



COMMON PRE-BOARD EXAMINATION 2022-23

Subject: Science (086)



Class: X
Max. Marks: 80

Date :
Duration: 3 Hrs.

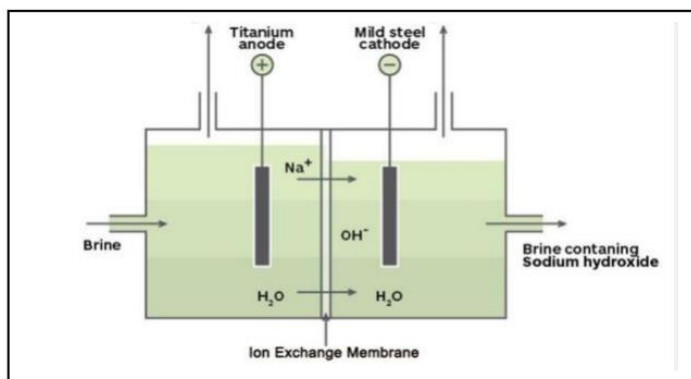
General Instructions:

- This question paper consists of 39 questions in 5 sections.
- All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
- Section **A** consists of 20 objective type questions carrying 1 mark each.
- Section **B** consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
- Section **C** consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should be in the range of 50 to 80 words.
- Section **D** consists of 3 Long Answer type questions carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.
- Section **E** consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

SECTION A

Select and Write one most appropriate option out of the four options given for each of the questions 1-20.

1.



The gas evolved at anode is used

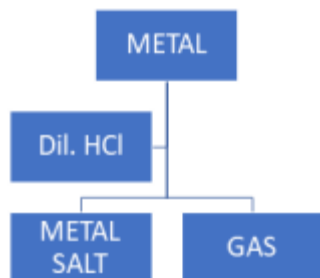
- as fuel
 - to manufacture ammonia
 - in water treatment
 - for degreasing metals
- (1)

2. We store silver chloride in a dark coloured bottle because

- it is a white solid
 - it undergoes combination reaction with oxygen
 - To avoid its decomposition by sunlight
 - None of the above
- (1)

3. Which information is not conveyed by a balanced chemical equation?
 (a) Physical states of reactants and products
 (b) Symbols and formulae of all the substances involved in a particular reaction
 (c) Number of atoms/molecules of the reactants and products formed
 (d) rate of the reaction (1)

4.



(1)

Which of the following two combinations are correct?

	Metal	Gas evolved
(i)	Copper	Yes
(ii)	Iron	Yes
(iii)	Magnesium	Yes
(iv)	Aluminium	No

- (a) i and iii
 (b) i and iv
 (c) ii and iii
 (d) ii and iv

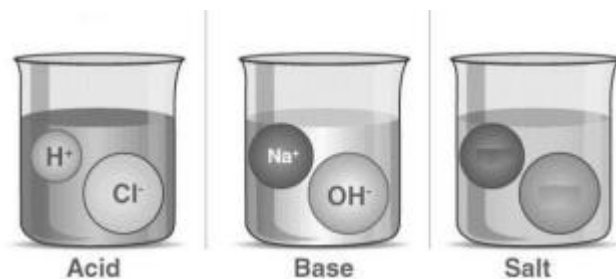
5. Which of the following are not ionic compounds?

- (i) KCl (ii) HCl (iii) CCl₄ (iv) NaCl

- (a) (i) and (ii)
 (b) (ii) and (iii)
 (c) (iii) and (iv)
 (d) (i) and (iii)

(1)

6. The salt obtained by the given ions is used :



- (a) for making margarine
 (b) in fire extinguisher
 (c) as ingredient of food
 (d) in paper industry

(1)

7. Which one of the following compounds decolourises aqueous KMnO_4 solution ?

(a) $\text{C}_2\text{H}_5\text{OH}$

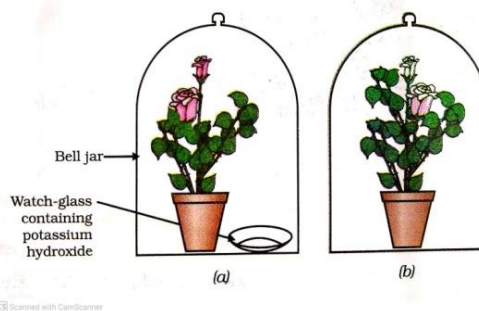
(b) $\text{CH}_3\text{CH}_2\text{CH}_3$

(c) $\text{CH}_3\text{CH}_2\text{Cl}$

(d) $\text{C}_2\text{H}_5\text{COOH}$

(1)

8. Observe the experimental set up shown below. What does this set up demonstrate?



(a) Light is necessary for photosynthesis

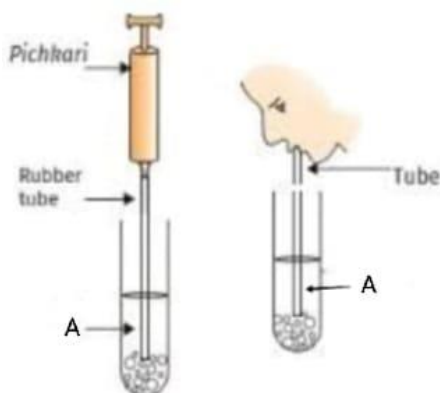
(b) CO_2 is necessary for photosynthesis

(c) chlorophyll is necessary for photosynthesis

(d) all of the above.

(1)

9. Observe the figure given below. Name the part indicated as 'A' in the experimental set up which changes its colour.



(a) Lemon water

(b) Test tube

(c) Lime water

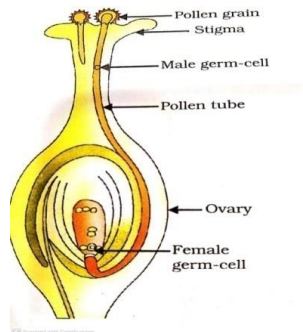
(d) Milk

(1)

10. If a yellow seeded pea plant is crossed with a pure green seeded pea plant, then what percentage of F_1 and F_2 generation respectively will be yellow and what percentage of F_2 generation respectively will be pure yellow (YY), hybrid yellow (Yy) and green (yy)?

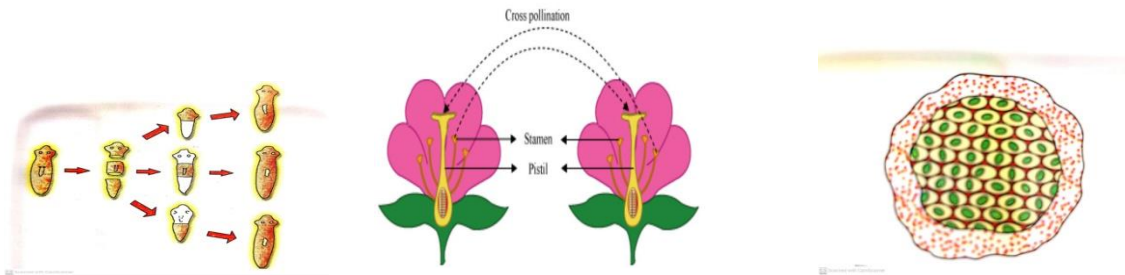
- (a) 75%, 100% and 25%, 25%, 50% (b) 50%, 50% and 50%, 25%, 25%
 (c) 75%, 25% and 30%, 30%, 40%. (d) 100%, 75% and 25%, 50%, 25%. (1)

11. Observe the figure given below. Which kind of tropic movement is indicated by the pollen tube?



- (a) Phototropism (b) geotropism (c) chemotropism (d) hydrotropism (1)

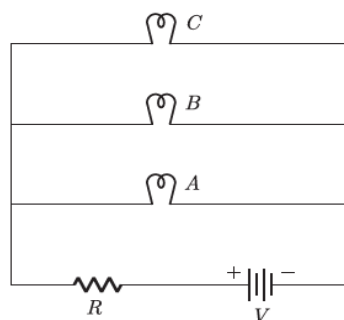
12. The diagrams given below depict modes of reproduction. Choose the option that will show a minimum variation in the offspring.



- (A)- planaria; (B)-Pollination (C)-plasmodium.

- (a) A and B (b) A and C (c) B and C (d) only B. (1)

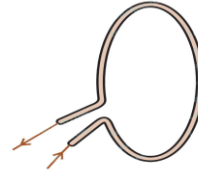
13. In an electrical circuit three incandescent bulbs A, B and C of rating 40 W, 60 W and 100 W respectively are connected in parallel to an electric source. Which of the following is likely to happen regarding their brightness? (1)



- (a) Brightness of all the bulbs will be the same
- (b) Brightness of bulb A will be the maximum
- (c) Brightness of bulb B will be more than that of A
- (d) Brightness of bulb C will be less than that of B

14. The nature of magnetic field line passing through the centre of current carrying circular loop is (1)

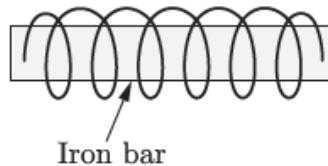
- (a) circular
- (b) ellipse
- (c) parabolic
- (d) straight line



15. If the current I through a resistor is increased by 100% (assume that temperature remains unchanged), the increase in power dissipated will be (1)

- (a) 100%
- (b) 200%
- (c) 300%
- (d) 400%

16. A soft iron bar is introduced inside the current carrying solenoid as shown in the figure. The magnetic field inside the solenoid



- (a) will decrease
 - (b) will remains same
 - (c) will increase
 - (d) will become zero
- (1)

Following questions consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

- (a) Both A and R are true and R is the correct explanation of A.
- (b) Both A and R are true but R is not the correct explanation of A.
- (c) A is true but R is false.
- (d) A is false but R is true.

17. **Assertion:** Chips manufacturers usually flush bags of chips with gas such as nitrogen .
Reason: This increase the taste of the chips and helps in their digestion. (1)
18. **Assertion:** In humans, males play an important role in determining the sex of the child.
Reason: Males have an 'X' and a 'Y' chromosome. (1)

19. **Assertion:** Birds and mammals cannot tolerate mixing of oxygenated and deoxygenated blood
Reason: Birds and mammals are animals with four chambered heart. (1)
20. **Assertion :** The magnetic field is stronger at a point which is nearer to the conductor and goes on decreasing on moving away from the conductor.
Reason : The magnetic field B produced by a straight current carrying wire is inversely proportional to the distance from the wire. (1)

SECTION B

Q. no. 21 to 26 are very short answer questions.

21. Give reasons for the following :
(i) Only one half of water molecule is shown in the formula of Plaster of Paris.
(ii) Sodium hydrogen carbonate is used as an antacid.
- OR**
- (i) Draw a labelled diagram to show the preparation of hydrogen chloride gas in laboratory.
(ii) Test the gas evolved first with dry and then with wet litmus paper. In which of the two cases, does the litmus paper show change in colour ?
Why ? (2)
22. How are brain and spinal cord protected? Why these organs are carefully protected? (2)
23. Why is excretion necessary in human body? How is the amount of urine produced regulated? (2)
24. Why the human heart does have different chambers? Why do the ventricles have thicker walls than atria? (2)
25. Which component of white light deviates (i) the least and (ii) the most while passing through a glass prism? State the reason of this difference in deviation. (2)
- OR**
- Name the part of eye where images formed in a normal human eye. State how the image position changes in myopia and hypermetropia.
26. How ozone layer is formed? What is its significance? (2)

SECTION C

Q.no. 27 to 33 are short answer questions.

27. Mention with reason the colour changes observed when : (3)
(i) potassium iodide solution is mixed with lead nitrate solution
(ii) copper powder is strongly heated in the presence of oxygen.
(iii) a piece of zinc is dropped in copper sulphate solution.
28. A chemical compound 'X' is used in the soap and glass industry. It is prepared from brine.

- (a) Write the chemical name, common name and chemical formula of 'X'.
 (b) Write the equations involved in its preparation.
 (c) If a pH indicator paper is dipped in the solution of X, what will be the possible colour of the pH paper. (3)

29. What is the role of hydrochloric acid in stomach and bile in our small intestine?

OR

How is small intestine designed to absorb digested food? (3)

30. Rohit uses a concave mirror which produces three times enlarged real image of an object placed at 12 cm in front of it. Calculate the radius of curvature of the mirror. (3)

31. (a) Define 1 dioptre of power. Find the focal length of a lens of power -2.0 D
 (b) Why does a lemon kept in water in a glass tumbler appear to be bigger than its actual size?
 (c) Study the table given below and state the medium in which light ray will travel fastest. Why? (3)

Medium	A	B	C
Refractive index	1.33	1.5	2.4

32. Answer the following questions :

- (a) What is the direction of magnetic field lines outside a bar magnet?
 (b) The magnetic field lines in a given region are getting crowded. What does it indicate?
 (c) State one advantage of AC over DC.

OR

- (a) Give the significance of the following in a domestic circuit:
 (i) Electric meter,
 (ii) Earthing.
 (b) List two precautions that should be taken to avoid overloading. (3)

33. State the difference between biodegradable and non-biodegradable substances? Give any two ways in which non-biodegradable substances would affect the environment. (3)

SECTION D

Q.no. 34 to 36 are Long answer questions.

34. a) Write the IUPAC names of the following : (5)

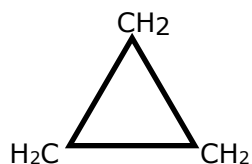
(i) HCOOH

(ii) CH₃-CH₂-CH₂-C≡CH

(iii)

$$\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_3 - \text{C} - \text{CH}_3 \\ | \\ \text{CH}_3 \end{array}$$

(iv)



(b) Give one example of each of the following

(i) Esterification

(ii) Addition reaction

(c) "A compound 'X' on combustion gives a yellow flame with lots of smoke." What inference would you draw from this statement ?

OR

(a) Give the electron dot structures of the following :

(i) Propanone

b) Ethene

(b) State in brief the cleansing action of soaps in removing an oily spot from a fabric. Why are soaps not very effective when a fabric is washed in hard water ? How is this problem resolved ?

35. (a) What is meant by vegetative propagation? What are the advantages of such a process? (*Any TWO*)

(b) Why does our body growth slow down during sexual maturation at the age of puberty?

OR

(a) What happens when fertilisation does not occur?

(b) What are the possible health consequences of having sex?

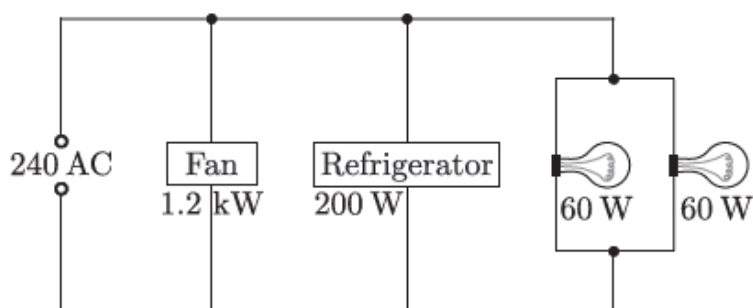
(c) How does fragmentation differ from regeneration?

(5)

36. Inside the house, connections to all the devices are made in parallel, each having independent switch and fuse (if necessary). Thus, whenever some fault occurs in circuit of one particular device in one room, devices in other rooms do not suffer.

Figure shows a 240V AC mains circuit to which a number of appliances are connected and switched on.

(5)



(a) Calculate the power supplied to the circuit.

(b) Calculate (i) the current through the refrigerator

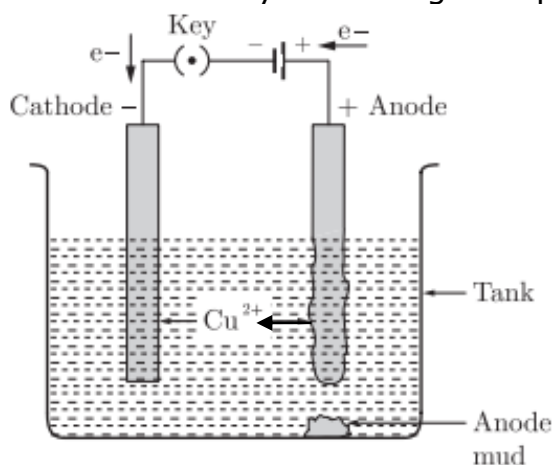
(ii) the energy used by the fan in 3 hours

(iii) the resistance of the filament of one lamp.

SECTION - E

Q.no. 37 to 39 are Case - Based/Data -Based questions with 2 to 3 short sub - parts. Internal choice is provided in one of these sub-parts.

37. Refining is the process of purification of metals. One of the important method of refining is electrolysis. In electrolysis, electrical energy is used to bring about a non-spontaneous redox reaction. This is done by passing an electric current through a liquid containing ions, known as an electrolyte. In contrast to metals, the current in electrolytes is carried by the movement of ions rather than the movement of electrons. The solid conductors inserted into the liquid are called electrodes, the one with a positive charge is called the anode (because it attracts anions) and the one with the negative charge is called the cathode. A diagrammatic representation of electrolytic refining of copper is shown below : (4)



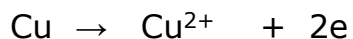
(a) What is the anode and cathode material used in the refining of copper?

What happens to size of anode and cathode with passage of time?

(b) For the electrolytic refining of Zinc metal what changes should be made in the anode ,cathode and electrolyte.

OR

(b) (i) Which of these two reactions occur at cathode during the electrolytic refining of copper:



(ii) What is anode mud?

38. Neha has brown hair and her parents and brother have black hair. Neha married Naidu who has black hair while his father has brown hair and mother has black hair. (4)

(a) On the basis of the above given information, is the brown hair a dominant or recessive trait? Justify.

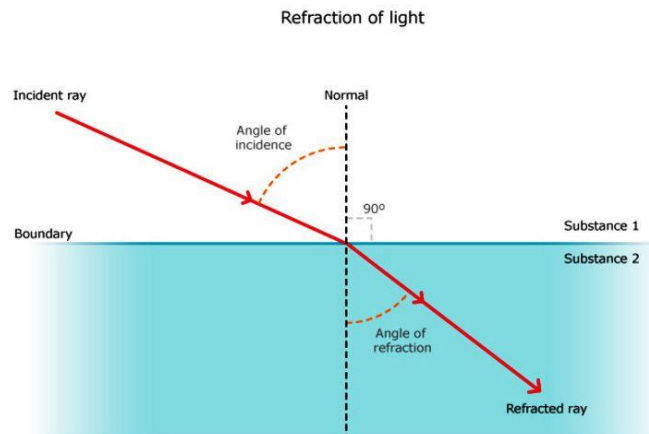
(b) What is the possible genetic makeup of Neha's brother's black hair trait?

(c) What is the probability that the offspring of Neha and Naidu will have brown hair? Show the inheritance pattern of the nature of hair in the offspring with the help of a suitable cross.

OR

(c) 50% of the offspring of Neha's brother are having brown hair. With the help of cross show how this is possible?

39. "Change in path of a light ray as it passes from one medium to another medium is called refraction of light." (4)



When light travels from a rarer medium to a denser one, it bends towards the normal ($i > r$) and when travels from a denser medium to a rarer one. it bends away from the normal ($i < r$).

Where, i = Angle of incidence
and r = Angle of refraction

We can see refraction in our daily life, some of the examples are given below :
The bottom of a tank or pond containing water appears to be raised due to refraction of light which takes place when light rays pass from the pool of water into the air. The letters appear to be raised when viewed through a glass slab placed over the document because of refraction of light.

When a light ray enters in a glass slab, then the emergent ray is parallel to the incident ray but it is shifted sideward slightly.

In this case, refraction takes place twice, first when ray enters glass slab from air and second when exits from glass slab to air.

- (i) What do you mean by optically rarer and denser medium?
- (ii) What is the cause of refraction?
- (iii) Draw a labelled ray diagram showing refraction of light through a rectangular glass slab.

OR

- (iii) Give **TWO** applications of refraction from our daily life experience other than the two examples given above.