SET-B

CODE-02/2024

G-W CLASSES, GONDIA

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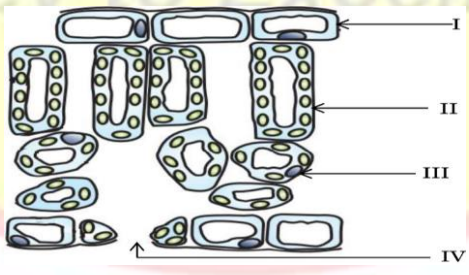
GW PARIKSHA (PRE-BOARD -01)

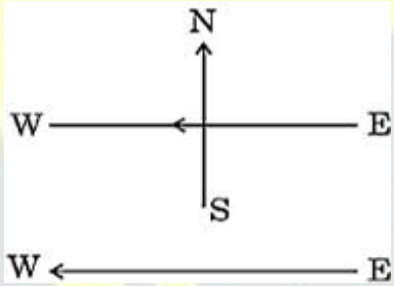
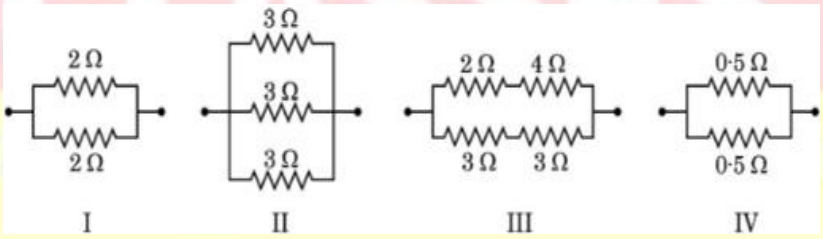
CLASS-X **SUBJECT- SCIENCE(086)**
TIME ALLOWED: 3 HRS **MAX. MARKS :** 80

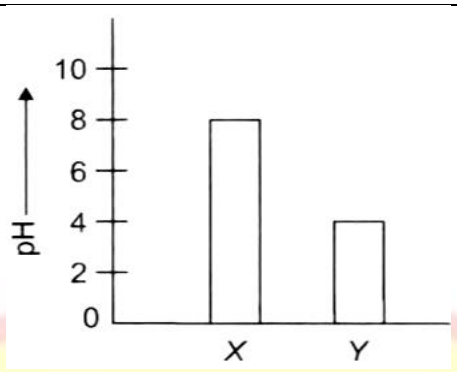
General Instructions:

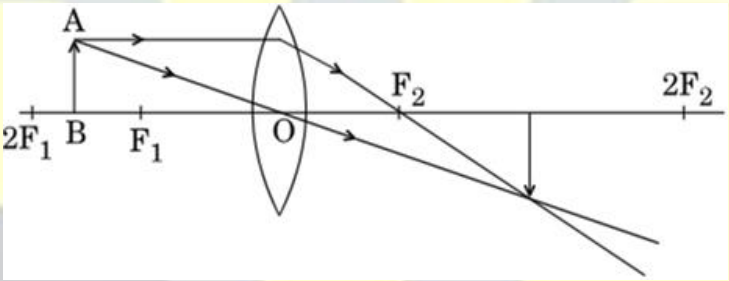
1. This question paper consists of 39 questions in 5 sections.
2. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
3. Section A consists of 20 objective - type questions carrying 1 mark each.
4. Section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

	SECTION A	
1	The balanced chemical equation showing reaction between quicklime and water is: a) $CaO + H_2O \rightarrow Ca(OH)_2 + H_2 + Heat$ b) $CaO + H_2O \rightarrow Ca(OH)_2 + Heat$ c) $2\,CaO + H_2O \rightarrow 2\,CaOH + H_2 + Heat$ d) $2\,CaO + 3\,H_2O \rightarrow 2\,Ca(OH)_3 + O_2 + Heat$	**[1]**
2	In a double displacement reaction such as the reaction between sodium sulphate solution and barium chloride solution: 1.exchange of atoms takes place 2.exchange of ions takes place 3.a precipitate is produced 4.an insoluble salt is produced The correct option is: a) A and C b) B and D c) only B d) B, C and D	**[1]**

3	Several factories were pouring their wastes in rivers A and B. Water samples were collected from these two rivers. It was observed that sample collected from river A was acidic while that of river B was basic. The factories located near A and B are a) Soaps and detergents factories near B and alcohol distillery near A. b) Soaps and detergents factories near A and alcohol distillery near B. c) Lead storage battery manufacturing factories near B and soaps and deterg. factories near A. d) Lead storage battery manufacturing factories near A and soaps and deterg. factories near B.	**[1]**
4	Which one of the following hydrocarbons is different from the others? a) C_2H_6 b) C_4H_{10} c) C_7H_{14} d) C_5H_{12}	**[1]**
5	Substance W does not conduct electricity under any condition, X conducts electricity only in aqueous solution, Y conducts electricity in both the molten and solid states while Z conducts electricity in both the molten state and in aqueous solution. Substances W, X, Y and Z could be respectively a) S, NaCl, HCl and Pb b) HCl, S, NaCl and Pb c) Pb, HCl, NaCl and S d) S, HCl, Pb and NaCl	**[1]**
6	Which of the following statements is true for an amphoteric oxide? a) It reacts only with acid and does not form water. b) It reacts with both acid as well as base to form salt and water. c) It reacts with acid as well as base to form salt and hydrogen gas. d) It reacts only with base and does not form water.	**[1]**
7	$CH_3\text{-}CH_2\text{-}OH \xrightarrow{Alkaline\ KMnO_4+Heat} CH_3\text{-}COOH$ In the above given reaction, alkaline $KMnO_4$ acts as a) A reducing agent b) dehydrating agent c) oxidising agent d) catalyst	**[1]**
8	In the following diagram, identify the cells through which massive amounts of gaseous exchange takes place for photosynthesis:  a) I b) III c) IV d) II	**[1]**
9	In an experiment to study independent inheritance of two separate traits : shape and colour of seeds, the ratio of the different combinations in F_2 progeny would be a) 9 : 3 : 3 : 1 b) 9 : 1 : 1 : 3 c) 1 : 2 : 1 d) 1 : 3	**[1]**

10	The plants that can be raised by the method of vegetative propagation are: a) Papaya, mustard, potato b) Banana, orange, mustard c) Sugarcane, roses, grapes d) Sugarcane, mustard, potato	**[1]**
11	A cross between pea plant with white flowers (vv) and pea plant with violet flowers (VV) resulted in F_2 progeny in which ratio of violet (VV) and white (vv) flowers will be: a) 1 : 1 b) 1 : 3 c) 2 : 1 d) 3 : 1	**[1]**
12	Which one of the following statements is correct about the human circulatory system? a) Blood transports only oxygen and not carbon dioxide. b) Human heart has five chambers. c) Both oxygen - rich and oxygen - deficient blood gets mixed in the heart. d) Valves ensure that the blood does not flow backwards.	**[1]**
13	A constant current flows in a horizontal wire in the plane of the paper from east to west as shown in figure.The direction of the magnetic field will be north to south at a point:  a) directly below the wire. b) located in the plane of the paperon the south side of the wire. c) located in the plane of the paperon the north side of the wire. d) directly above the wire.	**[1]**
14	Consider the following combinations of resistors:  The combinations having equivalent resistance 1Ω is/are: a) I and II b) I and IV c) I, II and III d) Only IV	**[1]**
15	What will happen if deer is missing in the given food chain?Grass→ Deer → Tiger. a) Tiger will start eating grass. b) The population of grass will decrease. c) The population of tiger will decreases and the population of grass will increase. d) The population of tiger will increase.	**[1]**
16	The pH level of precipitation at two places X and Y was found to be as shown in the graph. Which of the following can you deduce from it?	**[1]**

	 a) Marble statues at place X can be seen yellowing. b) At place Y, renewable energy sources are fastly replacing the use of conventional energy sources. c) Plants at place Y can be seen to have burnt yellow looking leaves. d) At place X there is higher consumption of fossil fuels.	
17	**Assertion (A):** Brown fumes are produced when lead nitrate is heated. **Reason (R):** Nitrogen dioxide gas is produced as a byproduct due to the decomposition of lead nitrate. 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.	**[1]**
18	**Assertion (A):** Amoeba shows multiple fission during unfavorable conditions. **Reason (R):** Chances of survival are less during unfavourable conditions. 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.	**[1]**
19	**Assertion (A):** The deflection of a compass needle placed near a current carrying wire decreases when the magnitude of an electric current in the wire is increased. **Reason (R):** Strength of the magnetic field at a point due to a current carrying conductor increases on increasing the current in the conductor. 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.	**[1]**
20	**Assertion (A):** Green plants trap only 1% of the energy of sunlight that falls on their leaves. **Reason (R):** All green plants are the producers in a food chain. 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.	**[1]**

	SECTION B	
21	When ethanol reacts with ethanoic acid in the presence of conc. H_2SO_4 , a substance with fruity smell is produced Answer the following. 1. State the class of compounds to which the fruity smelling compounds belong. Write the chemical equation for the reaction and write the chemical name of the product formed. 2. State the role of conc. H_2SO_4 in this reaction.	**[2]**
22	List two roles of each of the following in human reproductive system: 1.Seminal vesicles and prostate gland 2. Oviduct 3. Testis	**[2]**
23	List four functions of the human heart. Why is double circulation necessary in the human body? **OR** Write a common feature between the following. 1. Xylem and phloem 2.Haemoglobin and chlorophyll	**[2]**
24	Study the following ray diagram and list two mistakes committed by the student while tracing it. Rectify these mistakes by drawing the correct ray diagram to show the real position and size of the image corresponding to the position of the object AB. 	**[2]**
25	Explain an agricultural practice that has a harmful effect on ecosystem. **OR** Give reason to justify the following: 1. The existence of decomposers is essential in a biosphere. 2. Flow of energy in a food chain is unidirectional.	**[2]**
26	What is dispersion? What happens when light is passed through a glass prism?	**[2]**
	SECTION C	
27	Nikita took Zn, Al, Cu, Fe, Mg and Na metal and put each metal in cold water and then hot water. She reacted the metal with steam (i) Name the metal which reacts with cold water. (ii) Which of the above metals react with steam? (iii) Name the metal which reacts with hot water. (iv) Arrange these metals in order of increasing reactivity.	**[3]**
28	In a chemistry laboratory, students were instructed to set up three experiments, details of	**[3]**

which are given below: Indicate the changes observed in the nails kept in all the three setups, with reasons.

Experiment No.	Set up details
1.	2 iron nails in a cork capped test tube + Tap water immersing the nails +
2.	2 iron nails in a cork capped test tube + Boiled water immersing the nails + Oil on top of water layer.
3.	2 iron nails In a cork capped test tube + Cotton wool on top of the iron nails + Granules of calcium chloride on cotton wool.

OR

Sample pieces of five metals A, B, C, D and E were added to the tabulated solutions separately. The results observed are shown in the table:

Metal	$FeSO_4$	$CuSO_4$	$ZnSO_4$	$AgNO_3$	$Al_2(SO_4)_3$
A	No Change	No Change	No Change	Coating on metal	No Change
B	Grey Deposit on metal	Brown Coating on metal	No Change	Coating on metal	No Change
C	No Change	No Change	No Change	No Change	No Change
D	No Change	--------	No Change	Coating on metal	No Change
E	--------	Brown Coating	New Coating	New Coating	No Change

Based on the observations recorded in the table, answer the following:

(1) Which is the most reactive metal?

(2) Which is the least reactive metal?

(3) What would be observed if metal D were added to a solution of copper (II) sulphate?

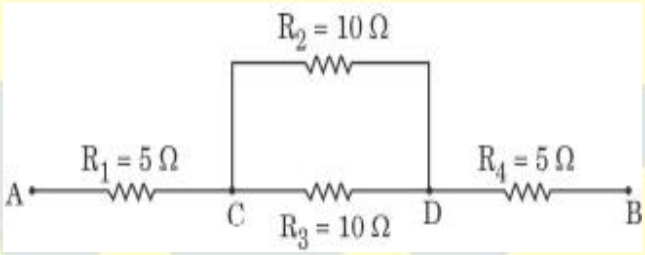
(4) What would be observed if metal E were added to a solution of iron (II) sulphate?

(5) Arrange the metals A, B, C, D and E in decreasing order oftheir reactivity?

29 Food does not pass through the digestive system by 'gravity'. This is clear from the fact that we can digest the food even if we are lying down. Explain the logic behind the passage of food through our digestive system. **[3]**

30 In pea plant, round seed is dominant over the wrinkled. If a cross is carried out between these two plants, give answer to the following questions. **[3]**

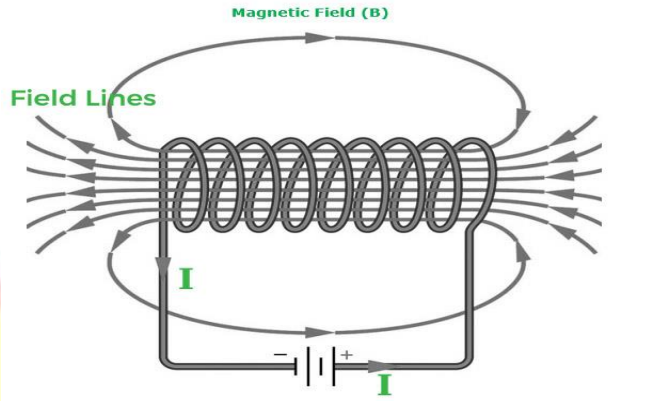
1. Mention the genes for the traits of parents.
2. State the trait of F_1 hybrids.
3. Write the ratio of F_2 progeny obtained from this cross. What is the name of the cross?

31	"A concave mirror of focal length f can form a magnified, erect as well as an inverted image of an object placed in front of it." Justify this statement stating the position of object with respect to the mirror in each case for obtaining these images.	**[3]**
32	Define the term electric power. An electric device of resistance R when connected across an electric source of voltage V draws a current I. Derive an expression for the power in terms of resistance R and voltage V. What is the power of a device of resistance 400Ω operating at 200 V?	**[3]**
33	1. Three resistors R_1 , R_2 and R_3 are connected in parallel and the combination is connected to a battery, an ammeter, a voltmeter and a key. Draw suitable circuit diagram to show the arrangement of these circuit components along with the direction of current flowing. 2. Calculate the equivalent resistance of the following network:  	**[3]**
	SECTION D	
34	1. What happens when a small piece of sodium is dropped in ethanol? Write the equation for this reaction. 2. Why is glacial acetic acid called so? 3. What happens when ethanol is heated at 443 K in the presence of conc. H_2SO_4 ? Write the role of conc. H_2SO_4 in this case. 4. Write an equation showing saponification. **OR** 1. A compound **A** with a molecular formula of $C_2H_4O_2$ reacts with a base to give salt and water. Identify A, state its nature and the name of the functional group it possesses. Write chemical equation for the reaction involved. 2. When the above stated compound **A** reacts with another compound **B** having molecular formula C_2H_6O in the presence of an acid, a sweet smelling compound **C** is formed. a. Identify **B** and **C** . b. State the role of acid in this reaction. c. Write chemical equation for the reaction involved.	**[5]**
35	Draw a neat diagram showing fertilisation in a flower and label (a) Pollen tube, (b) Male germ cell and (c) Female germ cell, on it. Explain the process of fertilisation in a flower. What	**[5]**

	happens to the 1. ovary and 2. ovule after fertilisation? **OR** 1. Name the hormone secreted by (i) Pituitary, and (ii) Thyroid stating one main function of each. Name the disorder a person is likely to suffer from due to the deficiency of the above mentioned hormones. 2. How is the timing and amount of hormone released regulated? Explain with an example.	
36	A student wants to project the image of a candle flame on the walls of school laboratory by using a lens. 1. Which type of lens should he use and why? 2. At what distance in terms of focal length F of the lens should he place the candle flame, so as to get a. a magnified and b. a diminished image respectively, on the wall? 3. Draw ray diagrams to show the formation of the image in each case. **OR** The variation of image distance (v) with object distance (u) for a convex lens is given in the following observation table. Analyse it and answer the questions that follow: 1. Without calculation, find the focal length of the convex lens. Justify your answer. 2. Which observation is not correct? Why? Draw ray diagram to find the position of the image formed for this position of the object. 3. Find the approximate value of magnification for u = - 30 cm.	**[5]**
	SECTION E	
37	**Read the following text carefully and answer the questions that follow:** The teacher while conducting practicals in the laboratory divided the students into three groups and gave them various solutions to find out their pH and classify them into acidic, basic and neutral solutions.	**[4]**

S. No.	Object distance (u) cm	Image distance (v) cm
1	-150	+30
2	-75	+37.5
3	-50	+50
4	-37.5	+75
5	-30	+150
6	-15	+37.5

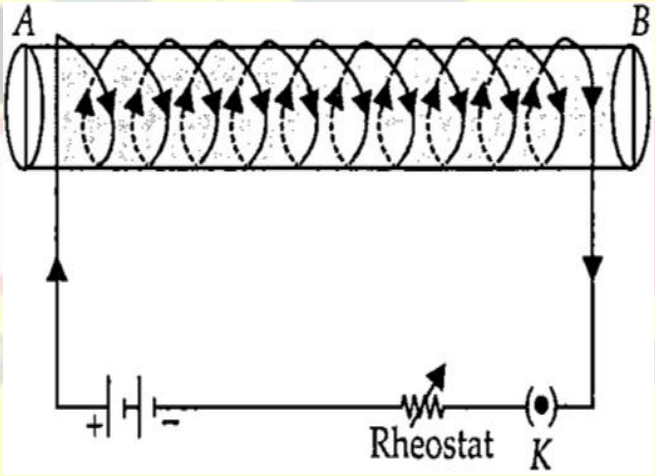
	Group A - Lemon juice, vinegar, colourless aerated drink Group B - Tomato juice, coffee, ginger juice Group C - Sodium hydroxide, sodium chloride, lime water 1. For the solutions provided, which group is/are likely to have pH value (i) less than 7, and (ii) greater than 7? (1) 2. List two ways of determining pH of a solution. (1) 3. Explain, why the sour substances such as lemon juice are effective in cleaning the tarnished copper vessels. (2) **OR** **3. pH has great importance in our daily life.** Justify this statement by giving two examples. (2)	
38	**Read the following text carefully and answer the questions that follow:** You must have noticed many dramatic changes in your appearance as well as that of your friends as you approached 10 - 12 years of age. These changes associated with puberty are because of the secretion of testosterone in males and oestrogen in females. Do you know anyone in your family or friends who has been advised by the doctor to take less sugar in their diet because they are suffering from diabetes? As a treatment, they might be taking injections of insulin. This is a hormone that is produced by the pancreas. 1. Why is pancreas a dual gland? (1) 2. Name the hormone which is secreted by males and females during adolescence. (1) 3. What happens if Insulin is not secreted in the proper amount? (2) **OR** 3.From which cells of pancreatic islets insulin and glucagon hormone are secreted? (2)	**[4]**
39	**Read the following text carefully and answer the questions that follow:** An insulated copper wire wound on a cylindrical cardboard tube such that its length is greater than its diameter is called a solenoid. When an electric current is passed through the solenoid, it produces a magnetic field around it. The magnetic field produced by a current - carrying solenoid is similar to the magnetic field produced by a bar magnet. The field lines inside the solenoid are in the form of parallel straight lines. The strong magnetic field produced inside a current - carrying solenoid can be used to magnetize a piece of a magnetic material like soft iron when placed inside the solenoid. The strength of the magnetic field produced by a current - carrying solenoid is directly proportional to the number of turns and strength of the current in the solenoid.	**[4]**



1. What would be the strength of the magnetic field inside a long current - carrying straight solenoid? (1)
2. Which end is north and which end is south pole when current flows through a solenoid? (1)
3. A long solenoid carrying a current produces a magnetic field B along its axis. If the current is double and the number of turns per cm is halved, then what will be the new value of the magnetic field? (2)

OR

3. A soft iron bar is enclosed by a coil of insulated copper wire as shown in the figure. When the plug of the key is closed, then where would the face B of the iron bar be marked? (2)



"Everything you've ever wanted is sitting on the other side of fear."

ALL THE BEST