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GW PARIKSHA-02

CLASS-X **SUB -SCIENCE**

TIME ALLOWED: 3 HRS **MAX. MARKS :** 80

General Instructions:

1. This question paper consists of 39 questions in 3 sections. Section A is Biology, Section B is Chemistry and Section C is Physics.
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.

SECTION A

1 An organism which breaks down the food material outside the body and then absorbs it is **[1]**

a) a bacteria, Rhizobium b) a plant parasite, Cuscuta

c) an animal parasite, Tapeworm d) a fungi, Rhizopus

2 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 **[1]**

a) 1 : 3 b) 1 : 2 : 1 c) 9 : 1 : 1 : 3 d) 9 : 3 : 3 : 1

3 The percentage of solar radiation absorbed by all the green plants for the process of photosynthesis is about **:** **[1]**

a) 10% b) 1% c) 5% d) 8%

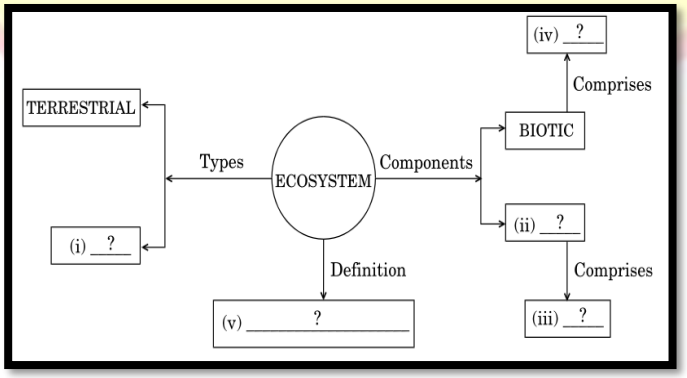
4 Match the following with correct response. **[1]**

Column A	Column B
(i)Cretinism	(a)Over secretion of growth hormone
(ii)Gigantism	(b) Under secretion of ADH
(iii)Exophthalmia	(c)Over secretion of thyroxin
(iv)Diabetes insipidus	(d)Deficiency of thyroxin

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

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

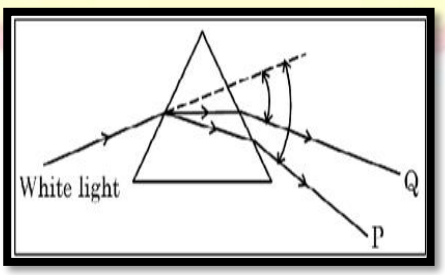
5 Human activities that are affecting the environment are: **[1]**

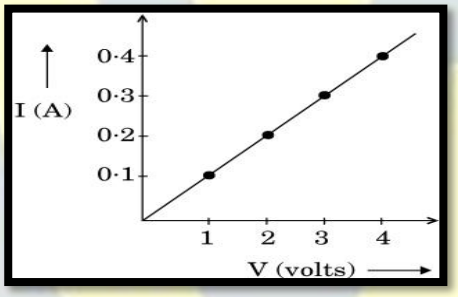
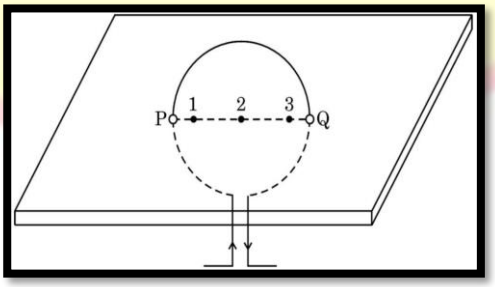
	a) excessive use of disposable cups and plates. b) segregating the wastes into biodegradable and non - biodegradable before disposal. c) maximising the use of reusable utensils for eating food and drinking fluids. d) minimising the use of chloroflurocarbons.	
6	During vigorous exercise, the occurrence of cramps in the outer muscles of an athlete is due to the conversion of pyruvate to: a) Lactose b) Glucose c) Lactic acid d) Ethanol	**[1]**
7	Which of the following is nastic movement? a) The growth of pollen tube towards a chemical b) Opening of flower (evening primrose) c) Roots moving downwards d) Shoots moving towards light	**[1]**
8	**Assertion (A):** The embryo gets nutrition from the mother's blood with the help of a special tissue called placenta. **Reason (R):** Placenta is a disc which is embedded in the uterine wall. 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]**
9	**Assertion (A):** The amount of ozone in the atmosphere began to drop sharply in the 1980s. **Reason(R):** The oxygen atoms combine with molecular oxygen to form ozone. 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]**
10	1.Which of the following flowers will have higher possibility of self - pollination? **Mustard, Papaya, Watermelon, Hibiscus** 2.List the two reproductive parts of a bisexual flower.	**[2]**
11	Explain how some harmful chemicals enter our bodies through the food chain. Why is the concentration of these harmful chemicals found to be maximum in human beings? **OR** Complete the following flow chart based on ecosystem and its components.  	**[2]**

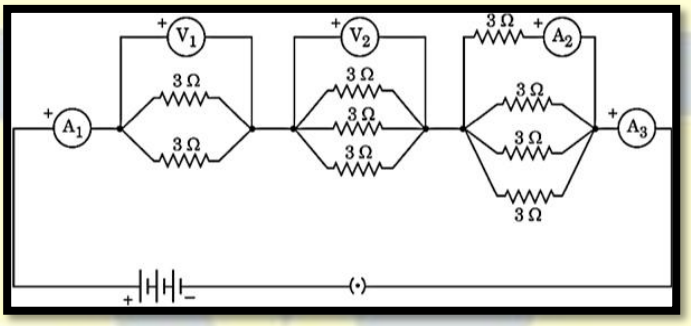
12	What is feedback mechanism of Hormonic regulation. Take the example of insulin to explain this phenomenon.	**[2]**
13	The gene combination of purple flowered pea plants is denoted as (WW) and that of white flowered pea plants as (ww), when these two plants are crossedF_1 generation is obtained. 1.List two observations made by Mendel inF_1 generation plants. 2.Give the (i) percentage of white flowered plants and (ii) ratio of the gene combinationsWW, Ww and ww in F_2 generation. 3.Write one difference between dominant and recessive trait.	**[3]**
14	1.Blood circulation in fishes is different from the blood circulation inhuman beings.Justify the statement. 2.Describe **blood circulation** in human beings.	**[3]**
15	**Read the following text carefully and answer the questions that follow:** Sex of an individual is determined by different factors in various species. Some animals rely entirely on the environmental cues, while in some other animals the individuals can change their sex during their life time indicating that sex of some species is not genetically determined. How ever, in human beings, the sex of an individual is largely determined genetically. 1.What is the statistical probability of getting either a male child or a female child? (1) 2.Write the number of pair/pairs of sex chromosomes present in human beings. In which one of the parent (male/female) perfect pair I pairs of sex chromosomes are present? (1) 3.Citing two examples, justify the statement **Sex of an individual is not always determined genetically** . (2) **OR** Draw a flow chart to show that sex is determined genetically in human beings. (2)	**[4]**
16	1.Draw a diagram showing spore formation in Rhizopus and label the (a) reproductive and (b) non - reproductive parts. Why does Rhizopus not multiply on a dry slice of bread? 2.Name and explain the process by which reproduction takes place in Hydra. **OR** With the help of labelled diagram explain the general scheme to illustrate how nervous impulses travel in the body?	**[5]**
	SECTION B	
17	Select the incorrect statement. 1.The formula of the compound is calcium sulphate dihydrate. 2.When mixed with water and left for half an hour, this compound sets into a hard mass. 3.If heated at higher temperature, the compound becomes dehydrated and is called dead burnt plaster. 4.Both (a) and (b)	**[1]**

	a) Statement (d) is incorrect. b) Statement (a) is incorrect. c) Statement (b) is incorrect. d) Statement (c) is incorrect.	
18	Which of the given statement is correct or wrong: **Statement A:** Oxyacetylene flame is used for welding purposes. **Statement B:** Ethyne reacts with HCl in the presence of $HgCl_2$ to form vinyl chloride. a) Neither statement A nor statement B is true. b) Both the statements A and B are true. c) Statement B is true;Statement A is false. d) Statement A is true; Statement B is false.	**[1]**
19	An element X reacts with O_2 to give a compound with a high melting point. This compound is also soluble in water. The element X is likely to be: a) silicon b) carbon c) iron d) calcium	**[1]**
20	Match the following with the correct response: **Column A** / **Column B** (i) Alcohol — (a) - X (ii) Aldehyde — (b) - CHO (iii) Ketone — (c) - OH (iv) Haloalkane — (d) - CO - a) (i) - (c), (ii) - (b), (iii) - (d), (iv) - (a) b) (i) - (b), (ii) - (d), (iii) - (a), (iv) - (c) c) (i) - (d), (ii) - (a), (iii) - (c), (iv) - (b) d) (i) - (a), (ii) - (c), (iii) - (b), (iv) - (d)	**[1]**
21	The slag obtained during the extraction of copper pyrites is composed mainly of:  a) $CuSiO_3$ b) SiO_2 c) Cu_2S d) $FeSiO_3$	**[1]**
22	A few drops of ethanoic acid are added to solid sodium bicarbonate. Which of the following observations would be observed? a) Evolution of a pungent smelling gas. b) Evolution of brown fumes c) Production of ahissing sound d) Brisk effervescence	**[1]**
23	When a mixture of baking soda and tartaric acid is heated (or mixed in water) a product 'X' is formed, which is responsible for making breads and cakes soft and spongy. The product 'X' is a) Carbon monoxide b) Sodium tartrate c) Carbon dioxide d) Hydrogen	**[1]**
24	**Assertion (A):** Higher the H^+ ion concentration, lower is the pH value.	**[1]**

	Reason (R): The pH of a neutral solution = 7, that of a basic solution < 7 and that of an acidic solution > 7. 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.	
25	1.What happens when dilute hydrochloric acid is added to sodium carbonate ? Write a balanced chemical equation of the reaction involved. 2. Which gas is liberated when dilute hydrochloric acid reacts with sodium carbonate ? How will you test for the presence of this gas?	**[2]**
26	Define a displacement reaction. Name a displacement reaction which is highly exothermic and has its use in joining railway tracks. Explain the process with a balanced chemical equation of the reaction that occurs. **OR** A student adds water to a substance X taken in beaker. He feels the beaker turning hot and a hissing sound is produced.Whydoes this happen? Write a chemical equation for the reaction. State the type of this reaction.	**[3]**
27	P, Q and R are 3 elements which undergo chemical reactions according to the following equations: 1.$P_2 O_3 + 2Q \rightarrow Q_2 O_3 + 2P$ 2.$3RSO_4 + 2Q \rightarrow Q_2 (SO_4)_3 + 3R$ 3.$3RO + 2P \rightarrow P_2 O_3 + 3R$ Answer the following questions: a.Which element is most reactive? b.Which element is least reactive? c.State the type of reaction listed above.	**[3]**
28	**Read the following text carefully and answer the questions that follow:** In a balanced chemical reaction, equal number of atoms are present on both sides of reaction. A balanced chemical reaction is based on law of conservation of mass which means that total mass of reactants and products participating in a reaction must be equal. For example, a balanced chemical equation of burning of magnesium in oxygen to form magnesium oxide is written as: $2Mg + O_2 \rightarrow 2MgO$ The mass of reactants ($2 \times 24 + 32 = 80$) is equal to the mass of products [$2 \times (24 + 16) = 80$] . 1.In a reaction, 35 g of reactant, PQ breaks down into 20 g of product, Pand an unknown amount of product, Q. Find the amount of product Q. (1) 2.The solid mercury (II) oxide is heated, and liquid mercury and oxygen gas are produced. Mention balanced chemical reaction. (1)	**[4]**

	3.Whichlaws are satisfied by a balanced chemical equation? (2) **OR** In the given chemical reaction, (2) $2C_6H_{6(l)} + 15O_{2(g)} \rightarrow mCO_{2(g)} + nH_2O_{(l)}$ Find the values of m and n respectively.	
29	1.Name the compound formed when ethanol is heated at 443 K in the presence of conc. H_2SO_4 and draw its electron dot structure. State the role of conc. H_2SO_4 in this reaction. 2.What is hydrogenation? Explain it with the help of a chemical equation. State the role of this reaction in industry. **OR** Consider the molecular formula of the carbon compounds (a) and (b) given below: (a) C_3H_8O (b) $C_3H_6O_2$ 1.Identify the functional groups in (a) and (b) and write their structures. 2.Are (a) and (b) isomers? Give reason. 3.What happens when alkaline KMnO4 is added, drop by drop, into a test tube containing warm propanol? Write the chemical equation for the reaction and state the role of alkaline $KMnO_4$ in this reaction.	**[5]**
	SECTION C	
30	Which of the following statement is incorrect? 1.A ray of light passing from an optically rarer medium to an optically denser medium bends away from the normal. 2.A ray of light passing from an optically denser medium to an optically rarer medium bends away from the normal. 3.A ray of light passing from an optically rarer medium to an optically denser mediumbends toward the normal. 4.A ray light passing from an optically denser medium to an optically rarer mediumbends towards the normal. a) A, B and D b) B and C c) A and C d) A and D	**[1]**
31	In the following diagram showing dispersion of white light by a glass prism, the colours **P** and **Q** respectively are -  a) Violet and Red b) Orange and Green c) Red and Blue d) Red and Violet	**[1]**

32	**Assertion (A):** A compass needle is placed near a current - carrying wire. The deflection of the compass needle decreases when the magnitude of an electric current in the wire is increased. **Reason (R):** Strength of a magnetic field at a point near the conductor increases on increasing the current. 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]**
33	Write the conditions for observing a rainbow. Show, by drawing a suitable diagram, how one understands the formationof a rainbow?	**[2]**
34	In the experiment to study the dependence of current (I) on the potential difference (V) across a resistor, a student obtained a graph as shown. 1.What does the graph depict about the dependence of current on the potential difference? 2.Find the current that flows through the resistor when the potential difference across it is 2.5 V.  **OR** Compare the power used in the 2Ω resistor in each of the following circuits: (i) a 6 Vbattery in series with 1 Ω and 2 Ω resistors,and (ii) a 4 V battery in parallel with 12 Ω and 2 Ω resistors.	**[2]**
35	Consider a rectangular cardboard having two holes P and Q through which a current carrying circular loop has been inserted as shown in the diagram. 1.Make this diagram on your answer sheet and draw three magnetic field lines, one each passing through the points 1 (near P), 2 (at the centre of the loop) and 3 (near Q).  2.List two factors on which the intensity of the magnetic field produced at the centre of the loop depends.	**[3]**

	3.Name the rule you will apply to determine the direction of magnetic field produced due to a current carrying straight conductor.	
36	1.Draw a diagram to show the dispersion of white light by a glass prism. 2.What is spectrum? Give reason for its formation.	**[3]**
37	2.Draw a labelled diagram to show the pattern of magnetic field lines on a horizontal white board due to a straight current carrying conductor passing perpendicular through its centre. If the direction of current in the conductor is vertically downwards, mark the direction of (i) current, and (ii) magnetic field lines. 2.State the right hand thumb rule and check whether the directions marked on the diagram are in accordance with this rule.	**[3]**
38	**Read the following text carefully and answer the questions that follow:** Consider the following electrical circuit diagram in which nine identical resistors of 3 Ω each are connected as shown. If the reading of the ammeter A_1 is 1 ampere, answer the following questions:  1.What is the relationship between the readings of A_1 and A_3 ? Give reasons for your answer. (1) 2.What is the relationship between the readings of A_2 and A_3 ? (1) 3.Determine the reading of the voltmeter V_1. (2) **OR** Find the total resistance of the circuit. (2)	**[4]**
39	1.List four characteristics of the image formed by a concave lens of focal length 20 cm when the object is placed at a distance of 40 cm from its optical centre. 2.The size of image of an object by a convex lens of focal length 20 cm is observed to be reduced to $\frac{1}{3}^{rd}$ of its size. Find the distance of the object from the optical centre of the lens. **OR** 1.Define power of a lens and write its SI unit. Name the type of lens whose power is negative. 2.A convex lens forms a real and inverted image of finite size at a distance of 50 cm from it. Where is the object placed in front of the lens? Give all possible positions of the object stating reason in each case. 3.Draw labelled ray diagram for any one position of the object mentioned in (b) above.	**[5]**