



# APEEJAY SCHOOL PANCHSHEEL PARK

Class - X  
Subject - Science  
MIDTERM EXAMINATION (2024-25)

Name of the student: Ridhima Jha  
Time Allowed: 3 hrs.

Date: 2  
M.M.:8

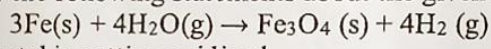
### General Instructions.

- 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 Answer Type 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. Answer 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. Mild non-corrosive basic salt is  
 (a)  $\text{Ca(OH)}_2$       (b)  $\text{NaCl}$       (c)  $\text{NaOH}$       (d)  $\text{NaHCO}_3$

2. Which of the following statements about the given reaction are correct?



- (i) Iron metal is getting oxidized
  - (ii) Water is getting reduced
  - (iii) Water is acting as reducing agent
  - (iv) Water is acting as an oxidizing agent
- (a) (i), (ii) and (iii)      (b) (iii) and (iv)  
 (c) (i), (ii) and (iv)      (d) (ii) and (iv)

Which of the following salts does not contain water of crystallization?

- (a) Blue vitriol      (b) Baking soda  
 (c) Washing soda      (d) Gypsum

Ammonium acetate is obtained as a mixture of

- (a) strong acid and strong base
- (b) weak acid and weak base
- (c) strong acid and weak base
- (d) weak acid and strong base

5. Exposure of silver chloride to sunlight for a long duration turns grey due to;
- (i) the formation of silver by decomposition of silver chloride
  - (ii) sublimation of silver chloride
  - (iii) decomposition of chlorine gas from silver chloride
  - (iv) oxidation of silver chloride
- Which among the above statement(s) is(are) true?

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

6. A student adds lead and silver to two different test tubes containing an equal amount of copper sulphate solution. The student observes that the color of the solution in the test tube with lead changes. What explains the change in the color of the solution?

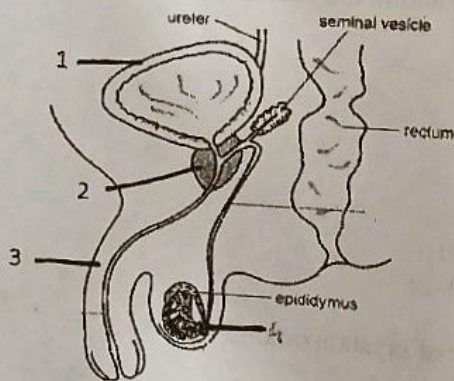
- (a) A displacement reaction takes place as lead replaces copper from the solution.
- (b) A combination reaction takes place as lead combines with sulphate in the solution.
- (c) A decomposition reaction takes place as copper dissociates from sulphate in the solution.
- (d) A double displacement reaction takes place as copper dissociates from sulphate and lead combines with sulphate in the solution.

7. Which of the following substance will not give carbon dioxide on treatment with dilute acid?

- (a) Marble                      (b) Limestone                      (c) Baking soda                      (d) Quick lime

8. Identify the part which is responsible for the secretion of testosterone

- (a) 4                      (b) 1                      (c) 3                      (d) 2

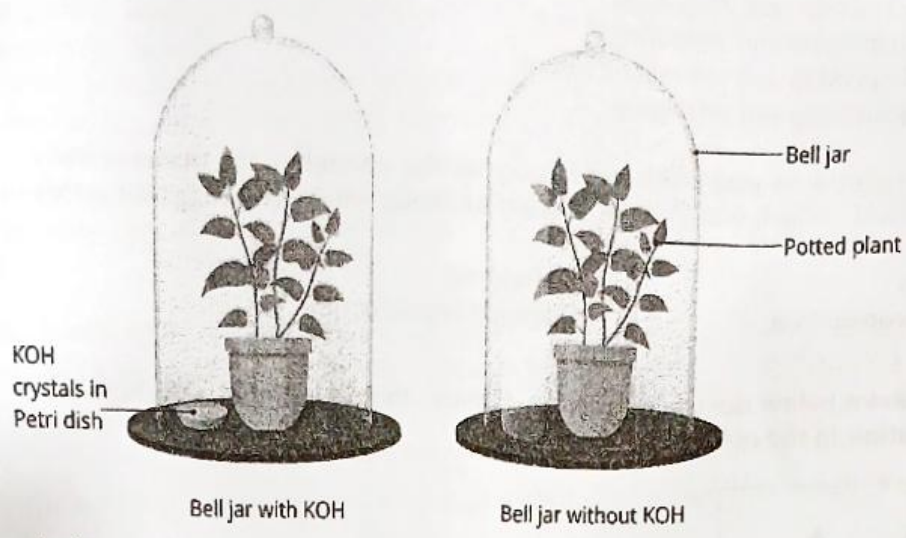


9. Which of the following statement is NOT true?
- (a) DNA carries the information for inheritance of features from parents to next generation.
  - (b) DNA is the information source for making proteins.
  - (c) Change in the information lead to different proteins.
  - (d) Feature will remain same even if the proteins change.



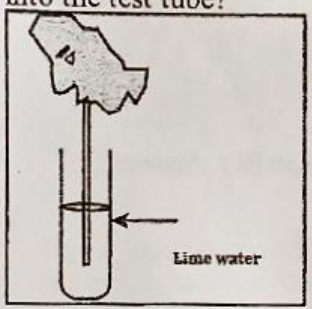
10. In which of the following organisms, multiple fission is a means of asexual reproduction 1
- (a) Yeast (b) *Leishmania*  
 (c) *Paramecium* (d) *Plasmodium*

11. The following experimental setup is used to prove which of the following requirements of photosynthesis? 1



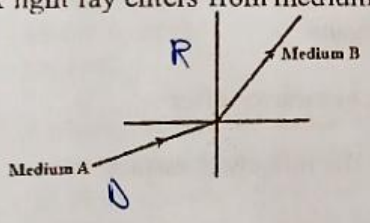
- (a) Chlorophyll (b) Oxygen  
 (c) Carbon dioxide (d) Sunlight

12. Observe the activity given below. What does it help to conclude, when a person exhale into the test tube? 1



- (a) Percentage of carbon dioxide is more in inhaled air.  
 (b) Fermentation occurs in the presence of oxygen.  
 (c) Percentage of carbon dioxide is more in exhaled air.  
 (d) Fermentation occurs in the presence of carbon dioxide

13. A light ray enters from medium A to medium B as shown in the figure. 1

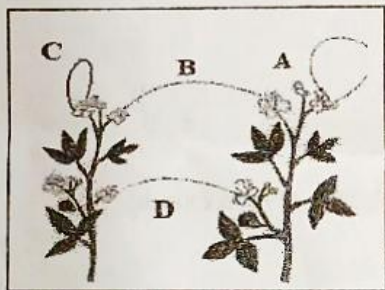


The refractive index of medium B relative to medium A will be

- (a) more than one  
(c) equal to one

- (b) less than one  
(d) zero

14. Which of the following phenomena of light are involved in the formation of a rainbow?  
(a) Reflection, refraction and dispersion  
(b) Refraction, dispersion and scattering  
(c) Refraction, dispersion and internal reflection  
(d) Dispersion, scattering and refraction
15. A farmer wants to grow banana plants genetically similar enough to the plants already available in his field. Which one of the following methods would you suggest for this purpose?  
(a) Regeneration  
(b) Budding  
(c) Vegetative propagation  
(d) Sexual reproduction
16. The diagram shown below depicts pollination. Choose the options that will show a maximum variation in the offspring.



- (a) A, B and C  
(c) B, C and D

- (b) B and D  
(d) A and C

Question No. 17 to 20 consist of two statements – Assertion (A) and Reason (R). Answer these questions 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.
17. Assertion (A): Photosynthesis is considered as an endothermic reaction.  
Reason (R): Energy gets released in the process of photosynthesis.
18. Assertion: Cucumber, pumpkin and watermelon are examples of unisexual flower.  
Reason: unisexual flower has both male and female reproductive organs.
19. Assertion(A): A ray passing through the center of curvature of concave mirror after reflection, is reflected back along a same path.  
Reason(R): The incident rays fall on the mirror along the normal to the reflecting surface.



20. Assertion: Probability of survival of an organism produced through sexual reproduction is more than that of organism produced through asexual mode.  
Reason: Variations provide advantages to individuals for survival.

1

### Section - B

21. For making cake, baking powder is used. If at home your mother uses baking soda instead of baking powder in cake,  
(a) how will it affect the taste of the cake and why?  
(b) how can baking soda be converted into baking powder?

2

22. Draw a diagram showing germination of pollen on stigma of a flower and mark the following organs/parts of the flower that develop after fertilization into;  
(a) Seed (b) Fruit

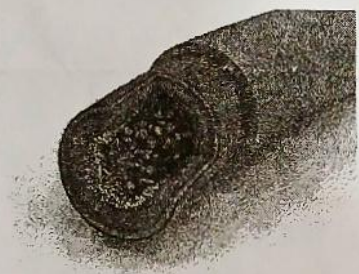
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23. Name the substances (any two) other than water that are absorbed during urine formation. What are the two parameters that decide the amount of water that is reabsorbed.

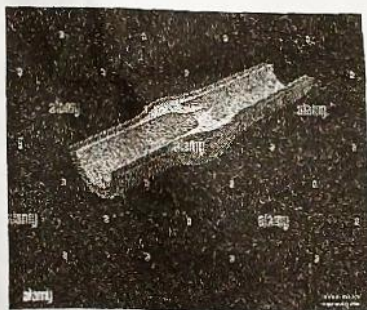
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OR

Identify the image (A) & (B) given below and write one structural difference between them.



(A)



(B)

24. Write about power of accommodation of human eye. Explain why the image distance in the eye does not change when we change the distance of an object from the eye?

2

25. State the laws of refraction of light. If the speed of light in vacuum is  $3 \times 10^8$  m/s, find the absolute refractive index of a medium in which light travels with a speed of  $1.4 \times 10^8$  m/s.

2

OR

What is meant by power of a lens? Write its SI unit. A student uses a lens of focal length 40 cm to read the board in class room. Write the nature and power of lens used by the student.

26. Arthropods and Mollusca have a copper containing respiratory pigment called hemocyanin, while human beings have iron containing hemoglobin.  
(a) How do respiratory pigment help in the process of respiration?  
(b) Why do multi-cellular animals need a respiratory pigment?

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Section - C

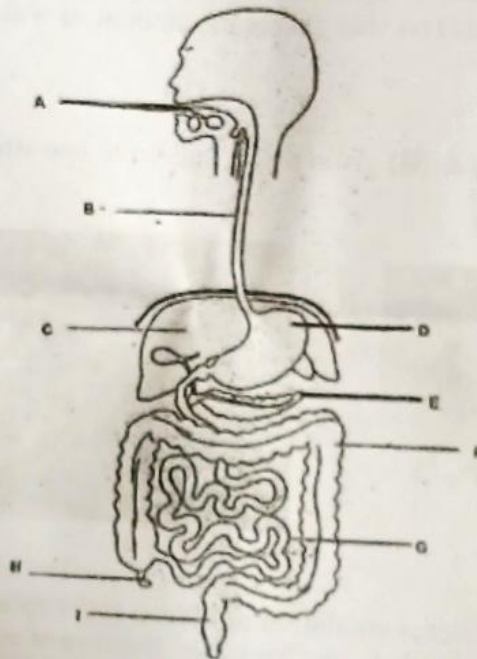
27. The solutions of lead (II) nitrate and potassium iodide are mixed together.

- (a) Identify the color and the name of the precipitate formed? —
- (b) Write the balanced chemical equation for this reaction.
- (c) Identify the type of reaction and write one more example of this type of reaction.

28. A metal carbonate X on reacting with an acid gives a gas which when passed through a solution Y gives the carbonate back. On the other hand, a gas G that is obtained at anode during electrolysis of brine is passed on dry Y, it gives a compound Z, used for disinfecting drinking water. Write the chemical reactions involved and identify X, Y, G, Cl<sub>2</sub>.

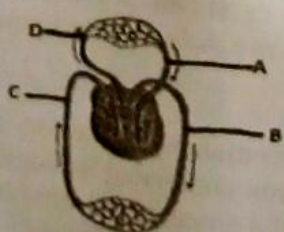
*X = CaCO<sub>3</sub>, Y = Ca(OH)<sub>2</sub>, G = Cl<sub>2</sub>*

29. Study the diagram below of alimentary canal of man and write the name of enzymes present in the parts marked as A, D and E and also write the function of each.



*CaCO<sub>3</sub> + HCl → CaCl<sub>2</sub> + H<sub>2</sub>O + CO<sub>2</sub>*  
*Z = Ca(OH)<sub>2</sub>*  
*Y = Ca(OH)<sub>2</sub>*  
*G = Cl<sub>2</sub>*

30. (a) Study the diagram below showing schematic presentation of transport and exchange of gases in human heart and name the part labeled as B and D.





(b) Explain how separation of right and left side of heart is useful for birds and mammals?

31. A person cannot read newspaper placed nearer than 50 cm to his eyes. Name the defect of vision he is suffering from. Draw a ray diagram to illustrate this defect. List its two possible causes. Draw a ray diagram to show how this defect may be corrected using a lens of appropriate focal length.

32. (a) A security mirror used in a big showroom has radius of curvature 5 m. If a customer is standing at a distance of 20 m from the security mirror, find the position, nature and size of the image formed in the security mirror.

(b) Neha visited a dentist in his clinic. She observed that the dentist was holding an instrument fitted with a mirror. State the nature of this mirror and reason for its use in the instrument used by dentist.

33. (a) A ray of light incident on a rectangular glass slab immersed in any medium emerges parallel to itself. Draw labeled diagram to justify the statement.

(b) Water has refractive index 1.33 and alcohol has refractive index 1.36. In which of the two media the speed of light is maximum?

### Section - D

34. Account for the followings:

- Magnesium ribbon should be cleaned before burning in air.
- Black substance is formed when Cu powder is heated.
- A chemical equation should always be balanced.
- We should keep our food in air tight containers.
- We should keep iron articles away from moisture.

OR

Balance the following chemical equations and identify the type of chemical reaction.

- $\text{H}_3\text{PO}_4 (\text{aq}) + \text{KOH} (\text{aq}) \rightarrow \text{K}_3\text{PO}_4 (\text{aq}) + \text{H}_2\text{O} (\text{l})$
- $\text{HgO} (\text{s}) + \text{Heat} \rightarrow \text{Hg} (\text{l}) + \text{O}_2 (\text{g})$
- $\text{Na} (\text{s}) + \text{S} (\text{s}) \rightarrow \text{Na}_2\text{S} (\text{s})$
- $\text{TiCl}_4 (\text{l}) + \text{Mg} (\text{s}) \rightarrow \text{Ti} (\text{s}) + \text{MgCl}_2 (\text{s})$
- $\text{H}_2\text{O}_2 (\text{l}) + \text{UV rays} \rightarrow \text{H}_2\text{O} (\text{l}) + \text{O}_2 (\text{g})$

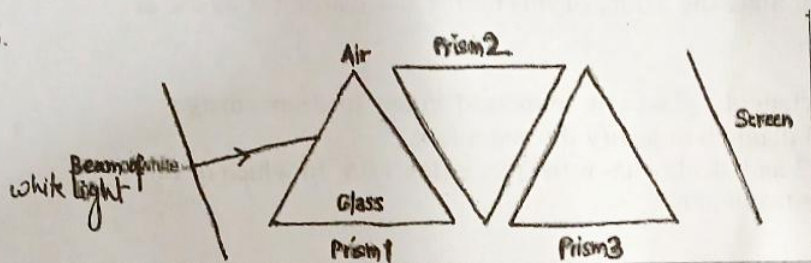


35. (a) Draw a diagram showing spore formation in Rhizopus and label the reproductive and non-reproductive parts. Why does Rhizopus not multiply on a dry slice of bread?  
 (b) Name two contraceptive devices / techniques used by human female to avoid pregnancy. Mention the side effects caused by each.

OR

- (a) Make a diagram of female reproductive system and mark the following  
 (i) Organ where development of foetus takes place  
 (ii) Organ where fusion of male and female gamete takes place  
 (b) What will happen if in a human female  
 (i) fertilization takes place?  
 (ii) an egg is not fertilized?

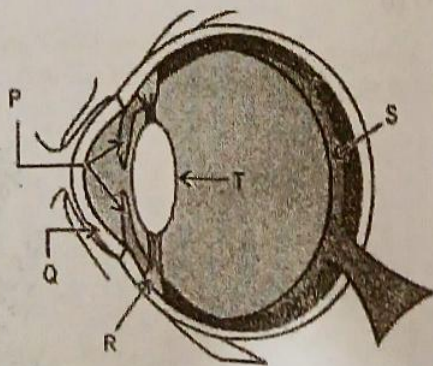
36.



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

OR

- (a) Rupal suffers from myopia. Where would the image form in her eye?  
 (b) Name the type of lens that is generally used to correct myopia.  
 (c) Rupal underwent cataract surgery and her eye lens was replaced with an artificial lens with a fixed focal length, made of a plastic material (silicon). State one likely visual disadvantage that Rupal is likely to experience as compared to a person who has normal eyesight.  
 (d) Identify the parts of the eye labeled in the diagram from the descriptions given below by writing the labels as your answer



VIBOYOK



- (i) It helps in changing the focal length of the lens.
- (ii) It causes most of the refraction of the light entering the eye.
- (iii) It controls the amount of light entering the eye.
- (iv) It acts as a screen on which the image is formed.

### Section - E

37. Read the following passage and answer the following questions:

Chemically, plaster of Paris (POP) is calcium sulphate hemihydrate, i.e., containing half molecule of water of crystallization. It is represented by the formula,  $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$ . Half molecule of water of crystallization means that one water molecule is shared by two formula units of  $\text{CaSO}_4$ , hence, we also represent its formula as  $(\text{CaSO}_4)_2 \cdot \text{H}_2\text{O}$ . The name, Plaster of Paris, was given to this compound because for the first time, it was made from gypsum which was mainly found in Paris.

- (a) Calculate the difference of water molecules in gypsum and plaster of Paris?
- (b) How Plaster of Paris is hardened?
- (c) Write the chemical name of Gypsum.
- (d) How can we get half a water molecule in Chemical formula of POP? Explain.

OR

A dry pellet of a common base B, when kept in open absorbs moisture and turns sticky. The compound is also a by-product of Chlor - alkali process.

- (a) Identify B.
- (b) Write other products of Chlor - alkali process.
- (c) What type of reaction occurs when B is treated with an acidic oxide?
- (d) Write a balanced chemical equation for one such solution.

38. Read the following passage and answer the following questions:

The digestion in stomach is taken care of by the gastric glands present in the wall of the stomach. These release hydrochloric acid, a protein digesting enzyme called pepsin, and mucus. From the stomach, the food now enters the small intestine. The food coming from the stomach is acidic and has to be made alkaline for the pancreatic enzymes to act. Bile juice from the liver accomplishes this in addition to acting on fats.

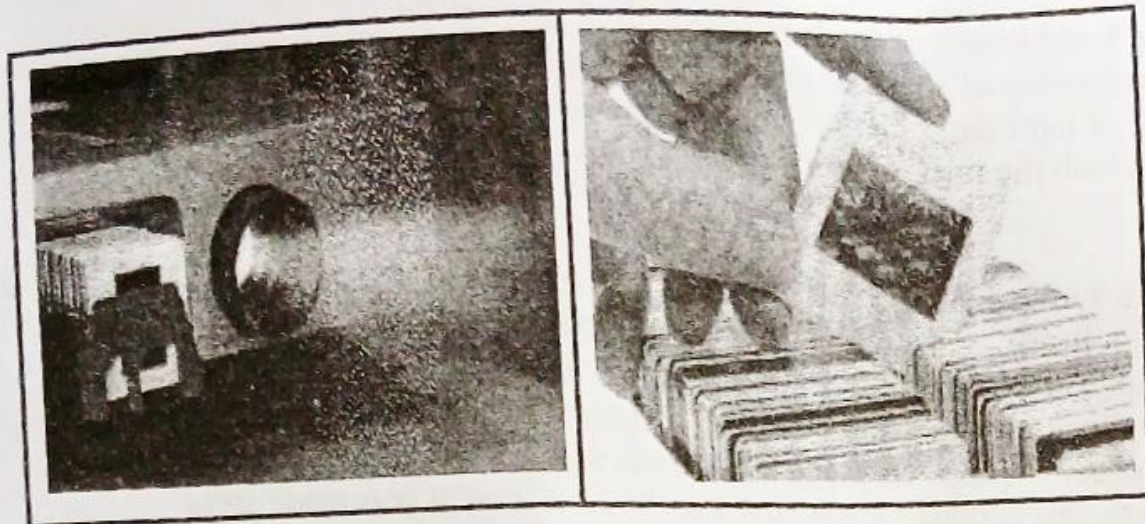
- (a) Name a common nutrient that is absorbed in the small intestine and re-absorbed by the kidney tubules.
- (b) Out of a Goat and a Tiger, which one will have a longer small intestine?
- (c) Patients whose gallbladder is removed are recommended to eat less oily food. Why?

OR

- (c) We often hear people complain about the acidity in the stomach. Over production of what substance is most likely the reason of the complain? Why is the production of this substance necessary?



39.



The above images are that of a specialized slide projector. Slides are small transparencies mounted in sturdy frames ideally suited to magnification and projection, since they have a very high resolution and a high image quality. There is a tray where the slides are to be put into a particular orientation so that the viewers can see the enlarged erect images of the transparent slides. This means that the slides will have to be inserted upside down in the projector tray. To show her students the images of insects that she investigated in the lab, Mrs. Iyer brought a slide projector. Her slide projector produced a 500 times enlarged and inverted image of a slide on a screen 10 m away.

(a) Based on the text and data given in the above paragraph, what kind of lens must the slide projector have?

(b) If  $v$  is the symbol used for image distance and  $u$  for object distance then with one reason state what will be the sign for  $v/u$  in the given case?

(c) A slide projector has a convex lens with a focal length of 20 cm. The slide is placed upside down 21 cm from the lens. How far away should the screen be placed from the slide projector's lens so that the slide is in focus?

**OR**

(c) When a slide is placed 15 cm behind the lens in the projector, an image is formed 3 m in front of the lens. If the focal length of the lens is 14 cm, draw a ray diagram to show image formation. (not to scale)