SET-B

GWCS02B

G-W CLASSES, GONDIA

Near Giri Hospital, Vivekanand Colony, Gondia. Mob.: 9673916351, 9422950376

email : gwclassesgondia@gmail.com

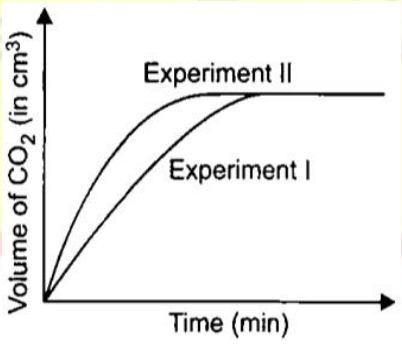
GW PARIKSHA PREBOARD-02

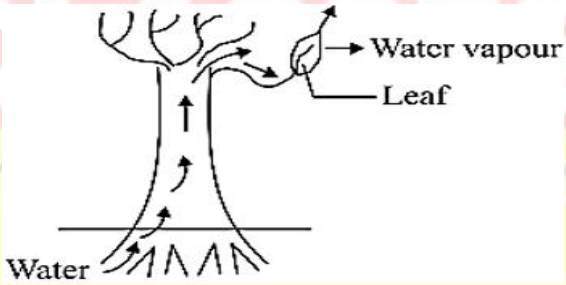
CLASS-X **SUBJECT- SCIENCE**

TIME ALLOWED: 3 HOURS **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	Marble chips or calcium carbonate react with hydrochloric acid as: $CaCO_3 + 2HCl \rightarrow CaCl_2 + H_2O + CO_2$ The reaction is carried out twice and following graphs were obtained:  Which of the following statements is incorrect? a) Reaction is faster in experiment II. b) Same amount of marble chips and hydrochloric acid is used for both the experiments. c) Marble chips taken in experiment II are smaller in size than the marble chips taken in expe. I. d) None of these	[1]
2	Calcium oxide reacts vigorously with water to produce slaked lime.	[1]

	$CaO(s) + H_2O(l) \rightarrow Ca(OH)_2(aq)$ This reaction can be classified as : 1.Combination reaction 2. Exothermic reaction 3.Endothermic reaction 4. Oxidation reaction Which of the following is the correct option? a) C and D b) A and B c) A and C d) A, C and D	
3	An aqueous solution of a salt turns blue litmus to red. The salt could be the one obtained by the reaction of: a) H_2SO_4 and KOH b) HNO_3 and NaOH c) HCl and NH_4OH d) CH_3COOH and NaOH	**[1]**
4	A hydrocarbon with molecular formula C_4H_{10} has: a) 10 covalent bonds b) 7 covalent bonds c) 13 covalent bonds d) 6 covalent bonds	**[1]**
5	A brief information about a few elements is given below: P : It is used in making electrodes. Q : It is required for combustion. R : It is used to preserve food. S : It is used as fungicide. P, Q, R and S are respectively a) Carbon, oxygen, nitrogen and Sulphur b) Aluminium, carbon, oxygen and phosphorus c) Copper, oxygen, hydrogen and iodine d) Sulphur, oxygen, nitrogen and hydrogen.	**[1]**
6	Copper utensils slowly lose their shiny brown surface and gain a green coat on prolonged exposure to atmospheric air. This is due to the formation of a coating of a) Cuprous oxide b) Cupric oxide c) Copper carbonate d) Copper sulphate	**[1]**
7	Oils on treating with hydrogen in the presence of palladium or nickel catalyst form fats. This is an example of a) Addition reaction b) Displacement reaction c) Oxidation reaction d) Substitution reaction	**[1]**
8	Observe the following diagram and identify the process and its significance from the following options:  a) Translocation: helps in transporting materials from one cell to another. b) Excretion: helps in excreting out waste water from the plant. c) Evaporation: maintains water contents in leaf cells. d) Transpiration: creates a suction force which pulls water inside the plant.	**[1]**
9	The statement that correctly describes the characteristic(s) of a gene is: a) A gene is not the information source for making proteins in the cell. b) In individuals of a given species, a specific gene is located on a particular chromosome. c) All the inherited traits in human beings are not controlled by genes. d) Each chromosome has only one gene located all along its length.	**[1]**
10	A student decides to study the impact of removing certain flower parts on fruit formation in plant species X. He chooses three separate plants that are growing in the same plot under uniform	**[1]**

conditions. The data is given in the table below.

Plant	Part removed	Impact on formation
1	Anther	30% less fruit formed than average plan in the plot
2	Stigma	No fruit formed
3	Petal	No significant impact

Which of the following cannot be inferred from the above data?

a) Anthers and stigmas are crucial in sexual reproduction in species X.

b) Species X relies com pletely on cross - pollination.

c) Species X is likely to be wind - pollinated.

d) Pollen grains are probably unable to germinate if they land on other parts of the carpel besides the stigma.

11 Select the correct statement among the following. **[1]**

1. Human female possesses homomorphic sex chromosomes.
2. Males possess homogameticsex chromosomes in humans.
3. Human females possess heterogametic sex chromosomes.
4. Human male possesses homomorphic sex chromosomes.

a) Statement (iii) is correct. b) Statement (i) is correct.

c) Statement (ii) is correct. d) Statement (iv) is correct.

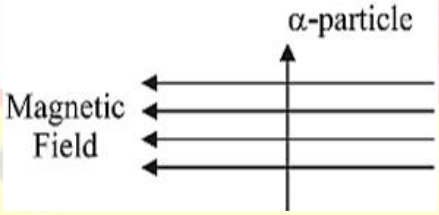
12 Select from the following the correct statement about tropic movement in plants: **[1]**

a) It is a growth related movement.

b) It does not depend upon the direction of stimulus received.

c) It is due to stimulus of touch and temperature. d) It is observed only in roots and not in stems.

13 An alpha particle enters a uniform magnetic field as shown. The direction of motion of the alpha particle is: **[1]**



a) out of the page b) into the page c) towards right d) towards left

14 The values of mA and μ A are **[1]**

a) 10^{-3} A and 10^{-9} A respectively b) 10^{-6} A and 10^{-3} A respectively

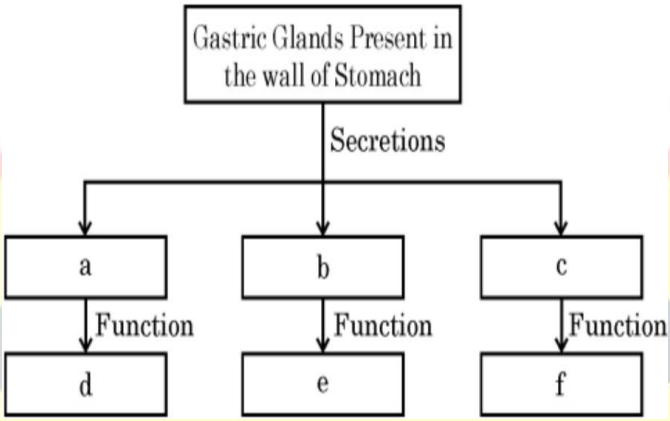
c) 10^{-6} A and 10^{-9} A respectively d) 10^{-3} A and 10^{-6} A respectively

15 The table below lists some information about the trophic levels of a food chain. **[1]**

Trophic level	Number of organisms	Energy in the trophic level (arbitrary units)
P	100	10,000
Q	1	100
R	1000	100,000
S	10	1000

Which of the following food chains is correct?

	a) P→ 0 → R → S b) R→ P → S → Q c) P→ S → Q → R d) R→ Q → S → P	
16	Food web is constituted by a) relationship between animals and environment. b) relationship between plants and animals c) various interlinked food chains in an ecosystem d) relationship between the organisms and the environment	**[1]**
17	**Assertion (A):** A lead nitrate on thermal decomposition gives lead oxide, brown coloured nitrogen dioxide and oxygen gas. **Reason (R):** Lead nitrate reacts with potassium iodide to form yellow ppt. of lead iodide and the reaction is double displacement as well as precipitation reaction. 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):** Meiosis takes place only in gametes. **Reason (R):** To restore the total number of chromosomes in offspring. 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):** A current - carrying conductor experiences a force in a magnetic field. **Reason (R):** The force acting on a current-carrying conductor in a magnetic field is due to interaction between magnetic field produced by the current - carrying conductor and external magnetic field in which the conductor is placed. 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):** A food chain can have maximum of three trophic levels. **Reason (R):** Energy available at each trophic level keeps on decreasing as we move higher up the 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	Consider the carbon compounds having the following molecular formula: (i) C_2H_2 (ii) C_2H_6 (iii) C_3H_7OH (iv) C_2H_5COOH (v) CH_3CHO 1. Identify which one of the above compounds, is a member of aldehyde series. 2. Write the general formula of the series to which compound C_2H_2 belongs. 3. Which one of the above compounds has triple bonds between carbon - carbon atoms? 4. Write the molecular formula of the first member of the homologous series to which the compound C_3H_7OH belongs.	**[2]**
22	1. List two reasons of using contraceptive methods by married couples. 2. Write in proper sequence the processes going on in the different organs of the reproductive system of a human female starting from the time of egg production to childbirth.	**[2]**
23	In the context of the statement **chlorophyll is necessary for photosynthesis** answer the following questions:	**[2]**

	1. What are variegated leaves? Give an example. 2. When leaf is boiled in alcohol, what happens to the colour of the leaf and the colour of the solution? 3. In what form is the carbohydrate produced, stored in the plant? Why is chlorophyll necessary for photosynthesis? **OR** Complete the following flow chart as per the given instructions:  	
24	1. To get an enlarged, real and inverted image of an object by a concave mirror, where should the object be placed? Draw a labelled ray diagram to justify your answer. 2. If an object is placed at the centre of curvature of this mirror, what will be the magnification produced?	**[2]**
25	What is ozone? How is it formed at the higher level of the atmosphere? What is likely to happen if the ozone layer is continuously damaged, which is in fact happening at the moment? List any two consequences of it. **OR** 1. Construct a food chain of four trophic levels operating in a grassland. If the energy available to the organisms of 4^{th} trophic level is 75 joules, how much energy was available with the organisms of the 2^{nd} trophic level for transfer to the next trophic level? Justify your answer. 2. Why is the flow of energy unidirectional in a food chain?	**[2]**
26	1. With the help of labelled ray diagram show the path followed by a narrow beam of monochromatic light when it passes through a glass prism. 2. What would happen if this beam is replaced by a narrow beam of white light?	**[2]**
	SECTION C	
27	1. Which types of metals can be obtained in their pure form by just heating their oxides in air? Give one example. 2. Consider the reaction given below used to obtain Manganese metal in pure form: $3MnO_2(s) + 4Al(s) \rightarrow 3Mn(l) + 2Al_2O_3(s) + Heat$ a. What type of reaction is it? b. What is the role of aluminium in this reaction?	**[3]**
28	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:	**[3]**

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?

OR

Samples of four metals A, B, C and D were taken and added to the following solution one by one. The results obtained have been tabulated as follows:

Metal	**Iron(II) sulphate**	**Copper(II) sulphate**	**Zinc sulphate**	**Silver nitrate**
A	No reaction	Displacement	—	—
B	Displacement	—	No reaction	—
C	No reaction	No reaction	No reaction	Displacemen
D	No reaction	No reaction	No reaction	No reaction

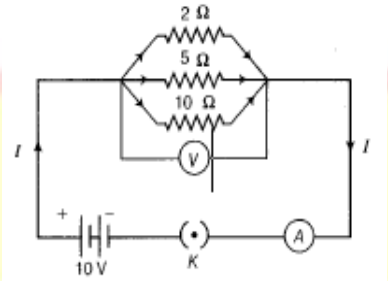
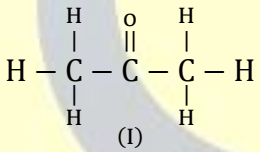
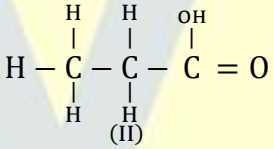
Use the table above to answer the following questions about metals A, B, C and D.

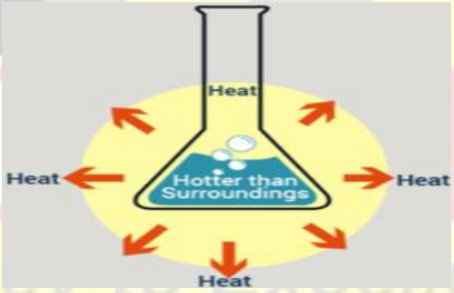
1. Which is the most reactive metal?
2. What would you observe if B is added to a solution of copper(II) sulphate?
3. Arrange the metals A, B, C and D in the order of decreasing reactivity.

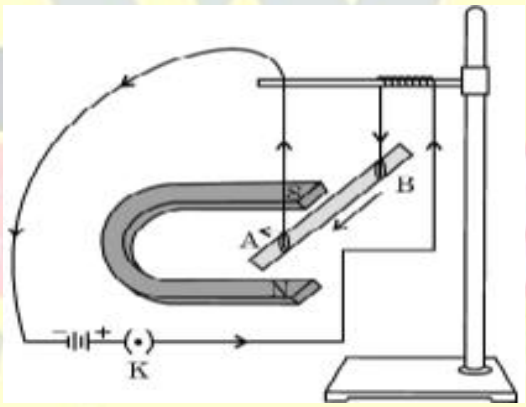
29 Leaves of healthy potted plant were coated with vaseline. Will this plant remain healthy for long? Give reasons for your answer. **[3]**

30 A red - eyed individual is crossed with a white - eyed individual to produce F_1 progeny with red eyes. When F_1 individuals are intercrossed, F_2 progeny is formed with both red as well as white - eyed individuals. **[3]**

1. How is the dominant trait identified?
2. What are recessive traits?
3. If 12 individuals are produced in F_2 generation, then how many white - eyed individuals would be obtained? Calculate the ratio of red - eyed individuals to white - eyed individuals.

31	What is atmospheric refraction? Explain with the help of a labelled diagram that the position of a star as seen by us is not its true position.	**[3]**
32	An electric motor rated 1100 Wis connected to 220 V mains. Find: 1. The current drawn from the mains, 2. Electric energy consumed if the motor is used for 5 hours daily for 6 days. 3. Total cost of energy consumed if the rate of one unit is₹ 5.	**[3]**
33	A circuit diagram is given as shown below:  Calculate 1. the total effective resistance of the circuit. 2. the total current in the circuit and the current through each resistor.	**[3]**
	SECTION D	
34	1. Define the term functional group. Identify the functional groups present in the following carbon compounds:  (I)  (II) 2. What happens when ethanol reacts with acidified potassium dichromate solution? Write chemical equation for the reaction. Why is this reaction considered an oxidation reaction? 3. Write chemical equation for the reaction of ethanoic acid with sodium hydroxide. **OR** 1. Define the term **isomer** . 2. Two compounds have same molecular formula C_3H_6O. Write the name of these compounds and their structural formula. 3. How would you bring the following conversions: a. Ethanol to ethene b. Propanol to propanoic acid	**[5]**
35	1. Use of a condom is beneficial for both the sexes involved in a sexual act. Justify this statement giving two reasons. 2. How do oral contraceptive help in avoiding pregnancies? 3. What is sex selective abortion? How does it affect a healthy society? (State any one consequence) **OR** Draw a labelled diagram of human brain and mention the functions of the following: Medulla oblongata, cerebellum and forebrain.	**[5]**
36	1. An object is placed in front of a convex lens of focal length f. If the distance of the object from the lens is 2f, draw a ray diagram to show the formation of the image. State two characteristic of image formed.	**[5]**

	2. A student has focussed the image of a candle flame on a white screen using a convex lens. The situation is as given below: Length of the flame = 1.5 cm Focal length of the lens = 12 cm Distance of the flame from the lens = 18 cm If the flame is perpendicular to the principal axis of the lens, calculate the values of the following: a. Distance of the image from the lens b. Length of the image formed **OR** It is desired to obtain an erect image of an object, using concave mirror of focal length of 12 cm. 1. What should be the range of distance of an object placed in front of the mirror? 2. Will the image be smaller or larger than the object? Draw ray diagram to show the formation of image in this case. 3. Where will the image of this object be, if it is placed 24 cm in front of the mirror? Draw ray diagram for this situation also to justify your answer. Show the positions of pole, principal focus and the centreof curvature in the above ray diagrams.	
	SECTION E	
37	**Read the following text carefully and answer the questions that follow:** The dissolving of an acid or a base in water is a highly exothermic reaction. Care must be taken while mixing concentrated nitric acid or sulphuric acid with water. The acid must always be added slowly to water with constant stirring. If water is added to a concentrated acid, the heat generated may cause the mixture to splash out and cause burns. The glass container may also break due to excessive local heating. Look out for the warning sign on the can of concentrated sulphuric acid and on the bottle of sodium hydroxide pellets.  1. What is the exothermic reaction? (1) 2. Write an example of an exothermic reaction. (1) 3. How will you obtainsulphuric acid from an acidic oxide? (2) **OR** While diluting an acid, why is it recommended that the acid should be added to water and not water to the acid? (2)	**[4]**
38	**Read the following text carefully and answer the questions that follow:** Animals have a nervous system for controlling and coordinating the activities of the body. But plants have neither a nervous system nor muscles. So, how do they respond to stimuli? When we touch the leaves of a chhui - mui (the 'sensitive' or 'touch - me - not' plant of the Mimosa family), they begin to fold up and droop. When a seed germinates, the root goes down, the stem comes up into the air. What happens? Firstly, the leaves of the sensitive plant move very quickly in response to touch. There is no growth involved in this movement. On the other hand, the directional movement of a	**[4]**

	seedling is caused by growth. If it is prevented from growing, it will not show any movement. So plants show two different types of movement - one dependent on growth and the other independent of growth.  1. Plants neither have nervous system nor muscles, then how does chemical coordination occur in plants? (1) 2. Why *Mimossa pudica* leaves drop down when wetouched? Write its another name also. (1) 3. What is turgor movement? (2) **OR** What is a tropic movement? Explain with an example. (2)	
39	**Read the following text carefully and answer the questions that follow:** A student was asked to perform an experiment to study the force on a current carrying conductor in a magnetic field. He took a small aluminum rod AB, a strong horse shoe magnet, some connecting wires , a battery and a switch and connected them as shown. He observed that on passing current, the rod gets displaced. On reversing the direction of current, the direction of displacement also gets reversed. On the basis of your understanding of this phenomenon, answer the following questions:  1. a. In the above experimented set up, when current is passed through the rod, it gets displaced towards the left. What will happen to the displacement if the polarity of the magnet and the direction of current both are reversed? b. Name any two devices that use current carrying conductors and magnetic field. (1) 2. Why does the rod get displaced on passing a current through it? (1) 3. State the rule that determines the direction of the force on the conductor AB. (2) **OR** Draw the pattern of magnetic field lines produced around a current carrying straight conductor held vertically on a horizontal cardboard. Indicate the direction of the field lines as well as the direction of current flowing through the conductor. (2)	**[4]**