



# G-W CLASSES, GONDIA

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## GW PARIKSHA- 02

CLASS-X

SUBJECT- SCIENCE (086)

TIME ALLOWED: 3 HRS

MAX. MARKS : 80

### 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. Answers 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.

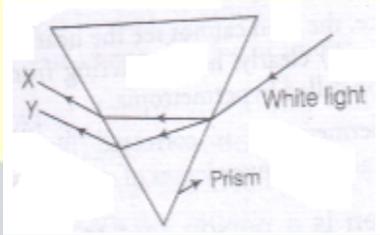
### SECTION A

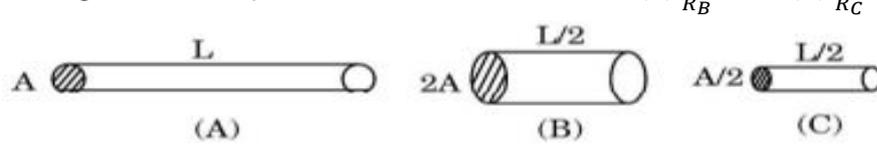
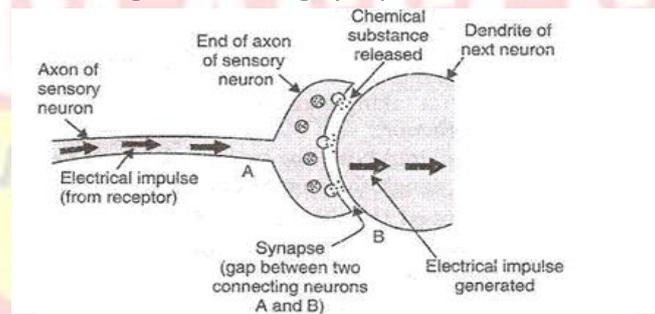
1	<p>Which characteristic is observed by the reaction shown in the given image?</p> <p>a) Formation of a precipitate b) Change in temperature c) Evolution of a gas d) Both change in temperature and evolution of gas</p>	[1]
2	<p>Two colourless solutions X and Y were mixed together. On mixing, a yellow precipitate Z was formed. Which of the following statements is correct regarding X, Y and Z?</p> <p>a) X and Y were potassium hydroxide solution and nitric acid respectively and the yellow precipitate Z was potassium nitrate. b) X and Y were sodium hydroxide solution and hydrochloric acid respectively and the yellow precipitate Z was sodium chloride. c) X and Y were potassium chloride solution and water respectively. The yellow precipitate Z was of</p>	[1]



9	<p>If a round, green seeded pea plant (RRyy) is crossed with wrinkled, yellow seeded pea plant (rrYY) the seeds to be produced in F<sub>2</sub> generation will be:</p> <p>a) Wrinkled and yellow                      b) Round and yellow c) Round and green                            d) Wrinkled and green</p>	[1]
10	<p>Offsprings formed as a result of sexual reproduction produce more variations because</p> <p>a) DNA copying is not accompanied by the creation of cellular apparatus. b) sexual reproduction is a lengthy process. c) genetic material is contributed by two individuals of same species to produce a new generation. d) genetic material is contributed by many parents.</p>	[1]
11	<p>Humans inherit colour of their eyes from their parents. Brown - eyed couple has three blue - eyed children. Which of the following statements gives correct explanation of this situation?</p> <p>i) Each parent has an allele for brown eyes and an allele for blue eyes. ii) The allele for blue eyes is recessive. iii) The probability that their next child will have blue eyes is 75%. iv) The probability that their next child will have brown eyes is 50%.</p> <p>a) (i) and (ii) only      b) (iii) and (iv) only                      c) (ii) and (iv) only      d) (i) and (iii) only</p>	[1]
12	<p>Lack of oxygen in muscles often leads to cramps among cricketers. This results due to</p> <p>a) Conversion of pyruvate to ethanol                      b) Non conversion of glucose to pyruvate c) Conversion of pyruvate to lactic acid                      d) Conversion of pyruvate to glucose</p>	[1]
13	<p>The shape of magnetic field lines produced (i) inside a solenoid (ii) around a straight conductor, both carrying current of the same magnitude are, respectively:</p> <p>a) (i) straight, (ii) straight                      b) (i) circular, (ii) straight c) (i) circular, (ii) circular                      d) (i) straight, (ii) circular</p>	[1]
14	<p>An electric kettle consumes 1 kW of electric power when operated at 220 V. The minimum rating of the fuse wire to be used for it is</p> <p>a) 1 A                      b) 5 A                      c) 2 A                      d) 4 A</p>	[1]
15	<p>Food chains generally do not exceed above 3 or 4 trophic levels because _____.</p> <p>a) A producer cannot be eaten by more than two herbivores b) Transfer of energy from one trophic level to other is associated with energy loss c) There are limited number of organisms in an ecosystem d) Larger food chains increase complications of food web</p>	[1]
16	<p>Study the given food web. Which of the following would lead to decrease in the water snail population?</p> <div style="text-align: center;"> <pre> graph TD     Hydrilla --&gt; Young_tadpoles[Young tadpoles]     Hydrilla --&gt; Water_snails[Water snails]     Young_tadpoles --&gt; Fish     Water_snails --&gt; Fish     Fish --&gt; Kingfishers     Dragonfly_nymphs[Dragonfly nymphs] --&gt; Fish </pre> </div> <p>i) Increase in Hydrilla population ii) Increase in young tadpole population iii) Decrease in kingfisher population iv) Increase in dragonfly nymphs population</p>	[1]

	a) (ii), (iii) and (iv) only      b) (ii) only                      c) (i) and (iii) only                      d) (iv) only	
17	<p><b>Assertion (A):</b> Exposure of silver chloride to sunlight for a long duration turns grey due to the formation of silver by decomposition of silver chloride.</p> <p><b>Reason (R):</b> In this process, sublimation of silver chloride takes place.</p> <p>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.</p>	[1]
18	<p><b>Assertion (A):</b> Offsprings produced by asexual reproduction are genetically similar to the parents.</p> <p><b>Reason (R):</b> Asexual reproduction involves a single parent.</p> <p>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.</p>	[1]
19	<p><b>Assertion (A):</b> In a conductor, free electrons keep on moving but no magnetic force acts on a conductor in a magnetic field.</p> <p><b>Reason (R):</b> Force on free electrons due to magnetic field always acts perpendicular to its direction of motion.</p> <p>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.</p>	[1]
20	<p><b>Assertion (A):</b> The flow of energy in a food chain operating in an ecosystem is always unidirectional.</p> <p><b>Reason (R):</b> Lots of energy is lost as heat from living organisms at each trophic level of a food chain.</p> <p>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.</p>	[1]
<b>SECTION B</b>		
21	<p>i) A liquid compound X is made up of carbon, oxygen and hydrogen elements. It has 8 covalent bonds. It releases hydrogen gas upon reaction with alkali metal. What is the chemical compound?</p> <p>ii) Write formula of two homologs of the compound X.</p>	[2]
22	<p>Give reasons:</p> <p>i) Placenta is extremely essential for foetal development.  ii) Uterine lining becomes thick and spongy after fertilisation.</p>	[2]
23	<p>Draw a labelled diagram of a cross - section of the leaf.</p> <p style="text-align: center;"><b>OR</b></p> <p>Draw a diagram of alimentary canal labelling the following:</p> <p>i) Organ which secretes bile  ii) Organ which stores bile  iii) Organ which behaves as an exocrine as well as endocrine gland  iv) Part where maximum absorption of water occurs  v) Part where digested food is absorbed</p>	[2]
24	<p>i) The image of an object formed by a lens is of same size but inverted. If the object distance is 30 cm, calculate</p> <p>a. The distance between the object and its image.</p>	[2]

	<p>b. Focal length of the lens.</p> <p>ii) Draw a ray diagram to show the image formed in above case.</p>	
25	<p>i) Natural water bodies are not regularly cleaned whereas an aquarium needs regular cleaning. Why?</p> <p>ii) What are decomposers? What will be the consequence if the decomposers are completely eradicated from an ecosystem? Give justification in support of your answer.</p>	[2]
26	<p>When a beam of white light is passed through a triangular glass prism, it gets dispersed into its seven colour components. Why do we get these colours? In the given figure, the colours X and Y represent the extreme components of the spectrum. Identify X and Y.</p> 	[2]
<b>SECTION C</b>		
27	<p>A metal 'X' is found in the form of filings which burns vigorously when sprinkled on flame. When these filings are treated with sulphur a black coloured compound 'Y' is formed which is not attracted by magnet. 'X' reacts with dil HCl to liberate hydrogen gas. 'X' reacts with steam to form 'Z' along with hydrogen gas. Identify 'X', 'Y', and 'Z'. Write the reaction involved.</p>	[3]
28	<p>i) Which types of metals can be obtained in their pure form by just heating their oxides in air? Give one example.</p> <p>ii) Consider the reaction given below used to obtain Manganese metal in pure form:  <math>3\text{MnO}_2(s) + 4\text{Al}(s) \rightarrow 3\text{Mn}(l) + 2\text{Al}_2\text{O}_3(s) + \text{Heat}</math></p> <p>a. What type of reaction is it?</p> <p>b. What is the role of aluminium in this reaction?</p> <p style="text-align: center;"><b>OR</b></p> <p>Draw the electron - dot structures of the following compounds and state the type of bonding in each case:</p> <p>i) KCl      ii) <math>\text{NH}_3</math>      iii) CaO      iv) <math>\text{N}_2</math>      v) <math>\text{CaCl}_2</math></p>	[3]
29	<p>i. If a plant is releasing carbon dioxide and taking in oxygen during the day, does it mean that there is no photosynthesis occurring? Justify your Answer.</p> <p>ii. How is ozone formed in the higher levels of the atmosphere? Damage to the ozone layer is a cause of concern. Justify this statement.</p>	[3]
30	<p>A green stemmed tomato plant denoted by (GG) is crossed with a tomato plant with purple stem denoted by (gg).</p> <p>i) What colour of the stem would you expect in their <math>F_1</math> progeny?</p> <p>ii) In what ratio would you find the green and purple coloured stem in plants of <math>F_2</math> progeny?</p> <p>iii) What conclusion can be drawn for the above observations?</p>	[3]
31	<p>The image of a candle flame placed at a distance of 30 cm from a spherical lens is formed on a screen placed on the other side of the lens at a distance of 60 cm from the optical centre of the lens. Identify the type of lens and calculate its focal length. If the height of the flame is 3 cm, find the height of its image. (Delhi 2015)</p>	[3]

32	<p>i) In the following figure, three cylindrical conductors A, B and C are shown along with their lengths and areas of cross - section. If these three conductors are made of the same material and <math>R_A</math>, <math>R_B</math> and <math>R_C</math> be their respective resistances, then find (a) <math>\frac{R_A}{R_B}</math>, and (b) <math>\frac{R_A}{R_C}</math>.</p> <div style="text-align: center;">  <p>(A)                      (B)                      (C)</p> </div> <p>ii) If the conductor A is made of copper and the conductor C is made of constantan (alloy of copper and nickel), then which one of the two will have more electrical resistance and why?</p>	[3]
33	<p>i) What is the heating effect of electric current?</p> <p>ii) Write an expression for the amount of heat produced in a resistor when an electric current is passed through it stating the meanings of the symbols used.</p> <p>iii) Name two appliances based on heating effect of electric current.</p>	[3]
<b>SECTION D</b>		
34	<p>Write the chemical equation for the following:</p> <p>i) Combustion of methane      ii) Oxidation of ethanol      iii) Hydrogenation of ethene</p> <p>iv) Esterification Reaction      v) Saponification Reaction</p> <p style="text-align: center;"><b>OR</b></p> <p>What is the difference between soaps and detergents? 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?</p>	[5]
35	<p>i) What is puberty? Write any two changes that occur in boys during early teenage years.</p> <p>ii) List two functions performed by testis in human males.</p> <p>Mention one role each of (i) Vas deferens, (ii) Seminal Vesicle (iii) Urethra and (iv) Scrotum in human male reproductive system.</p> <p style="text-align: center;"><b>OR</b></p> <p>Given below is a well - labelled diagram showing synapse between the two neurons.</p> <div style="text-align: center;">  </div> <p>Using the given diagram, answer the following questions:</p> <p>i) What is the sequence in which nerve impulse travels?</p> <p>ii) How synapse between two neurons acts as a one - way valve?</p> <p>iii) Which chemical substance is released when an electrical impulse coming from the receptor reaches the end of the axon of a sensory neuron?</p> <p>iv) How a neurotransmitter starts an electrical impulse in the next neuron?</p> <p>v) Which part of the neuron has a synaptic knob?</p>	[5]
36	<p>An object is placed at a distance of 30 cm from a concave lens of focal length 30 cm.</p> <p>i) Use lens formula to determine the distance of the image from the lens.</p> <p>ii) List four characteristics of the image (nature position, size, erect/inverted) in this case.</p>	[5]

iii) Draw a labelled diagram to justify your answer of part (ii)

OR

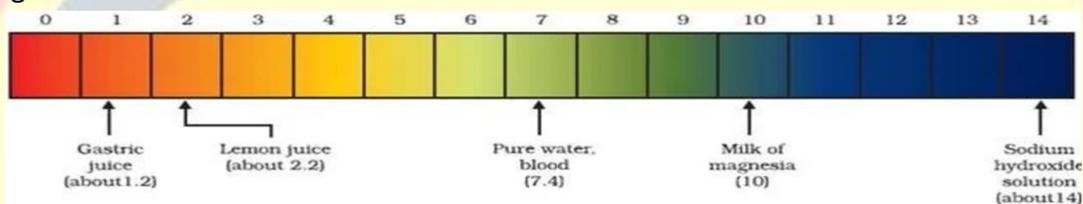
- i) Draw a ray diagram to show the formation of image by a convex lens when an object is placed in front of the lens between its optical centre and principal focus.
- ii) In the above ray diagram mark the object distance ( $u$ ) and the image distance ( $v$ ) with their proper signs (+ve or -ve as per the new cartesian sign convention) and state how these distances are related to the focal length ( $f$ ) of the convex lens in this case.
- iii) Find the power of convex lens which forms a real and inverted image of magnification - 1 of an object placed at a distance of 20 cm from its optical centre.

## SECTION E

37 Read the following text carefully and answer the questions that follow:

[4]

The strength of acid and base depends on the number of  $H^+$  and the number of  $OH^-$  respectively. If we take hydrochloric acid and acetic acid of the same concentration, say one molar, then these produce different amounts of hydrogen ions. Acids that give rise to more  $H^+$  ions are said to be strong acids, and acids that give less  $H^+$  ions are said to be weak acids. Can you now say what weak and strong bases are?

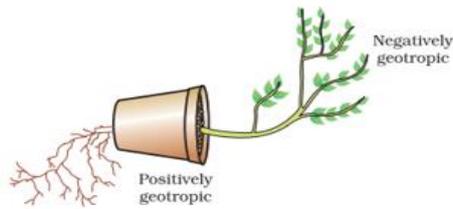


- i) Fresh milk has a pH of 6. How do you think the pH will change as it turns into curd? (1)
- ii) Is Gastric juice a weak acid? What is the pH value of saliva after the meal? (1)
- iii) Milk of magnesia is an acid or base? For what purpose it can be used? (2)

38 Read the following text carefully and answer the questions that follow:

[4]

Environmental triggers such as light, or gravity will change the directions that plant parts grow in. These directional, or tropic, movements can be either towards the stimulus or away from it. So, in two different kinds of phototropic movement, shoots respond by bending towards light while roots respond by bending away from it. How does this help the plant? Plants show tropism in response to other stimuli as well. The roots of a plant always grow downwards while the shoots usually grow upwards and away from the earth. This upward and downward growth of shoots and roots, respectively, in response to the pull of earth or gravity, is, obviously, geotropism. If 'hydro' means water and 'chemo' refers to chemicals, what would 'hydrotropism' and 'chemotropism' mean? Can we think of examples of these kinds of directional growth movements? One example of chemotropism is the growth of pollen tubes towards ovules, about which we will learn more when we examine the reproductive processes of living organisms.



- i) Where does negative phototropism occur in plants? (1)
- ii) Phototropism in shoots is attributed due to which plant hormone? (1)
- iii) Tendrils exhibit/ twining of tendrils show which type of tropic movement? (2)

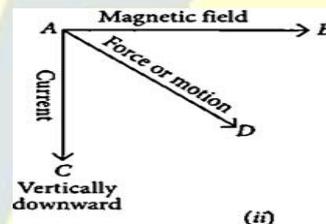
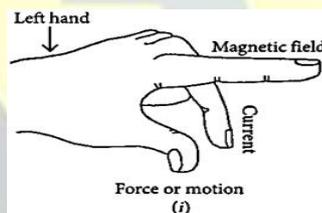
**OR**

If the stem grows towards sunlight and the root grows just opposite to it, then what type of movement of the stem is it? Define it. (2)

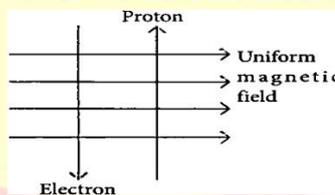
39 **Read the following text carefully and answer the questions that follow:**

**[4]**

Andre Marie Ampere suggested that a magnet must exert an equal and opposite force on a current - carrying conductor, which was experimentally found to be true. But we know that current is due to charges in motion. Thus, it is clear that a charge moving in a magnetic field experience a force, except when it is moving in a direction parallel to it. If the direction of motion is perpendicular to the direction of magnetic field, the magnitude of force experienced depends on the charge, velocity ( $v$ ), strength of magnetic field ( $B$ ), and sine of the angle between  $v$  and  $B$ . Direction of magnetic force is given by Fleming's left - hand rule.



- i) If an electron is travelling horizontally towards east. A magnetic field in vertically downward direction exerts a force on the electron along which direction? (1)
- ii) A charged particle is moving with velocity  $v$  in a magnetic field of induction  $B$ . The force on the particle will be maximum when (1)
- iii) A uniform magnetic field exists in the plane of paper pointing from left to right as shown in figure. In the field, an electron and a proton move as shown. Where do the electron and the proton experience the force? (2)



**OR**

An electron beam enters a magnetic field at right angles to it as shown in the figure. What would be the direction of force acting on the electron beam? (2)

