DAV PUBLIC SCHOOLS, DELHI NCR
SAMPLE PAPER (2026-27)
CLASS: X
SUBJECT: SCIENCE

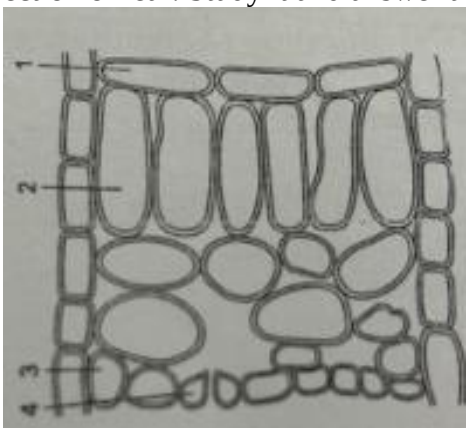
Time Allowed – 3 hrs. ***Max Marks – 80***

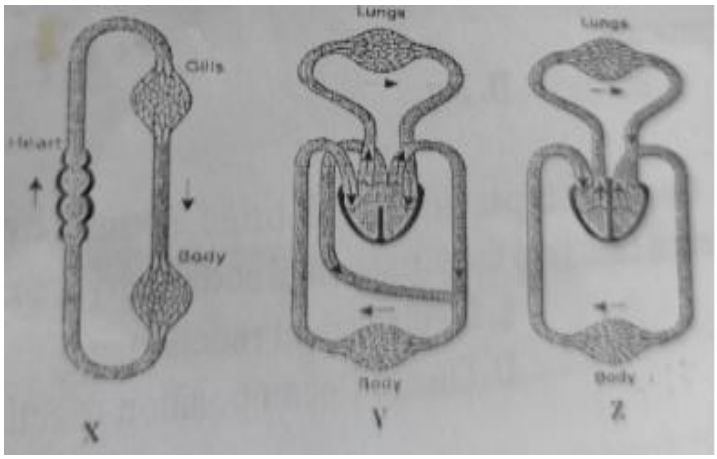
General Instructions:

1. ***This question paper consists of 39 questions in three sections. All questions are compulsory.***
2. ***Question paper is divided in THREE Sections– Section A , B, C***
   Section A : Biology (30 Marks)
   Section B : Chemistry (25 Marks)
   Section C: Physics (25 Marks)
3. ***The question paper has MCQs, VSAs, SAs, LAs and CBQs. Marks are given against each question.***
4. ***There are case based questions (CBQs) with three sub questions and are of 4 Marks each.***
5. ***Divide your answer sheets into three sections as per question paper- SECTION A (Biology), SECTION B (Chemistry) and SECTION C(Physics). It is compulsory to answer each question in its respective section. Do not mix answers of one section into the other section.***
6. ***Instructions are given with each section and question, wherever necessary.***
7. ***There is no overall choice in the question paper however an internal choice has been provided in few questions. Only one of the choices in such questions must be attempted.***

SECTION – A (BIOLOGY)		**Marks**
1	In which of the following groups of organisms food materials are broken down outside the body and absorbed. A. Cuscuta, Lice and tapeworm B. Mushroom, Yeast and Amoeba C. Yeast, mushroom and bread mould D. Bread mould, lice and tapeworm	1
2	Among the following: which organism is capable of surviving without atmospheric oxygen? A. Amoeba B. Mosquito C. Yeast D. Leech	1
3	Which of the following statements are correct? A. Hormones are released directly into the bloodstream B. Endocrine gland use electrical impulse C. Sex hormones regulate changes associated with puberty I. A and B II. A and C III. B and C IV. A, B and C	1

4	Consider the following statements about small intestine and select the one which is not correct. A. The length of the small intestine in animals differs as it depends on the type of food they eat B. The small intestine is the site of complete digestion of food C. The small intestine receive secretion from liver and pancreas D. The villi of the small intestine absorb water from the unabsorbed food before it gets removed from the body via the anus I. A II. B III. C IV. D	1
5	Sphincter muscles are present at the exit of: A. Stomach and Small Intestine B. Stomach and Anus C. Small Intestine and Large Intestine D. Oesophagus and Stomach	1
6	Which statement shows interaction of an abiotic component with the biotic component in an ecosystem? A. A grasshopper feeding on a leaf B. Rainwater running down into lake C. An earthworm making burrows in the soil D. A mouse fighting with another mouse for food	1
7	During deficiency of oxygen in tissues of human beings pyruvic acid is converted into lactic acid in the: A. Cytoplasm B. Chloroplast C. Mitochondria D. Golgi Body	1
	The following two questions consists of two statements- **Assertion(A)** and **Reason(R).**Answer these questions by selecting the appropriate option given below: A. Both A and R are true, and R is the correct explanation of A. B. Both A and R are true and R is not the correct explanation of A C. A is true but R is false. D. A is false but R is true.	
8	**Assertion (A)** :Vulture will always have the least amount of pesticides in a food chain. **Reason(R)** : Vulture occupies the last trophic level and it gets only 10% of energy of Previous trophic level	1
9	**Assertion (A)** : Athletes develop muscular cramps during vigorous exercise. **Reason(R)** : Aerobic respiration occurs in muscle cells to meet the energy levels.	1
10	Give reason: (a) It is not advisable to sleep under a tree during the night. (b)Aquatic organisms have a faster breathing rate. (c)Gastric juice has dilute HCl as one of its components. (d)Carnivores have a short alimentary canal whereas a ruminant has a very long alimentary canal. **OR** (a)Name the two physical forces that help in transport of water. (b)How is conduction of water different from transport of food in plants?	2

11	What is emulsification of fats? Why is it important? Name the organ responsible for it.	2
12	A person withdraws his hand on touching a hot pan. (a) Define the action. (b) Write the sequence of events occurring in response to stimulus. (c) Name the receptor for smell in our body.	2
13	Below given is a Cross Section of leaf. Study it and answer the questions:  (a) Which part is the site of photosynthesis? (b) Identify the part that represents Guard Cells. (c) State one difference in part (1) and (3). (d) Explain the role of plastids during the process of photosynthesis.	3
14	Gas A found in the upper layer of the atmosphere is a deadly poison but is essential for all living organisms. The amount of this gas started declining in 1980. (a) Identify Gas A (b) How is it formed at a higher level of atmosphere? (c) Why is it essential for all living beings? (d) State the cause of depletion of Gas A. (e) How is it different from molecular oxygen?	3
15	Plant hormones can have antagonistic effects. Abscisic acid promotes wilting of leaves while auxin and gibberellins promote growth. During a drought the physiological change occurs in a plant due to increased activity of abscisic acid. (a) Write any two physiological changes that occur in a plant. (b) Why is this hormone also known as stress hormone.? (c) Tendrils coil around the support. Give adequate reason. **OR** (c) If the tip of a stem is removed, will it still show phototropism. Justify your answer.	4

16	Shown below are the diagrammatic representations of the circulatory systems of three organisms X, Y and Z.  (a) Identify which organism is a fish. Give a reason for your answer. (b) Identify the organisms that does/do not require energy to maintain their body temperature. (c) Identify the organism that does /does not tolerate mixing of blood. Give reason for your answer. (d) Which structure prevents mixing of blood in the human heart? What is its importance? OR (a) Discuss the three steps of urine formation. (b) State two factors on which quantity of urine produced depends.	5
	SECTION – B (CHEMISTRY)	**Marks**
17	On adding a few drops of water to quicklime in a beaker, which of the following observations are true? i) White precipitate settles at bottom ii) Solution turns milky iii) Reaction is highly exothermic, hissing sound produced iv) No reaction takes place A) i, ii. B) ii, iii C) i, iii, iv. D) i, ii, iii	1
18	The electrolytic decomposition of water gives hydrogen and oxygen in the ratio of A) 3:2 by mass B) 1:8 by mass C) 1:2 by mass D) 8:1 by mass	1
19	A compound 'X' is used for softening hard water. Identify X and its chemical formula. A) X = Baking soda, $NaHCO_3$ B) X = Bleaching powder, $CaOCl_2$ C) X = Washing soda, $Na_2CO_3 \cdot 10H_2O$ D) X = Plaster of Paris, $CaSO_4 \cdot ½H2O$	1

20	Identify the correct set of products when lead nitrate is heated: A) $PbO + NO_2 + O_2$ B) $Pb + NO_2 + O_2$ C) $PbO_2 + NO_2$ D) $PbO + N_2 + O_2$	1
21	A metal 'X' on treatment with sodium hydroxide liberates a gas 'G'. It also liberates the same gas 'G' on treatment with dilute sulphuric acid .Based on the above information identify 'X' and 'G' respectively. A) copper and Sulphur dioxide B) zinc and Sulphur dioxide C) zinc and hydrogen D) copper and hydrogen	1
22	In the reaction: $Fe_2O_3 + 3CO \rightarrow 3CO_2 + 2Fe$, identify the oxidising and reducing agents respectively. A) CO is oxidising agent, Fe_2O_3 is reducing agent B) CO is oxidising agent and Fe is reducing agent C) Fe is an oxidising agent and CO2 is a reducing agent . D) Fe_2O_3 is oxidising agent, CO is reducing agent	1
23	Fresh milk has a pH of 6. How does the pH change when it turns into curd, and why? A) pH increases because lactic acid is formed B) pH decreases because lactic acid is formed C) pH increases because milk becomes alkaline D) pH decreases because lactic acid decompose	1
24	For question number 24 two statements are given - one labelled as Assertion (A)and the other labelled as Reason (R)select the correct answer to this question from the code (A) (B) (C)and (D)as given below. (A)Both Assertion (A) and Reason (R) are true and Reason (R)is the correct explanation of Assertion (A). (B)Both Assertion (A) and Reason (R) are true but Reason(R) is not the correct explanation of Assertion (A). (C)Assertion (A) is true but Reason(R) is false. (D)Assertion (A) is false, but Reason(R) is true. Assertion(A) : The aqueous solution of glucose and alcohol show acidic character Reason (R) : Aqueous solution of glucose and alcohol do not produce H+ ions	1
25	The reaction of a metal X with $Fe_2O_3$is highly exothermic and is used to join railway tracks. (a)Identify metal X and name the reaction taking place. (b) Write the chemical equation for the reaction of metal X with Fe_2O_3.	2

26	Mention the colour changes observed with reason when: (a) Silver chloride is exposed to sunlight. (b) Copper powder is strongly heated in the presence of oxygen. (c) A piece of zinc is dropped in copper sulphate solution. **OR** (a) In the refining of silver ,the recovery of silver from silver nitrate solution involves displacement by copper metal .Write down the reaction involved. (b) Oil and fat containing food items are flushed with nitrogen gas.why? (c) List any two observations when two grams of ferrous sulphate crystals are heated in a dry boiling tube .	3
27	An acid 'X' present in tamarind when mixed with 'Y', produces a mixture 'Z'. 'Z' in addition to a dough when heated makes cakes soft and spongy. 'Y' is prepared from common salt and helps in faster cooking. (a) Write the common names of 'X', 'Y' and 'Z . (b) Write the name or chemical formula of a mild base other than Y' used as an antacid. (c) How is 'Y' prepared ? Illustrate the reaction with suitable chemical equations.	3

28.	Read the following passage and answer the questions that follow: Riya, a 15-year-old student, frequently consumed chocolates, candies and soft drinks. She usually brushed her teeth only once a day, before going to school. Recently, she noticed sensitivity while drinking cold water and developed a mild toothache. Her dentist explained that normally, saliva helps to maintain the pH of the mouth close to neutral. However, after eating sugary foods, the pH may fall considerably increasing the risk of tooth decay. a) The pH of saliva of four students after eating sweets was recorded:	4

Student	pH after eating sweets
A	6
B	5.7
C	4.9
D	6.8

Which student is at the greatest immediate risk of enamel demineralisation? Explain. (1)

a) Suggest two scientifically justified measures that Riya can adopt to reduce the risk of tooth decay. (1)

b) Why does eating sugary food increase the risk of tooth decay even though sugar itself is not a strong acid? (2)

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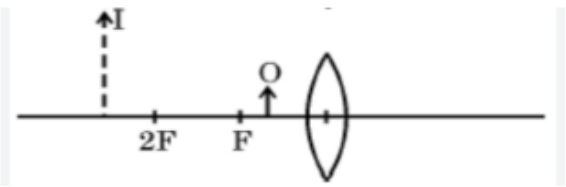
OR

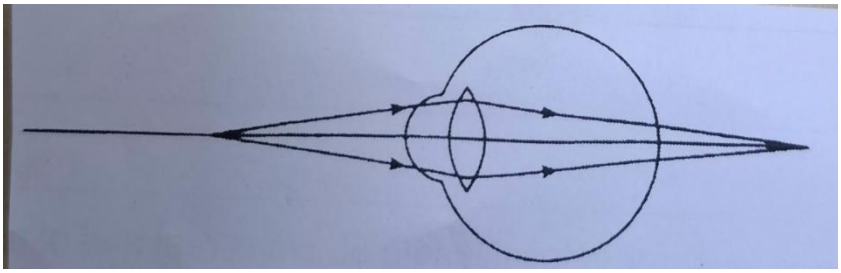
c) Equal-sized pieces of eggshell were placed separately in water, milk and a soft drink for the same duration. The students measured their mass and observed their appearance before and after the experiment.

(i) Which eggshell loses the most mass, and why? (1)

(ii) How does this experiment help explain the role of pH in tooth decay? (1)

29.	(a) Hydrogen gas does not evolve when certain metals except Mg and Mn react with nitric acid, explain. (b) Carbon cannot reduce the oxides of sodium or magnesium. Give reason. (c) Meenu was given two substances, copper sulphide Cu_2S and copper oxide Cu_2O, She had to obtain copper from these compounds. Using suitable chemical equations, explain how she could extract copper successfully from both substances. (d) Why do we choose lemon juice to clean corroded copper utensils ? **OR** (a) Write electronic configuration of two elements X (at no 12)and Y (at no 17) (b) Show the formation of ionic compounds when X and Y combine with each other. (c) What would happen if electric current is passed through the aqueous solution of this compound (d) Name the ion that will reach at- (i) cathode and (ii) anode (e)The melting point and boiling point of this compound is found very high.Explain, Why ?	5

	SECTION – C (PHYSICS)	Marks
30.	The image formed by a concave mirror of focal length 50 cm is real and of magnification -1. In this case the distance between the object from its own image is: (A) 50 cm (B) 100 cm (C) 200 cm (D) Zero	1
31.	Image formed by a convex spherical mirror is: (A) Virtual (B) real (C) enlarged (D) Inverted	1
32.	The following question (question no. 32) consists of two statements- **Assertion(A)** and **Reason(R).**Answer these questions by selecting the appropriate option given below: (A) Both A and R are true, and R is the correct explanation of A. (B) Both A and R are true and R is not the correct explanation of A (C) (A is true but R is false. (D) A is false but R is true. **Assertion(A)** : There is no dispersion of light refracted through a rectangular glass slab. **Reason(R) :** Dispersion of light is the phenomenon of splitting of a beam of white light into its constituent colours**.**	1
33.	When an incident ray of light enters a medium X from air, it bends towards the normal. Infer about the following with respect to air: (a) Optical density of medium X . (b) Speed of light through medium X. Give reason for your answer in each case.	2
34.	An object is placed at a distance of 10 cm from a convex mirror of focal length 15cm. Find the position of the image formed by the mirror. OR A concave mirror has a focal length of 20 cm. At what distance from the mirror should a 4 cm tall object be placed so that it forms an image at a distance of 30 cm from the mirror? Also calculate the size of the image formed.	2
35.	The diagram given below shows an object O and an image I,  (a) Complete the ray diagram (b) State the type of lens (c) List two characteristics of image formed if the lens is replaced by a concave mirror of focal length f and an object is placed at a distance of f/2 in front of the mirror.	3

36.	Study the diagram given below and answer the questions that follow:  (a) Name the defect of vision represented in the diagram. Give reason for your answer. (b) List two causes of this defect. (c) With the help of a diagram show how this defect of vision is corrected.	3
37.	Give reasons for the following observations: (a) Twinkling of stars at night (b) The sky appears dark instead of blue to an astronaut. (c) The human eye is able to focus on both nearby and distant objects.	3
38.	Analyse the following observation table showing variation of image distance (v) with object distance (u) in case of a convex lens and answer the questions that follow without doing any calculations: **Observation Number** / **Object distance (u) in cm** / **Image distance (v) in cm** 1 / -15 / -60 2 / -25 / +100 3 / -30 / +60 4 / -40 / +40 5 / -60 / +30 6 / -100 / +25 (a) Determine the focal length of the lens. Give reason for your answer. (b) Find magnification of the image formed in observation no. 3. (c) The numerical value of magnifications in cases of observation 1 and 2 is the same. List two differences in the images formed in these two cases. **OR** (c) Find the focal length of the lens in case 6.	4

39.	(a) Define one ampere. (b) The resistance of a wire of 0.01 cm radius is 14 Ω. If the resistivity of the material of the wire is 44 x 10^{-8} Ω-m, find the length of the wire. (Given π= 22/7) (c) Two wires A and B of the same material, having the same lengths and diameters of 0.2 mm and 0.3 mm respectively, are connected one by one in a circuit. Which one of these two wires will offer more resistance to the flow of current in the circuit? Justify your answer. **OR** (a) Define one volt. (b) Calculate the resistance of a copper wire of length 1000 m and area of cross-section 2 mm^2. Resistivity of copper is 1.6 x 10^{-8} Ω-m. (c) Two wires of equal length, one of copper and the other of manganin (an alloy) have the same thickness. Which one can be used for electrical transmission lines and why?	5

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