

BHARATH COACHING CENTRE

10th CBSE

Science

Total: 90

Model Exam - 3

Time: 3.00 hrs

General Instructions:

- I. Question numbers 1 to 3 in Section - A are one mark question. They are to be answered in one word or in one sentence.
- II. Question numbers 4 to 6 in Section - A are two marks questions. These are to be answered in 30 words each.
- III. Question numbers 7 to 18 in Section - A are three marks questions. These are to be answered in about 50 words each.
- IV. Question numbers 19 to 24 in Section-A are 5 marks questions. These are to be answered in 70 words each.
- V. Question numbers 25 to 33 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.
- VI. Question numbers 34 to 36 in Section B are two marks questions based on practical skills.
- VII. These are to be answered in brief.

1. Write the names of alkenes having two and three carbon atoms respectively.
 2. What is meant by DNA copying? Mention its importance in reproduction?
 3. Write two advantages of vegetative propagation
 4. State the nature of the image formed at the retina of human eye.
 5. Given below is a list of elements along with their atomic numbers in parenthesis. A(6), B(8), C(10), D(12), E(14), F(16)
Select the element which has:
 - a. Two shells both of which are completely filled with electrons.
 - b. The electronic configuration 2, 8, 2
 - c. A total of three shells, with four electrons in its valence shell.
 - d. A total of two shells, with four electrons in its valence shell.
 6. 'X' is an element with atomic number 20.
 - a. Is it a metal or a non – metal?
 - b. Which of the two X or Mg with atomic number 12 is more reactive?
 - c. What is the valency of X?
 - d. What will be the formula of its chloride?
 7. State any two differences between binary fission and multiple fission.
 8. More complex organisms cannot give rise to new individuals through regeneration. Why?
 9. A ray of light strikes the surface of water such that its speed in water is 2.25×10^8 m/s. If absolute refractive index of water is $\frac{4}{3}$, find the speed of light in air.
 10. What is meant by least distance of distinct vision? How does this vary between the very young and old people?
 11. Explain why the colour of the clear sky is blue.
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12. Why should fossil fuels be used judiciously? Write any two reasons.
13. Name the three 'R's to save environment. Explain any one with the help of one example. (Write in full form)
14. Why are detergents considered more useful than soaps these days? State one reason only.
 - a. Draw electron dot structure for Oxygen molecule.
 - b. Select alkanes from the following : C_2H_4 , C_5H_{12} , C_4H_8 , C_3H_8
15. How are elements arranged in the Modern Periodic Table? State the position of
 - i) Metals
 - ii) Non-metals
 - iii) Noble gases
 - iv) Metalloids
16. State the reasons for adopting contraceptive methods. List four methods of contraception.
17. In a cross between plants with purple flowers and plants with white flowers the offspring's of F1 generation all had white flowers. When the F1 generation was self – crossed, it was observed in the F2 generation that out of 100, 75 flowers were white. Make a cross and answer the following :-
 - (a) What are the genotypes of the F2 progeny?
 - (b) What is the ratio of White: Purple flowers in the F2 generation?
18. (a) Explain Geographical isolation.
 - (b) Giving reasons state whether the following are Homologous or Analogous organs :-
 - (i) Wings of butterfly and wings of a bat
 - (ii) forelimbs of frog and human
19. What are fossils? How are they formed? How is the age of a fossil determined?
20. An image $2/3^{rd}$ the size the object is formed by a convex lens at a distance of 12cm from it. Find the focal length of the lens.
21. Draw ray diagram and describe the nature of the image formed by a concave mirror when the object kept
 - (a) between pole and focus of the mirror
 - (b) Between infinity and Centre of curvature of the mirror
22. A student has difficulty in reading the black board while sitting in the last row what could be the defect the student is suffering from? How can it be corrected? Draw the ray diagrams for (a) defective eye (b) its correction.
23. (a) Name the following compounds (i) $CH_3-CH_2-CH_3$ (ii) CH_3CHO
 - (b) Complete the following equation and Name the reaction : $CH_3CH_2OH + O_2 \rightarrow$
 - (c) Draw the structure for Benzene.

OR

- (a) How can an ester be prepared in laboratory? Write the chemical reaction involved in its preparation.
- (b) Ethanoic acid is also known as glacial acetic acid. Why?
- (c) List two differences between saturated and unsaturated hydrocarbons.
24. Draw a neat diagram of longitudinal section of a flower showing growth of pollen tube and label on it the following with their functions : (i) Ovary (ii) style (iii) stigma

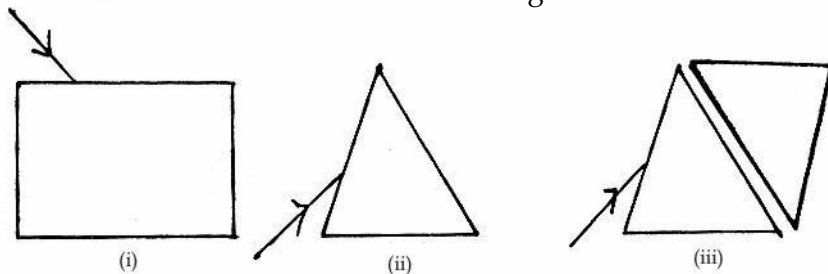
OR

- (a) Name the parts of flower which contain germ cells.
- (b) What is the difference between self-pollination and cross pollination?
- (c) Testes are located outside the abdominal cavity. Why?
- (d) Fertilization is possible if copulation has taken place during middle of menstrual cycle. Give reason.

- (e) What happens when the egg is not fertilized?
25. (a) Define power of a lens.
 (b) An object is kept at a distance of 18cm, 20cm, 22cm, and 30cm, from a lens of power +5D.
 (i) In which case or cases would you get a magnified image?
 (ii) Which of the magnified image can be got on a screen?
 (c) List two widely used applications of a convex lens.

OR

- (a) A very thin narrow beam of white light is made incident on three glass objects shown below. Comment on the nature of behaviour of the emergent beam in all the 3 cases.

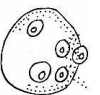
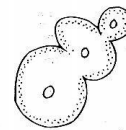
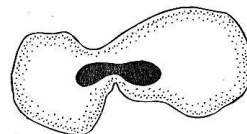
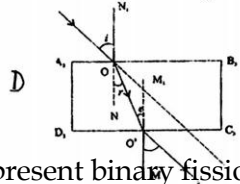
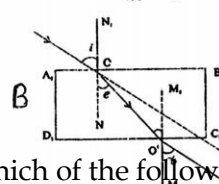
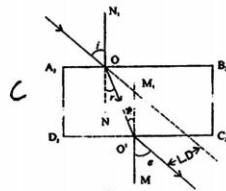
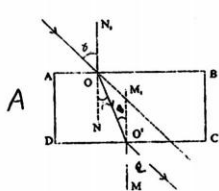


- (b) There is a similarity between two of the emergent beams. Identify the two.
 (c) When light enters from air to glass the angles of incidence and refraction in air and glass are 45° and 30° respectively. Find the refractive index of glass.
 (Given that $\sin 45^\circ = \frac{1}{\sqrt{2}}$; $\sin 30^\circ = \frac{1}{2}$)

SECTION-B

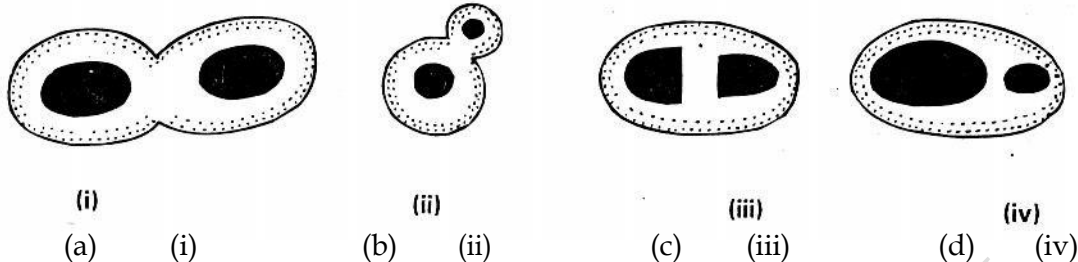
26. A thin plate of zinc metal is placed in a beaker containing aqueous ferrous sulphate solution. The zinc plate is taken out after 15 mins. The colour of solution changes to:
- (a) deep yellow (b) deep green
 (c) light blue (d) colourless.
27. When an aluminium strip is kept immersed in freshly prepared ferrous sulphate solution taken in a test tube, the change which is observed is:
- a. the green solution slowly fades
 b. the lower end of the test tube becomes slightly warm
 c. a colourless gas with the smell of burning sulphur is observed
 d. light green solution changes to blue.
28. Deepa was asked to identify bottles of acetic acid from a shelf where a number of other labelled bottles were placed. She reads the labels as :
- (i) Vinegar (ii) Formic acid (iii) Ethanoic acid (iv) Ethanol Correct identification would be-
- (a) i, ii (b) i, iv (c) ii, iv (d) i, iii
29. Manoj was asked to list the properties of acetic acid after he had studied them in the laboratory. According to him acetic acid –
- (i) Is insoluble in water.
 (ii) Turns blue litmus paper red.
 (iii) Reacts with Na_2CO_3 to form NaOH and CO_2 .
 (iv) Has sweet smell like perfume.
- (a) i (b) ii (c) iii (d) iv
30. Ethanoic acid was added to Sodium bicarbonate solution and the gas evolved was tested with burning splinter. Which one of the following four observations is correct ?
- a. The gas burns with pop sound and the flame gets extinguished.

- b. The flame gets extinguished and gas does not burn.
 c. The gas burns with a blue flame and the splinter burns brightly.
 d. The gas is brown in colour.
31. To find focal length of a convex lens in laboratory, Manoj fixed it on a stand and kept it on a mark of 15.3 cm on an optical bench. To get a clear image of a distant tree, he adjusted a screen and finally got clear image when screen was placed at 32.5 cm. Focal length of the lens is :
 (a) 32.5 cm (b) 17.2 cm (c) 34.4 cm (d) 47.8 cm
32. While determining the focal length of a concave mirror by forming an image of a distant object, the screen should be placed
 (a) at the back of mirror (b) in front of the mirror
 (c) at right angle with plane of mirror (d) anywhere near the mirror
33. To determine the focal length of given convex lens a student focussed the image of a distant object on a screen using the lens. To get the correct value of focal length he should measure the distance between
 a. object and the screen (b) object and the lens
 (c) screen and the lens (d) object and the image
34. While performing the experiment on tracing a ray of light passing through a rectangular glass slab, the inference given by four students after measuring angles of incidence, refraction and emergence is as
 a. angle of refraction is greater than angle of emergence
 b. angle of refraction is equal to angle of emergence
 c. angle of incidence is greater than angle of emergence
 d. angle of incidence is equal to angle of emergence Which student has given correct inference ?
 (a) A (b) B (c) C (d) D
35. A student has to perform an experiment on tracing the path of a ray of light passing through a rectangular glass slab for different angles of incidence. Which of the following figures shows correct labeling so that he can get a correct measure of the angles of incidence and the angles of emergence?

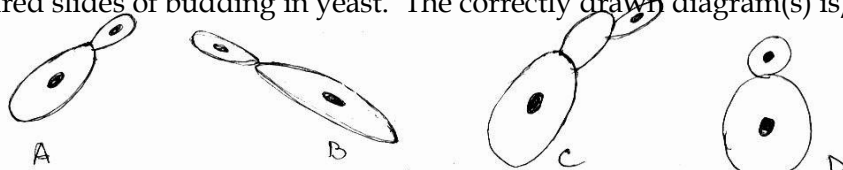


36. Which of the following represent binary fission in amoeba?
 (a) (i) (b) (ii) (c) (iii) (d) (iv)
37. A student is observing two permanent slides, one of binary fission in amoeba and other of budding in yeast. He would identify one difference in the nucleus of the two as
 (a) Presence of a single nucleus each in amoeba, yeast cell and its attached bud.
 (b) Presence of two distant nuclei in amoeba, one in yeast cell and two in bud.
 (c) Presence of one nucleus in amoeba, two in yeast cell and one in bud.
 (d) Presence of two nuclei in centrally constricted amoeba, one in yeast cell and one in its bud.

38. Which of the following figures shows budding in yeast :



39. Following diagrams were drawn by four students A, B, C and D on having observed the prepared slides of budding in yeast. The correctly drawn diagram(s) is/are



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

40. While performing the experiment to find percentage of water absorbed by raisins, a teacher asked her students to put 5 raisins each in 3 solutions A, B, C. After 2 hrs it was seen that :-

- * Size of the raisins did not change in solution A
- * Raisins swelled up in solution B
- * Raisins shrunk in solution C

The teacher asked them to identify the correct statement in reference to the 3 solutions:-

- (a) A is isotonic , B is hypotonic, C is hypertonic
- (b) A is isotonic, B is hypertonic , C is hypotonic
- (c) A is hypotonic, B is hypertonic, C is isotonic
- (d) A is hypertonic, B is isotonic , C is hypotonic

41. Group X raisins are kept in water at 5 degrees Celsius and group Y raisins are kept in water at 30 degrees Celsius. It will be observed that -

- (a) Raisins in Group X are swollen more than those in Group Y
- (b) Raisins in Group Y are swollen more than those in Group X
- (c) Raisins of both the Group are equally swollen
- (d) Raisins of Group X get contracted while that of Y are swollen