

BUDHA DAL PUBLIC SCHOOL PATIALA

Pre Board Examination (16 January 2025)

CLASS X

PAPER- SCIENCE (SET-A)

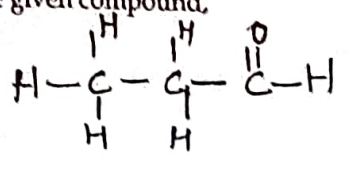
Time: 3 hr.

M.M. 80

General Instructions:

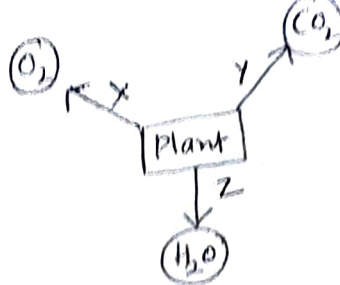
- i) This question paper consists of 39 questions in 5 sections.
- ii) All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.
- iii) Section A consists of 20 objective type questions carrying 1 mark each.
- iv) 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.
- v) 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.
- vi) Section D consists of 3 Long Answer type questions carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.
- vii) Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.

Section - A

- Q1. The setting of the plaster of Paris take place due to the process of
a) oxidation b) reduction d) dehydration d) hydration
- Q2. The following reaction is an example of $\text{CaO}(s) + \text{H}_2\text{O}(l) \rightarrow \text{Ca}(\text{OH})_2(aq)$
a) Displacement and combination reaction b) Decomposition and exothermic reaction
c) combination and exothermic reaction d) Combination and endothermic reaction
- Q3. Name the given compound,

a) propanone b) propanol c) propanal d) propanoic acid
- Q4. Which of the following hydrocarbon is different from others?
a) C_4H_{10} b) C_6H_{12} c) C_5H_{12} d) C_2H_6
- Q5. Which of the following acids does not give hydrogen gas on reacting with metals (except Mn and Mg)?
a) HNO_3 b) HCl c) H_2SO_4 d) All of these
- Q6. On adding some copper turnings to silver nitrate solution, what will you observe
a) The solution turned blue
b) Yellow ppt formed
c) White ppt formed
d) The solution turned red
- Q7. The hydrolysis of sodium carbonate gives
a) strong acid and strong base
b) weak acid and weak base
c) strong acid and weak base
d) weak acid and strong base

Q8. Look at the diagram below carefully
Identify the process taking place at Z.

- a) Reproduction
- b) Transpiration
- c) Photosynthesis
- d) Translocation



Q9. Which of the following receives oxygenated blood from the lungs?

- a) Right atrium b) Left atrium c) Right ventricle d) Left ventricle

Q10. An organism which breaks down the food material outside the body and then absorb it is

- a) a plant parasite, Cuscuta b) an animal parasite, Tapeworm
- b) a bacteria, Rhizobium d) a fungi, Rhizopus

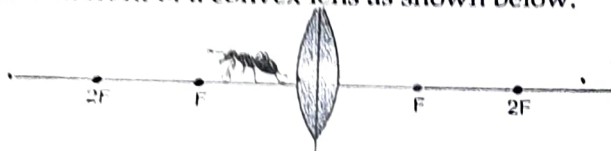
Q11. Regulation of involuntary actions like blood pressure, salivation and vomiting are controlled by

- a) cerebellum b) cerebrum c) medulla d) hypothalamus

Q12. In human beings, the chance of having a male child to female child is :

- a) 25 : 75 b) 75 : 25 c) 50 : 50 d) 100 : 0

Q13. An ant was in front of a convex lens as shown below:

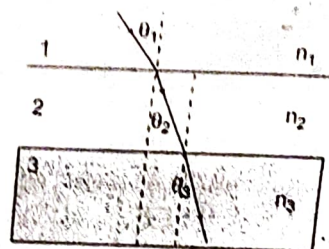


Which of the following image is correct?

- (a)
- (b)
- (c)
- (d)

Q14. In the diagram shown above n_1 , n_2 and n_3 are refractive indices of the media 1, 2 and 3 respectively. Which one of the following is true in this case?

- (a) $n_1 = n_2$
- (b) $n_1 > n_2$
- (c) $n_2 > n_3$
- (d) $n_3 > n_1$



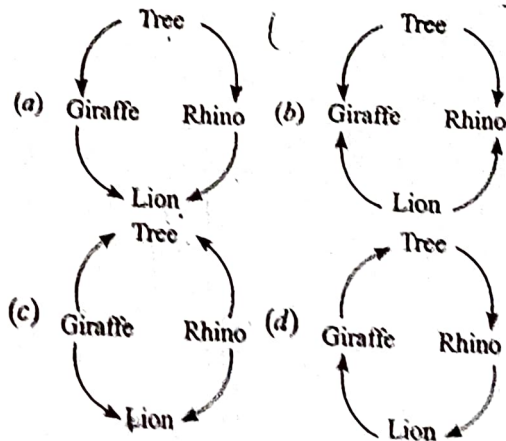
Q15. DDT was accidentally added to the water of a lake. All the organisms in it would be affected by DDT. Which of the following organisms would be affected the most?

- a) man b) Birds living in the lake c) Fish living in the lake d) Aquatic plants in the lake

Q16. The table shows some organisms including plants, animals and how they get energy

Organism	How the organism gets energy
Tree	Sunlight
Lion	Giraffe, Rhino
Rhino	Tree
Giraffe	Tree

Which option show the correct model based on the table?



For the following questions, two statements are given - one labeled Assertion (A) and the other labeled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

- Both A and R are true and R is the correct explanation of the assertion.
- Both A and R are true but Reason R is not a correct explanation of Assertion.
- A is true but R is false.
- A is false but R is true.

- Q17. Assertion : Food cans are coated with tin and not with zinc. (1)
Reason: zinc is more reactive than tin. (1)
- Q18. Assertion : All human chromosomes are not paired. (1)
Reason: Human males have 22 pair of autosomes and one odd, imperfect pair of sex chromosomes. (1)
- Q19. Assertion : Concave mirrors are used as make-up mirrors. (1)
Reason : When the face is held within the focus of a concave mirror, then a diminished image of the face is seen in the concave mirror. (1)
- Q20. Assertion : Biodegradable substances result in the formation of compost and natural replenishment. (1)
Reason : It is due to breakdown of complex inorganic substances into simple organic substances. (1)

Section - B

- Q21. Distinguish between a saturated and unsaturated hydrocarbons by 'flame test'. List the products of combustion reaction of a saturated hydrocarbon. (2)
- Q22. The leaves of a plant were covered with aluminium foil, how would it affect the physiology of the plant? (2)
- Q23. Oxygen, mostly, is carried by a pigment in our blood whereas carbon dioxide is transported in dissolved form in our blood. Give two reasons that make the above statement correct. (2)

OR

In the process of digestion of food in human beings, two protein-digesting enzymes are secreted. Name the enzymes along with the glands that secrete them.

- Q24. A student focused the image of a candle flame on a white screen by placing the flame at various distances from a convex lens. He noted his observation in the following table: (3)

S.No.	Distance of the screen from lens (cm)	Distance of the Flame from lens (cm)
I	20	60
II	24	40
III	30	30
IV	40	24
V	70	12

Analyse the above table and give the answers of the following questions:

- What is the focal length of convex lens?
 - Which set of observation is incorrect and why?
- Q25. What is electrical resistivity? In a series electrical circuit comprising of a resistor having a metallic wire, the ammeter reads 5 A. The reading of the ammeter decreases to half when the length of the wire is doubled. Why? (2)

OR

Why does an electric bulb become dim when an electric heater in parallel circuit is switched on? Why does dimness decrease after sometime?

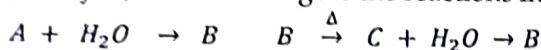
- Q26. a) When plants are eaten by primary consumers, a great deal of energy is lost as heat to the environment and some amount goes in carrying out various life processes. State the average percentage of energy lost in this manner. (2)
- b) What happens to Sun's energy that falls on green plants? (3)

Section - C

- Q27. The image given compound X is used in small amounts for making bread and cake. It helps to make these soft and spongy. Its aqueous solution turns red litmus blue. It is also used in soda acid fire extinguisher. Use this information to answer the following questions: (3)

- Identify the compound X.
- How does it help in extinguishing fire?
- Is the pH value of the given solution lower than or higher than 7?

- Q28. An element A reacts with water to form a compound B which is used in white washing. The compound B on heating forms an oxide C which on treatment with water gives back B. Identify A, B and C and give the reactions involved. (3)



OR

- Write structure formula of
 - Propanoic acid
 - Butanone
- Draw the electron dots structure of methane

- Q29. Human beings exhibit 'double circulation' during which blood is passed through the lungs and heart. (3)

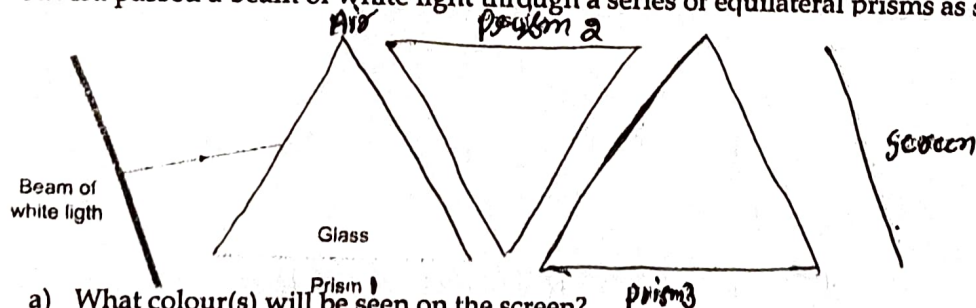
State the route of the first and the second circulation through the chambers of the heart and explain the usefulness of such circulation in humans.

- Q30. Two pea plants one with round yellow seeds (RRYY) and another with wrinkled green (rryy) seeds produce F₁ progeny that have round, yellow seeds. After self pollination in pea plants with round yellow seeds, following types of seeds were obtained by Mendel: (3)

Seeds	Number
Round, Yellow	90
Round, Green	30
Wrinkled, Yellow	30
Round, Green	10


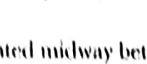
- What type of cross is it?
- What will be the percentage of new combinations of characters produced when a total of 160 seeds are produced in F₂ generation?
- Describe the mechanism which explains the result.

- Q31. Savera passed a beam of white light through a series of equilateral prisms as shown. (3)



- What colour(s) will be seen on the screen?
- Copy the diagram above and draw the beam entering Prism 1 and emerging from Prism 3 and falling on the screen.
- Name all the processes that take place when the beam of light enters the Prism 1 and emerges from Prism 3.

Two wires each carrying a steady current I are shown in two different configurations in column I. The magnetic field produced due to current in the wires is described in column II. Match the situations A and B in column I with all the correct statements in column II. (3)

Column I		Column II
A		B
C		D
<p>A. Point P is situated midway between the wires above.</p> <p>B. Point P is situated at the mid point of the line joining the centres of the circular wires, which have same radii.</p>		<p>(i) The magnetic fields B at P due to the current in the wires are in the same direction.</p> <p>(ii) The magnetic fields B at P due to the current in the wires are in the opposite directions.</p> <p>(iii) Magnetic field at P is zero.</p>



- Q33. a) Name and explain the phenomenon of light which is responsible for twinkling of stars. Also tell why planets do not twinkle? (3)
- b) What is SI unit of refractive index?
- c) What is the necessary condition of ohm's law?

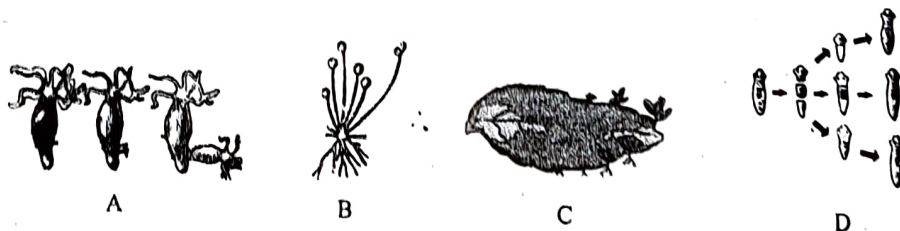
Section - D

- Q34. A compound C (molecular formula, $C_2H_4O_2$) reacts with Na metal to form a compound R (5) and evolves a gas which burns with a pop sound. Compound C on treatment with an alcohol A in the presence of an acid forms a sweet smelling compound S (molecular formula = $C_3H_6O_2$). On addition of NaOH to C, it also gives R and water. S on treatment with NaOH solution gives back R and A. Identify C, R, A, S and write down the reactions involved.

OR

- a) Name the type of carbon compounds that can be hydrogenated. With the help of suitable example explain the process of hydrogenation.
- b) Define (a) Homologous series (b) Catenation

Q35.



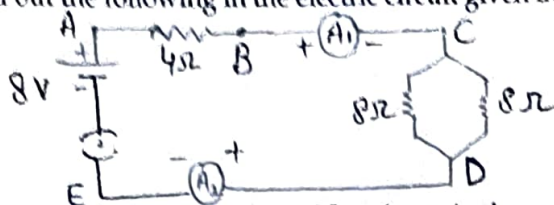
- a) Identify the organisms in figure A, B, C and D
- b) Identify the type of asexual reproduction shown in all the figures
- c) How is this type of reproduction advantageous to the organisms?

OR

- a) Name the two types of germ-cells present in human beings. How do they structurally differ from each other?
- b) Write the names of those parts of flower which serve the same function as the following do in the animals : (i) testis (ii) sperm (iii) ovary (iv) egg
- c) State the function of flowers in the flowering plants.

Q36. Find out the following in the electric circuit given in figure alongside:

(5)



- Effective resistance of two 8Ω resistors in the combination.
- Current flowing through 4Ω resistor.
- Potential difference across 4Ω resistor.
- Difference in ammeter readings, if any
- Power dissipated in 4Ω resistor.

OR

Two lamps, one rated at $40\text{ W} - 220\text{ V}$ and the other at $60\text{ W} - 220\text{ V}$, are connected in parallel to the electric supply at 220 V .

- Draw a circuit diagram to show the connections.
- Calculate the current drawn from the electric supply source.
- Calculate the total energy consumed by the two lamps together when they operate for one hour.

Section - E

Q37. Read the above passage and answer the following questions :

(4)

The table given below shows the hints given by the quiz master in a quiz.

S.No.	Hints
(i)	A metal 'A' is used in thermite reduction
(ii)	When metal 'A' is heated with oxygen it gives 'B', which is amphoteric in nature.
(iii)	Metal 'A' act as a reducing agent.

- Identify A and B.
- Write down the reactions of oxide B with HCl and NaOH.
- Write two example of reducing agent.

OR

- Explain the process of thermite welding with reaction.

Q38. Read the above passage and answer the following questions :

(4)

Pea Plants need support to grow. It clings on any other support and grows. It is possible due to response of plant hormones to different stimuli. Normally, plants respond to such stimuli slowly. Plants respond to some stimuli by growing towards it or away from it.

- The 'touch-me-not' plant is an example of which tropism? Answer the following questions:-
- Give one example of chemotropism.
- How does a pea plant cling to its support?

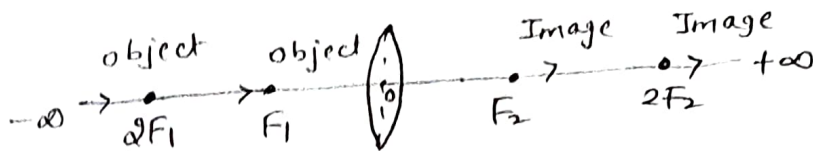
OR

- Name four different types of tropisms shown by plants.

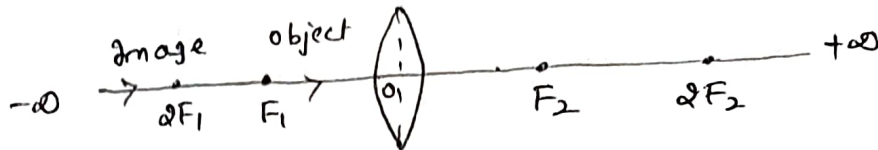
Q39. The image formed by a convex lens depends on the position of the object in front of the lens. When the object is placed anywhere between focus and infinity, the image formed by convex lens is real and inverted. The image is not obtained on the screen when the object is placed between focus and the lens. (4)

The distance between the optical centre O of the convex lens and the focus point F_1 or F_2 is its focal length.

When the object shifts from $-\infty$ to F_1 , the image moves from F_2 to $+\infty$.



When the object shifts from F_1 to O , the image moves from $-\infty$ to O



A student did an experiment with a convex lens. He put an object at different distances from the lens. In each case he measured the distance of the image from the lens. The results were recorded in the following table :

Object distance (in cm)	25	30	40	60	120
Image distance (in cm)	100	24	60	30	40

Unfortunately his results are written in the wrong order.

- Arrange the image distance in the correct order (in cm).
- Which of the object distances gives the biggest image? Give reason.
- Find the focal length of this lens.

OR

- What is the minimum distance between an object and its real image formed by a convex lens? Where should an object be placed to get a virtual image by convex lens?