

Previous Year Question Paper (2013)

Science

Class X

General Instructions:

1. The question paper comprises **two** Sections, **A and B**. You are to attempt both the sections.
2. There is no overall choice. However, internal choice has been provided in all the five questions of five marks category. Only one option in such question is to be attempted.
3. All questions of **Section-A** and **Section-B** are to be attempted separately.
4. Question numbers **1 to 3** in Section A are one-mark questions. These are to be answered in one word or in one sentence.
5. Question numbers **4 to 7** in Section A are two marks questions, to be answered in about 30 words each.
6. Question numbers **8 to 19** in Section A are three marks questions, to be answered in about 50 words each.
7. Question numbers **20 to 24** in Section A are five marks questions, to be answered in about 70 words each.
8. Question numbers **25 to 42** in Section B are multiple choice questions based on practical skills. Each question is a one-mark question. You are to select one most appropriate response out of the four provided to you.

SECTION A

Question 1. How many horizontal rows are there in the modern periodic table and what are they called?

Question 2. List any two factors that could lead to speciation.

Question 3. Mention one negative effect of our affluent life style on the environment.

Question 4. Mention two functions of the human testis.

Question 5. Every one of us can do something to reduce our consumption of various natural resources. List four such activities based on the 3-R approach.

Question 6. 'A ray of light incident on a rectangular glass slab immersed in any medium emerges parallel to itself.' Draw a labelled ray diagram to justify the statement.

Question 7. We often observe domestic waste decomposing in the bylanes of residential colonies. Suggest ways to make people realise that the improper disposal of waste is harmful to the environment.

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Question 8. Name the oxidising agent used for the conversion of ethanol to ethanoic acid. Distinguish between ethanol and ethanoic acid on the basis of (i) litmus test, (ii) reaction with sodium carbonate.

Question 9. (a) Differentiate between alkanes and alkenes. Name and draw the structure of one member of each.

(b) Alkanes generally burn with clean flame. Why?

Question 10. Given below are some elements of the modern periodic table:

${}_4\text{Be}$, ${}_{19}\text{K}$, ${}_{20}\text{Ca}$, ${}_{14}\text{Si}$, ${}_{9}\text{Fe}$

i. Select the element that has one electron in the outermost shell and write its electronic configuration. ii. Select two elements that belong to the same group. Give reasons for your answer. iii. Select two elements that belong to the same period. Which one of the two has bigger atomic size

Question 11. An element X (atomic number 17) reacts with an element Y (atomic number 20) to form a compound.

(a) Write the position of these elements in the modern periodic table.

(b) Write the formula of the compound formed.

Justify your answer in each case.

Question 12. 'The sex of a new born child is a matter of chance and none of the parents may be considered responsible for it.' Justify this statement with the help of flow chart showing determination of sex of a new born.

Question 13. Tabulate two distinguishing features between acquired traits and inherited traits with one example of each.

Question 14. Write two examples each of sexually transmitted diseases caused by (i) virus, (ii) bacteria. Explain how the transmission of such diseases can be prevented?

Question 15. (a) Explain the process of regeneration in Planaria.

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(b) How is regeneration different from reproduction?

Question 16. An object of height 5 cm is placed perpendicular to the principal axis of a concave lens of focal length 10 cm. Use lens formula to determine the position, size and nature of the image, if the distance of the object from the lens is 20 cm.

Question 17. Mention the types of mirrors used as (i) rear view mirrors, (ii) shaving mirrors. List two reasons to justify your answers in each case.

Question 18. State the difference in colours of the Sun observed during sunrise/ sunset and noon. Give explanation for each.

Question 19. (a) What is an ecosystem? List its two main components.
(b) We do not clean ponds or lakes, but an aquarium needs to be cleaned regularly. Explain.

Question 20. (a) Write the function of placenta in females.
(b) List four ways of preventing pregnancy. State two advantages of using such preventive methods.

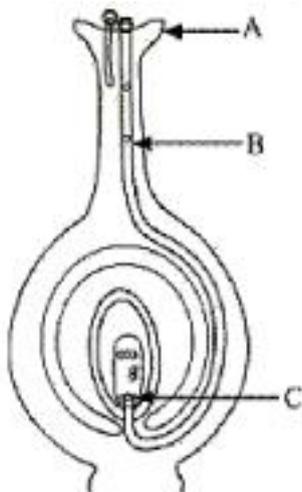
Question 21. (a) Identify A, B and C in the given diagram and write their functions. (b) Mention the role of gamete and zygote in sexually reproducing organisms.

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Question 22. (a) A person cannot read newspaper placed nearer than 50 cm from 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.

(b) We see advertisements for eye donation on television or in newspaper. Write the importance of such advertisements. **Question 23.**

State Snell's law of refraction of light. Write an expression to relate refractive index of a medium with speed of light in vacuum.

The refractive index of a medium 'a' with respect to medium 'b' is $\frac{2}{3}$ and the refractive index of medium 'b' with respect to medium 'c' is $\frac{4}{3}$. Find the refractive index of medium 'c' with respect to medium 'a'.

Question 24. (a) Define the term 'isomers'

(b) Draw two possible isomers of the compound with molecular formula C_3H_6O and write their names. (c) Give the electron dot structures of the above two compounds.

SECTION B

Question 25. A student obtained a sharp image of a burning candle, placed at the farther end of a laboratory table, on a screen using a concave mirror.

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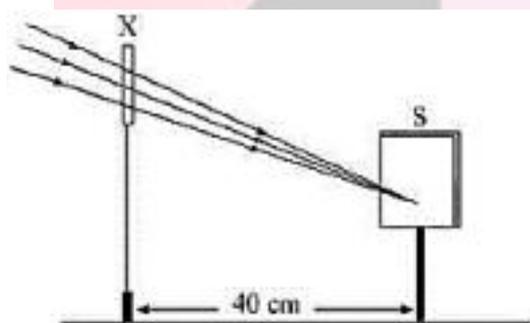
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For getting a better value of focal length of the mirror, what should the student do?

- (a) He should move the mirror away from the screen.
- (b) He should move the mirror slightly towards the screen.
- (c) He should move the mirror as well as the screen towards the newly selected object.
- (d) He should move only the screen towards the newly selected object.

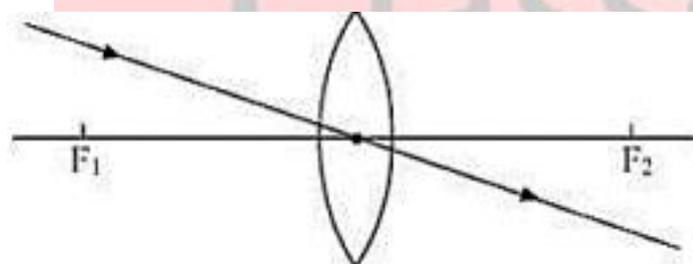
Question 26. A student focused the image of a distant object using a device 'X' on a white screen 'S' as shown in the figure. If the distance of the screen from the device is 40 cm, select the correct statement about the device.



- (a) The device X is a convex lens of focal length 20 cm.
- (b) The device X is a concave mirror of focal length 40 cm.
- (c) The device X is a convex mirror of radius of curvature 40 cm.
- (d) The device X is a convex lens of focal length 40 cm.

Question 27. Study the following ray diagrams:

I.

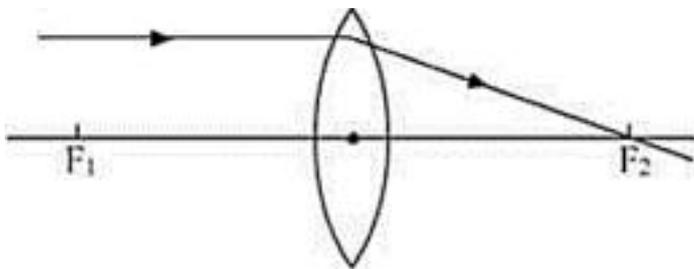


II.

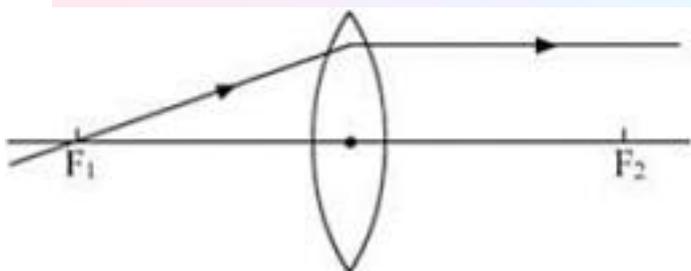
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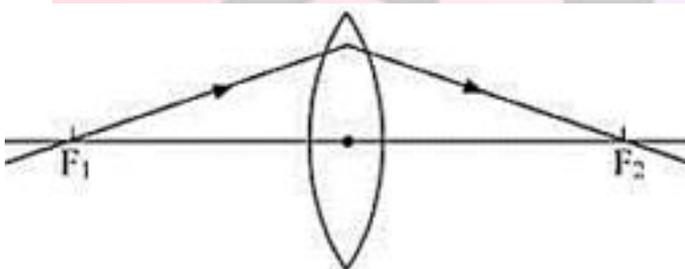
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III.



IV.

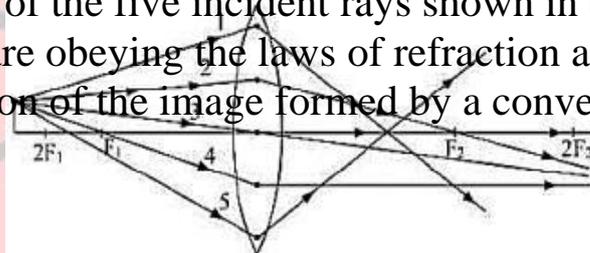


The diagrams showing the correct path of the ray after passing through the lens are: (a) II and III only

- (b) I and II only
- (c) I, II and III

Question 28. Out of the five incident rays shown in the figure find the three rays which are obeying the laws of refraction and may be used for locating the position of the image formed by a convex lens:

- (a) 1, 2 and 3
- (b) 2, 3 and 4
- (c) 3, 4 and 5
- (d) 1, 2 and 4



Question 29. Select from the following the best set-up for tracing the path of a ray of light through a rectangular glass slab:

- (a) I

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- (b) II
- (c) III
- (d) IV

Question 30. After tracing the path of rays of light through a glass slab for three different angles of incidence, a student measured the corresponding values of angle of refraction 'r' and angle of emergence 'e' and recorded them in the table given below:

The correct observations are:

- (a) I and II
- (b) II and III
- (c) I and III
- (d) I, II and III

Question 31. In an experiment to trace the path of a ray of light through a glass prism for different values of angle of incidence a student would find that the emergent ray:

- (a) is parallel to the incident ray
- (b) perpendicular to the incident ray
- (c) is parallel to the refracted ray
- (d) bends at an angle to the direction of the incident ray

Question 32. While performing an experiment to trace the path of a ray of light passing through a glass prism, four students marked the incident ray and the emergent ray in their diagrams in the manner shown below. Which one is correct?

- (a) I
- (b) II
- (c) III
- (d) IV

Question 33. Study the different conclusions draw by students of a class on the basis of observations of preserved/available specimens of plants and animals.

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- I. Potato and sweet potato are analogous organs in plants and animals.
- II. Wings of insects and wings of birds are homologous organs in animals.
- III. Wings of insects and wings of bats are analogous organs in animals.
- IV. Thorns of citrus and tendrils of cucurbita are analogous organs in plants

The correct conclusions are:

- (a) I and II
- (b) II and IV
- (c) III and IV
- (d) I and III

Question 34. You have potato, carrot, radish, sweet potato, tomato and ginger bought from the market in your jute bag. Identify two vegetables to represent the correct homologous structures. (a) Potato and sweet potato

- (b) Carrot and tomato
- (c) Potato and tomato
- (d) Carrot and radish

Question 35. In the figure, the parts marked A, B and C are sequentially:

- (a) Plumule, Cotyledon and Radicle
- (b) Radicle, Cotyledon and Plumule
- (c) Radicle, Plumule and Cotyledon
- (d) Plumule, Radicle and Cotyledon

Question 36. Select the correct statements for the process of budding in yeast:

- I. A bud arises from a particular region on a parent body.
- II. A parent cell divides into two daughter cells; here the parental identity is lost.
- III. Before detaching from the parent body a bud may form another bud.
- IV. A bud when detached from the parent body grows into a new individual.

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- (a) II, III and IV
- (b) I, II and III
- (c) III, IV and I
- (d) None of the above

Question 37. A student after observing a slide showing different stages of binary fission in Amoeba draws the following diagrams. However these diagrams are not in proper sequence.

The correct sequence is:

- (a) I, V, IV, III, II
- (b) I, V, III, IV, II
- (c) I, III, IV, V, II
- (d) None of these

Question 38. Read the following statements:

- I. When a red litmus paper is dipped into the reaction mixture of a saponification reaction, it turns blue and the reaction is exothermic.
- II. When a blue litmus paper is dipped into the reaction mixture of a saponification reaction, its colour does not change and the reaction is exothermic.
- III. When a red litmus paper is dipped into the reaction mixture of a saponification reaction, its colour does not change and the reaction is endothermic.
- IV. When a blue litmus paper is dipped into the reaction mixture of a saponification reaction, its colour does not change and the reaction is endothermic.

Which of the above statements are correct?

- (a) I and II
- (b) II and III
- (c) III and IV
- (d) I and IV

Question 39. A student prepared 20% sodium hydroxide solution in a beaker containing water. The observations noted by him are given below.

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- I. Sodium hydroxide is in the form of pellets.
- II. It dissolves in water readily.
- III. The beaker appears cold when touched from outside.
- IV. Red litmus paper turns blue when dipped into the solution.

The correct observations are:

- (a) I, II, and III
- (b) II, III and IV
- (c) III, IV and I
- (d) I, II and IV

Question 40. Hard water required for an experiment is not available in a school laboratory. However following salts are available in the laboratory. Select the salts which may be dissolved in water to make it hard for the experiment.

- 1. Calcium Sulphate
 - 2. Sodium Sulphate
 - 3. Calcium Chloride
 - 4. Potassium Sulphate
 - 5. Sodium Hydrogen Carbonate
 - 6. Magnesium Chloride
- (a) 1, 2 and 4
 - (b) 1, 3 and 6
 - (c) 3, 5 and 6
 - (d) 2, 4 and 5

Question 41. In an experiment to study the properties of acetic acid, a student takes about 2 ml of acetic acid in a dry test tube. He adds about 2 ml of water to it and shakes the test tube well. He is likely to observe that:

- (a) The acetic acid dissolves readily in water.
- (b) The solution becomes light orange.
- (c) Water floats over the surface of acetic acid.
- (d) Acetic acid floats over the surface of water.

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Question 42. A student takes 2 ml acetic acid in a dry test tube and adds a pinch of sodium hydrogen carbonate to it. He makes the following observations:

- I. A colourless and odourless gas evolves with a brisk effervescence.
- II. The gas turns lime water milky when passed through it.
- III. The gas burns with an explosion when a burning splinter is brought near it.
- IV. The gas extinguishes the burning splinter which is brought near it.

The correct observations are:

- (a) I, II and III
- (b) II, III and IV
- (c) III, IV and I
- (d) IV, I and II

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