**SET-B**

GWPS01B

**G - W CLASSES, GONDIA**
NEAR GIRI HOSPITAL, VIVEKANAND COLONY GONDIA
Mob. : 9673916351, 9422950376

# GW PARIKSHA-01 SET-B

**CLASS - X** **SUBJECT - SCIENCE**

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

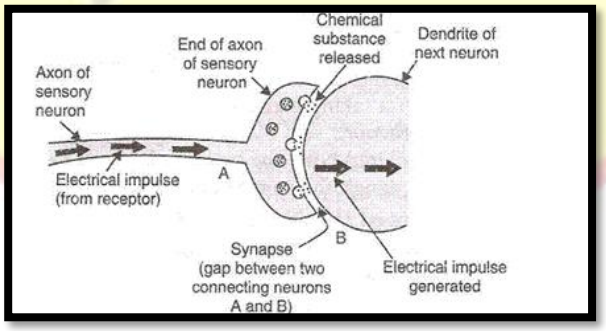
**NAME**_____

**General Instructions:**

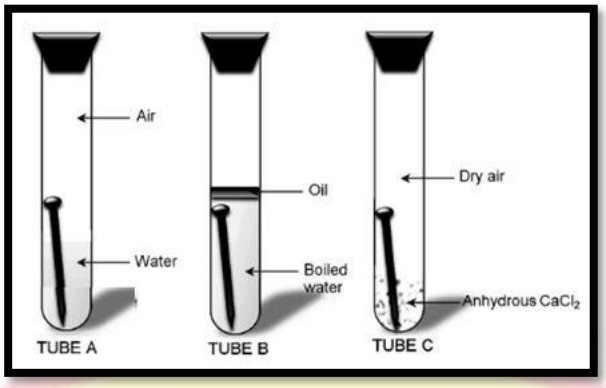
1. This question paper consists of 39 questions in 3 sections. Section A is Biology, Section B is Chemistry and Section C is Physics.
2. All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.

| | **SECTION A** | |
|---|---|---|
| 1 | Water in the root enters due to:<br>a) the function of the root to absorb water. b) diffusion of water in the roots.<br>c) difference in the concentration of ions between the root and the soil.<br>d) excess water present in the soil. | **[1]** |
| 2 | When a pure - tall pea plant is crossed with a pure - dwarf pea plant, the percentage of tall pea plants in $F_1$ and $F_2$ generation pea plants will be respectively:<br>a) 100%; 100% b) 100%; 50% c) 100%; 75% d) 100%; 25% | **[1]** |
| 3 | Other than the abiotic components, which of the given biotic components are not required to make an aquarium with small herbivorous fishes a self - sustaining system?<br>1.Aquatic plants and aquatic animals 2.Terrestrial plants and terrestrial animals<br>3.Decomposers as bacteria and fungi 4.Consumers as clown fishes and sea urchins<br>a) (ii) and (iv) b) (ii) and (iii) c) (i) and (iii) d) (i) and (iv) | **[1]** |
| 4 | Match the following with correct response.<br>**Column A** / **Column B**<br>(i)The master gland — (a)Control cell division and cell growth<br>(ii)Cytokinin — (b)Regulates metabolism<br>(iii)Insulin — (c)Reduces blood sugar<br>(iv)Thyroxine — (d)Pituitary gland<br>a) (i) - (d), (ii) - (a), (iii) - (c), (iv) - (b) b) (i) - (c), (ii) - (b), (iii) - (d), (iv) - (a)<br>c) (i) - (a), (ii) - (c), (iii) - (b), (iv) - (d) d) (i) - (b), (ii) - (d), (iii) - (a), (iv) - (c) | **[1]** |

| | | |
|---|---|---|
| 5 | Green plants occupy the first trophic level in every food chain because they<br>a) can synthesize food by photosynthesis. b) exist over a large area.<br>c) have very less concentration of harmful chemicals. d) have to feed large number of herbivores. | **[1]** |
| 6 | Which of the following statement(s) is (are) true about respiration?<br>1.During inhalation, ribs move inward and the diaphragm is raised<br>2.In the alveoli, exchange of gases takes place i.e., oxygen from alveolar air diffuses into blood and carbon dioxide from the blood into the alveolar air<br>3.Haemoglobin has a greater affinity for carbon dioxide than oxygen<br>4.Alveoli increase surface area for exchange of gases<br>a) (i) and (iii) b) (i) and (iv) c) (ii) and (iv) d) (ii) and (iii) | **[1]** |
| 7 | A pair of endocrine glands located in the human brain is<br>a) Hypothalamus and Thymus b) Pineal and Thymus<br>c) Hypothalamus and Pineal d) Parathyroid and Pituitary | **[1]** |
| 8 | **Assertion (A):** Sexual reproduction involves two parents of different sexes, a male and a female, which produce male and female gametes respectively.<br>**Reason (R):** The male and female gametes fuse to form a zygote in sexual reproduction, which develops into a new individual.<br>a) Both A and R are true and R is the correct explanation of A.<br>b) Both A and R are true but R is not the correct explanation of A.<br>c) A is true but R is false. d) A is false but R is true. | **[1]** |
| 9 | **Assertion (A):** The energy which passes to the herbivores does not come back to autotrophs.<br>**Reason (R):** The flow of energy in a food chain is unidirectional.<br>a) Both A and R are true and R is the correct explanation of A.<br>b) Both A and R are true but R is not the correct explanation of A.<br>c) A is true but R is false. d) A is false but R is true. | **[1]** |
| 10 | 1.List two reasons of using contraceptive methods by married couples.<br>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]** |
| 11 | How is ozone formed in the higher levels of the atmosphere? **Damage to the ozone layer is a cause of concern.** Justify this statement.<br>**OR**<br>Use of pesticides to protect our crops affect organisms at various trophic levels especially human beings. Name the phenomenon involved and explain how does it happen. | **[2]** |
| 12 | Write the name and location of a hormone which helps a person to respond when chased by a dog. Mention the responses in the body which help him to deal with the situation. | **[2]** |
| 13 | A pure pea plant having round (R), yellow (Y) seeds is crossed with another pure pea plant having wrinkled (r), green (y) seeds. Subsequently $F_1$ progeny is self - pollinated to obtain $F_2$ progeny. | **[3]** |

| | | |
|---|---|---|
| | 1.What do the seeds of $F_1$ generation look like?<br>2.Give the possible combinations of traits in seeds of $F_2$ generation. Also give their ratio.<br>3.State the reason of obtaining seeds of new combination of traits in $F_2$ generation. | |
| 14 | 1.Draw a well labeled diagram of the human digestive system<br>2.Describe the role of following in digestion.<br>a.Bile b. Salivary amylase c. HCl | **[3]** |
| 15 | **Read the following text carefully and answer the questions that follow:**<br>Mendel blended his knowledge of Science and mathematics to keep the count of the individuals exhibiting a particular trait in each generation. He observed a number of contrasting visible characters controlled in pea plants in a field. He conducted many experiments to arrive at the law's of inheritance.<br>1.If only one pair of contrasting characters like tall and short plants is taken, plants obtained in F1 generation are not of medium height. Why? (1)<br>2.Name the recessive traits in above case. (1)<br>3.Mention the type of the new combinations of plants obtained in F2 progeny along with their ratio, if F1 progeny was allowed to self pollinate. (2)<br>**OR**<br>If 1600 plants were obtained in F2 progeny, write the number of plants having traits:<br>a. Tall with round seeds b. Short with wrinkled seeds<br>Write the conclusion of the above experiment. (2) | **[4]** |
| 16 | 1.Draw a diagram showing the germination of pollen on the stigma of a flower and mark on it the following organs/parts:<br>a.Pollen Grain b. Pollen tube c. Stigma d. Female germ cell<br>2.State the significance of the pollen tube.<br>3.Name the parts of a flower that develop after fertilization into a.Seed b.Fruit<br>**OR**<br>Given below is a well - labelled diagram showing synapse between the two neurons.<br>  <br><br>Using the given diagram, answer the following questions:<br>1.What is the sequence in which nerve impulse travels?<br>2.How synapse between two neurons acts as a one - way valve?<br>3.Which chemical substance is released when an electrical impulse coming from the receptor reaches | **[5]** |

| | | |
|---|---|---|
| | the end of the axon of a sensory neuron?<br>4.How a neurotransmitter starts an electrical impulse in the next neuron?<br>5. Which part of the neuron has a synaptic knob? | |
| | **SECTION B** | |
| 17 | Which one of the following statements is **not** correct?<br>a) Some of the metals react with acids to give salt and hydrogen gas.<br>b) Generally, all metal carbonates react with acids to give salt, water and carbon dioxide.<br>c) All metal oxides react with water to give salt and hydrogen gas.<br>d) Some non - metal oxides react with water to form acids. | **[1]** |
| 18 | Which of the given statement is correct or wrong:<br>**Statement A:** Detergent with less branching in the molecule is degraded more easily than branched - chain detergents.<br>**Statement B:** Soaps are 100% biodegradable.<br>a) Both the statements A and B are true. b) Neither statement Anor statement B is true.<br>c) Statement B is true;Statement A is false. d) Statement A is true;Statement B is false. | **[1]** |
| 19 | A metal **X** is used in thermite process. When X is burnt in air it gives an amphoteric oxide **Y** . **X** and **Y** are respectively:<br>a) Fe and $Fe_3O_4$ b) Fe and $Fe_2O_3$ c) Al and $Al_2O_3$ d) Al and $Al_3O_4$ | **[1]** |
| 20 | Match the following with the correct response:<br>**Column A** / **Column B**<br>(i) Addition reaction — (a) Hydrogenation<br>(ii) Substitution reaction — (b) Methanol<br>(iii) Denaturation — (c) Carbon tetrachloride<br>(iv) Esterification — (d) Ethyl ethanoate<br>a) (i) - (b), (ii) - (d), (iii) - (a), (iv) - (c) b) (i) - (a), (ii) - (c), (iii) - (b), (iv) - (d)<br>c) (i) - (c), (ii) - (b), (iii) - (d), (iv) - (a) d) (i) - (d), (ii) - (a), (iii) - (c), (iv) - (b) | **[1]** |
| 21 | Take three boiling tubes A, B and C. Pour some water in test tube A Put iron nails in it and cork it. Pour boiled distilled water in another test tube B and put iron nails in it. Add 1 ml of oil over it such that oil floats over it and prevents the air from entering. Take some iron nails in test tube C and put some anhydrous calcium chloride in it and cork it. Leave all the three test tubes for one day and then observe. | **[1]** |




In which test tube nail is rusted?

a) Tube A b) Tube B and C c) Tube A and C d) Tube B

22 You want to test for hardness of water but hard water is not available in the laboratory. Which of the following compounds may be dissolved in pure water to make it hard? **[1]**

1.Hydrogen Carbonate of Sodium 2.Sulphate of Magnesium

3.Chloride of Calcium 4. Carbonate of Sodium

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

23 Two salts X and Y are dissolved in water separately. When phenolphthalein is added to these two solutions, the solution X turns pink and the solution Y does not show any change in colour, therefore X and Y are **[1]**

| | (X) | (Y) |
|---|---|---|
| (a) | $Na_2CO_3$ | $NH_4Cl$ |
| (b) | $Na_2SO_4$ | $NaHCO_3$ |
| (c) | $NH_4Cl$ | $Na_2SO_4$ |
| (d) | $NaNO_3$ | $Na_2SO_4$ |

a) Option (c) b) Option (a) c) Option (d) d) Option (b)

24 **Assertion (A):** Dry HCl gas does not change the colour of the dry litmus paper. **[1]**

**Reason (R):** It is because dry HCl does not contain the $OH^-$ ions.

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.

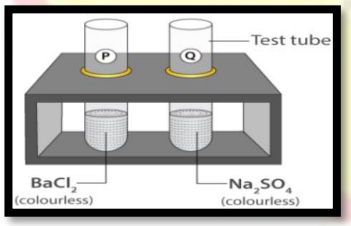
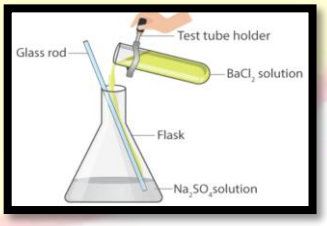
25 When a piece of limestone reacts with dilute HCl, a gas X is produced. When gas X is passed through lime water then a white precipitate Y is formed. On passing excess of gas X, the white precipitate dissolves forming a soluble compound Z. **[2]**

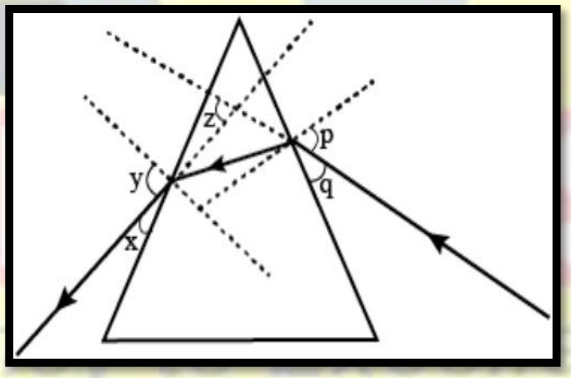
1.What are X, Y and Z?

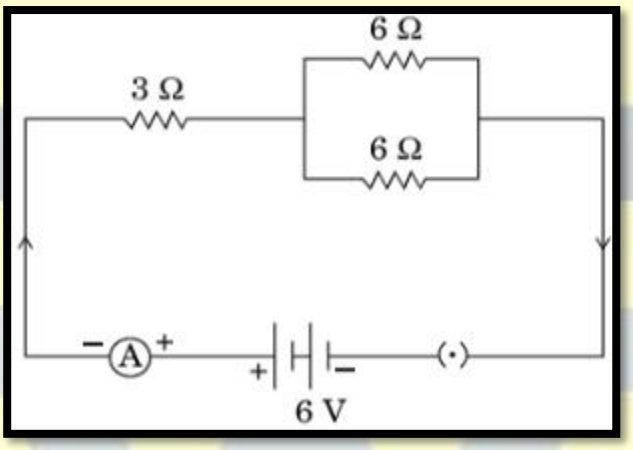
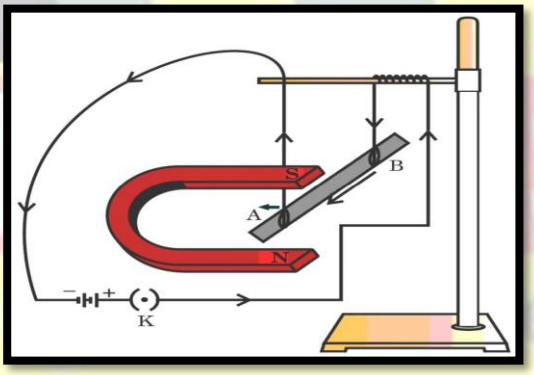
2.Write equations for the reactions which take place :

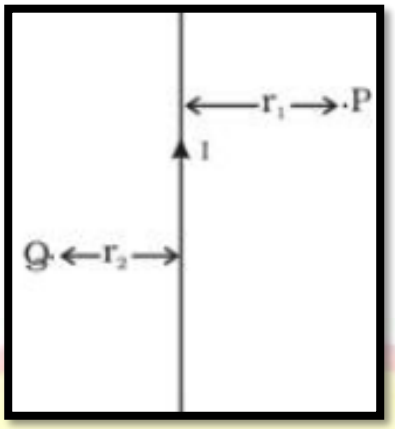
a. When limestone reacts with dilute HCl.

b. When gas X reacts with lime water to form white precipitate Y.

| | | |
|---|---|---|
| 26 | Why are decomposition reactions called the opposite of combination reactions? Write one chemical equation each for these two types of reactions mentioning the name of the reactant(s) and the product(s) involved in the reactions.<br>**OR**<br>State the change that is observed when a China dish containing copper powder is heated over the flame of a burner. Name the phenomenon responsible for the change and write balanced equation for the chemical reaction that occurs. How is this reaction different from the reaction that occurs when copper wares kept in open air slowly lose their shiny brown surface and gain a coat? Write chemical name of the coating and state its colour. | **[3]** |
| 27 | 1.Show the formation of Aluminium Nitride (AlN) by the transfer of electrons. [ At. no. of $Al = 13$ ; At. no. of $N = 7$ ]<br>2."Ionic compounds are solids and are generally brittle and break into pieces when pressure is applied." Give reason to justify the statement. | **[3]** |
| 28 | **Read the following text carefully and answer the questions that follow:**<br>When a more reactive element displaces a less reactive element from its compound, it is called a displacement reaction. The reaction is of two types. Single displacement reaction and double displacement reaction. Iron being more reactive than copper displaces copper from an aqueous solution of copper sulphate. This is an example of a single displacement reaction. On adding silver nitrate solution to sodium bromide, a yellow ppt of silver bromide and solution of sodium nitrate is formed. This is an example of a double displacement reaction.<br>1.When dil. sulphuric acid is added to pieces of iron sulphide, hydrogen sulphide gas is produced and soluble ferrous sulphate is formed. Which chemical reaction is involved in this process? (1)<br>2.Mention reaction which is used for the preparation of oxygen gas in the laboratory. (1)<br>**OR**<br>Which elements Can displace aluminum from its salt? (1)<br>3.What are the products formed in the double displacement reaction discussed below?Also write down the equation. (2)<br>  <br>  | **[4]** |
| 29 | 1.Why does carbon show catenation to maximum extent? List two reasons.<br>2.Draw electron dot structures of (i) ethane, and (ii) ethene.<br>3.An organic compound **A** (molecular formula $C_2H_4O_2$ ) is used for preserving pickles and gives hydrogen gas with sodium metal. | **[5]** |

| | | |
|---|---|---|
| | a. Identify **A** , and b. Write its structural formulae.<br>**OR**<br>A saturated organic compound **A** belongs to the homologous series of alcohols.On heating **A** with concentrated sulphuric acid at 443 K, it forms an unsaturated compound **B** with molecular mass 28 u. The compound **B** on addition of one mole of hydrogen in the presence of Nickel, changes to a saturated hydrocarbon **C** .<br>1.Identify A, B and C.<br>2.Write the chemical equations showing the conversion of A into B.<br>3.What happens when compound C undergoes combustion?<br>4.State one industrial application of hydrogenation reaction.<br>5.Name the products formed when compound A reacts with sodium. | |
| | **SECTION C** | |
| 30 | Find the incorrect statement:<br>1.Convex mirrors are used by the dentist to see the large images of teeth of patients.<br>2.Convex mirrors are used as rear - view mirrors in cars, motorcycles, scooters,etc<br>3.Concave mirrors are used for shaving purpose.<br>4.Concave mirrors are used by doctors to focus light inside the ear or inside the mouth for medical examination.<br>a) (B) b) (C) c) (A) d) (D) | **[1]** |
| 31 | Study the following ray diagram<br>  <br><br>In this diagram, the angle of incidence, the angle of emergence and the angle of deviation respectively have been represented by:<br>a) p, y, z b) y, p, z c) x, q, z d) p, z, y | **[1]** |
| 32 | **Assertion (A):** In the common domestic circuits the earth wire is connected to a metallic plate buried deep inside the earth.<br>**Reason (R):** Earth wire ensures that any leakage of current to the metallic body of the appliance keeps its potential to that of the earth, so the user may not get a severe electric shock.<br>a) Both A and R are true and R is the correct explanation of A.<br>b) Both A and R are true but R is not the correct explanation of A.<br>c) A is true but R is false. d) A is false but R is true. | **[1]** |

| | | |
|---|---|---|
| 33 | Draw a ray diagram showing the path of rays of light when it enters with oblique incidence:<br>1.from air to water 2. from water to air | **[2]** |
| 34 | Two resistors of resistance R and 2R are connected in parallel in an electric circuit. Calculate the ratio of the electric power consumed by R and 2R?<br>**OR**<br>In the given circuit, find:<br>1.Total resistance of the network of resistors<br>2.Current through ammeter A, and<br>3.Potential difference across $3\Omega$ and $6\ \Omega$ resistors<br>  <br> | **[2]** |
| 35 | As shown in the figure a small aluminum rod AB is suspended horizontally between the poles of a strong horseshoe magnet. This rod is also connected with a battery and a key. Study the arrangement shown.<br>  <br><br>1.State Fleming's left - hand rule.<br>2.Apply Fleming's left - hand rule to determine :<br>a.What is observed when a current is passed from B to A in the rod?<br>b.What is observed when a current is passed from A to B in the rod?<br>3. What is observed when therod$AB$ is aligned parallel to the magnetic field and current is passed through it from B to A? Justify your answer in this case. | **[3]** |
| 36 | 1.Draw a diagram to show the dispersion of white light by a glass prism.<br>2.What is spectrum? Give reason for its formation. | **[3]** |
| 37 | AB is a current carrying conductor in the plane of the paper as shown in Figure. | **[3]** |




1.What are the directions of magnetic fields produced by it at points P and Q?

2.Given $r_1 > r_2$ , where will the strength of the magnetic field be larger?

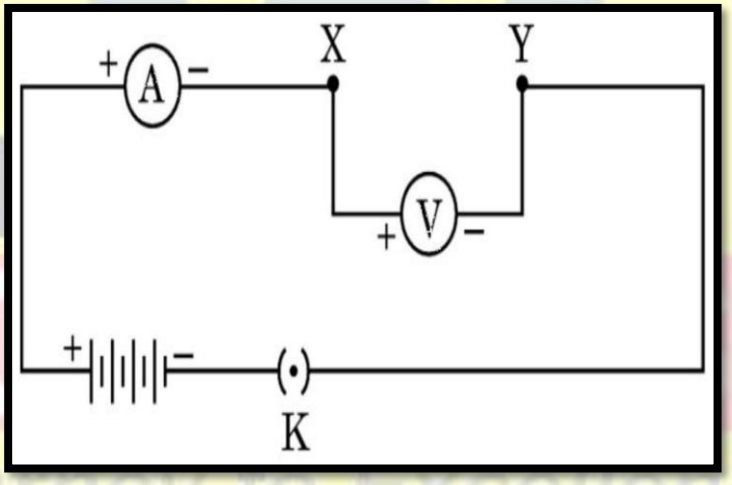
38 As shown in the diagram, an electric circuit consisting of an ammeter, a voltmeter, 4 cells of 1.5 V each, a plug key with a gap XY was set up. Voltmeter and ammeter readings were recorded in the observation table for four arrangements as given below: **[4]**

Arrangement No. 1 - only resistor $R_1$ in gap $XY$

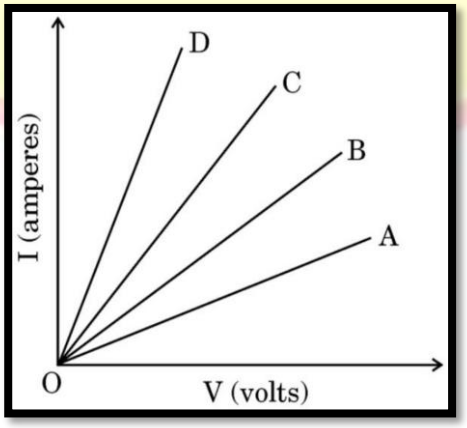
Arrangement No. 2 - only resistor $R_2$ in gap $XY$

Arrangement No. 3 - Resistors $R_1$ and $R_2$ in series in gap $XY$

Arrangement No. 4 - Resistors $R_1$ and $R_2$ in parallel in gap $XY$




Based on the observations, four V - I graphs A, B, C and D as shown in figure were drawn. Study these graphs.



| | | |
|---|---|---|
| | 1.Which one of the graphs represents the series combination of $R_1$ and $R_2$ ? **(1)**<br>2.Which one of these graphs represents the parallel combination of $R_1$ and $R_2$ ? **(1)**<br>3. a.Show an arrangement of three resistors, each of resistance $10\Omega$ , so that the combination has a resistance of $15\Omega$ . Give justification for your answer. **(2)**<br>**OR**<br>a. A battery of 6 V is connected with a series combination of five resistors of $0 \cdot 1\Omega, 0 \cdot 2\Omega, 0 \cdot 3\Omega, 0 \cdot 4\Omega$ and $0 \cdot 5\Omega$ . How much current would flow through the $0.3\Omega$ resistor? Justify your answer. **(2)** | |
| 39 | 1.A 5 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 20 cm. The distance of the object from the lens is 30 cm. Find the position, nature and size of the image formed.<br>2. Draw a labelled ray diagram showing object distance, image distance and focal length in the above case.<br>**OR**<br>A student focussed the image of a candle flame on a white screen using a convex lens. He noted down the position of the candle screen and the lens as under Position of candle = 12.0 cm Position of convex lens = 50.0 cm Position of the screen = 88.0 cm<br>1.What is the focal length of the convex lens?<br>2.Where will the image be formed if he shifts the candle towards the lens at a position of 31.0 cm?<br>3.What will be the nature of the image formed if he further shifts the candle towards the lens?<br>4.Draw a ray diagram to show the formation of the image in case (iii) as said above. | **[5]** |

SPACE FOR ROUGH WORK

CLASSES
Journey to Excellence