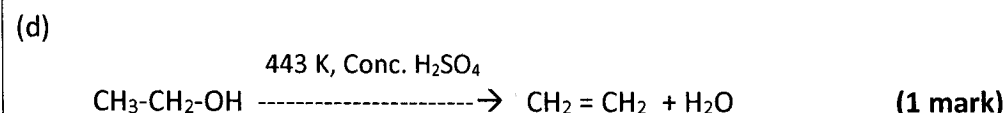
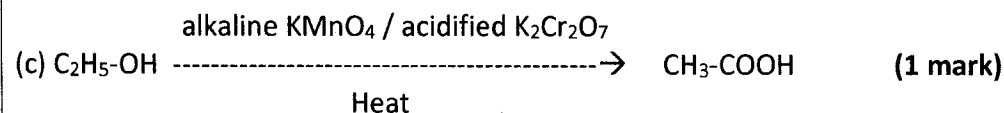


- (c) It is due to the reaction of soap with the calcium and magnesium salts in hard water and forms an insoluble precipitate called scum. (1 mark)

- (d) C<sub>2</sub>H<sub>2</sub> - C<sub>3</sub>H<sub>4</sub> and C<sub>5</sub>H<sub>12</sub> - C<sub>6</sub>H<sub>14</sub> (½ + ½ mark)

OR

- (a) (i) CH<sub>3</sub>-CH<sub>2</sub>-CH<sub>2</sub>-CHO - Butanal (1 mark)  
(ii) CH<sub>3</sub>-CH<sub>2</sub>-CH<sub>2</sub>-Cl - Chloropropane (1 mark)
- (b) Saturated hydrocarbons will generally give a clean flame while unsaturated hydrocarbons will give a yellow flame with lots of black smoke. (1 mark)



35.

- (a) Asexual. Vegetative propagation. (½ + ½ mark)
- (b) Advantages of vegetative propagation (Any two – 2 marks)
- (i) It is much easier, low cost, quicker method compared to sexual reproduction.
- (ii) Plants which produce non-viable seeds or too few seeds or have lost the ability to produce seeds can be made to reproduce vegetatively to produce daughter organisms.

5

- (iii) Plants produced by vegetatively reproduction are genetically similar to the parent.
- (c) Spore formation. (½ mark)
- (d) Humidity or warmth. (½ mark)
- (e) Sporangia is blob like structure containing spores. (1 mark)

OR

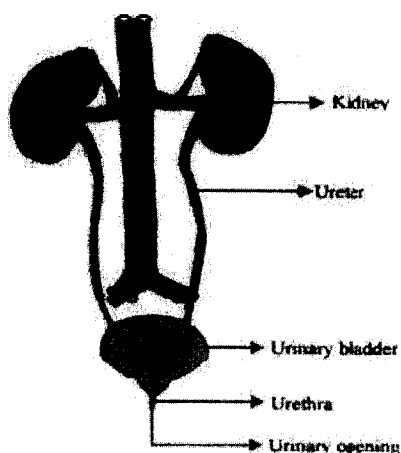


Diagram and label any three parts. (½ x 4 = 2 marks)

- **Filtration** involves the transfer of soluble components, such as water and waste, from the blood into the glomerulus. (1 mark)
- **Reabsorption** involves the absorption of molecules, ions, and water that are necessary for the body to maintain homeostasis from the glomerular filtrate back into the blood. (1 mark)
- **Secretion** involves the transfer of hydrogen ions, creatinine, drugs, and urea from the blood into the collecting duct, and is primarily made of water. (1 mark)

36.

(a) Let three resistors  $R_1$ ,  $R_2$ ,  $R_3$  connected in series. If potential difference across resistance  $R_1$  is  $V_1$ ,  $R_2$  is  $V_2$  and  $R_3$  is  $V_3$ . Let potential difference across battery be  $V$ , then:

$$V = V_1 + V_2 + V_3. \quad \dots\dots\dots (½ \text{ mark})$$

Applying Ohm's law to the whole circuit:  $V = IR \dots\dots\dots (1)$

Applying Ohm's law to the three resistors separately, we get:

$$V_1 = I \times R_1. \quad \dots\dots\dots (2)$$

$$V_2 = I \times R_2. \quad \dots\dots\dots (3)$$

$$V_3 = I \times R_3. \quad \dots\dots\dots (4)$$

Substituting (2), (3), (4) in (1)

$$IR = IR_1 + IR_2 + IR_3 \dots\dots\dots (½ \text{ mark})$$

$$IR = I (R_1 + R_2 + R_3)$$

$$R = R_1 + R_2 + R_3 \dots\dots\dots (½ \text{ mark})$$

5

(b)

- A parallel circuit divides the current through the electrical appliances. Hence each device gets required current from the mains to work properly.
- The total resistance in a parallel circuit is decreased. This is helpful particularly when each gadget has different resistance and requires different current to operate properly.
- When one component of the circuit fails rest of them work properly.

Devices can be operated separately with individual switch. (ANY TWO 1+1 = 2 marks)

(c)  $R_S = R_1 + R_2 + R_3 = X$

$$X = nR$$

(½ mark)

$$\frac{1}{R_p} = \frac{1}{R} + \frac{1}{R} + \frac{1}{R}$$

$$\frac{1}{R_p} = \frac{n}{R}$$

$$R_p = \frac{R}{n}$$

(½ mark)

$$\frac{X}{Y} = \frac{nR}{R/n}$$

$$= n^2$$

(½ mark)

### SECTION E

37.

(a) Q - Mg and R - K/Na (½ + ½ mark)

(b)  $S < P < Q < R$  (1 mark)

(c)  $M_2O_3$  is amphoteric in nature. (½ mark)  $Al_2O_3$  or  $ZnO$  (½ mark)



OR

(c) Nitric acid is a strong oxidising agent. It oxidises the  $H_2$  produced to water and itself gets reduced to any of the nitrogen oxides ( $N_2O$ ,  $NO$ ,  $NO_2$ ). (1 mark)

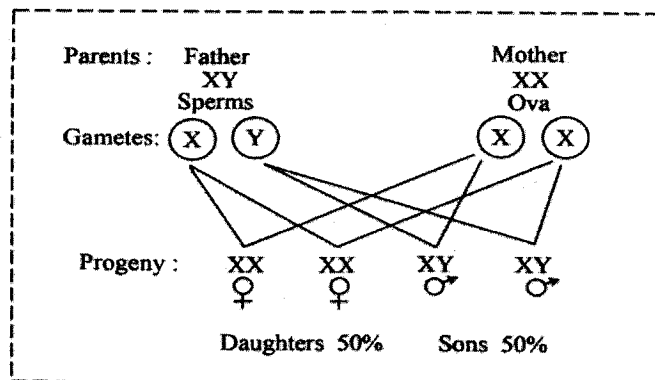
Mg and Mn (½ + ½ mark)

4



38.

(a)



(2 marks)

(b) No, the sex of the child depends on the father as he produces two types of gametes.

(½ + ½ mark)

(c) The deliberate use of artificial methods or other techniques to prevent unwanted pregnancy. (½ mark)

Any mechanical barriers or physical abstinence. (½ mark)

OR

(c) Sexually transmitted bacterial infection- Gonorrhoea and Syphilis. (½ + ½ mark)

39.

(a) 380 nm to 700nm (1 mark)

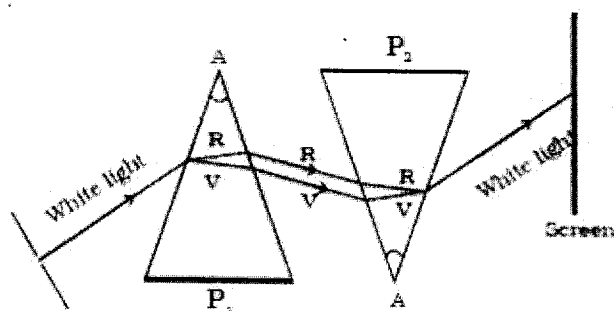
(b) Deviated more: violet

Deviated less: red (½ + ½ mark)

(c) Different colours deviate at different angles when passing through a prism because different colours have different wavelengths. Due to the difference in wavelengths, they travel through the glass at different speeds.

No, glass has a different refractive index for different colours. (1 + 1 = 2 marks)

OR



(2 marks)

4

