JAIPUR EDUCATION PLUS

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SA-2

SAMPLE PAPER- SCIENCE
TIME: 2HRS 30 MIN

SECTION-A

1. Molecular formula of a hydrocarbon is C3H8. Draw its complete structure and write its name.
2. Mention the name of a structure found in human eye that controls size of pupil.
3. Consider a food chain of the following- fish, crab, plankton, shark Arrange the above chain in proper order of trophic level.
4. Mention the role of decomposers in our eco-system.
5. State Modern Periodic Law. Name the two elements of first period.
6. Arrange the following elements in the descending order of atomic size and give a reason for your answer. Mg, Cl, P, Ar (Atomic numbers of the above elements are 12, 17, 15, 18 respectively.
7. Differentiate between the fission of uni-cellular organism Leishmania and of Plasmodium.
8. Mention any four ways of asexual reproduction.
9. (a) State Snell's Law of refraction.
(b) Define refractive index of a medium and express it mathematically.
10. (a) What is the least distance of distant vision for the normal eye?
(b) Does the above distance increase or decrease for long-sighted eye? Give reason for your answer with diagram.
11. (a) Why danger signals are red in colour?
(b) What would have been the colour of sky if the earth had no atmosphere? Give reason for your answer.
12. Fossil fuels are being increasingly used as source of energy. List any two reasons for replacing these by alternate sources of energy.
13. List any two reasons due to which construction of large dams is opposed.
14. (a) Write chemical name and formula of Vinegar?
(b) Describe with a chemical equations what happens when sodium reacts with ethanol.
15. (a) What are metalloids ?
(b) Name any four metalloids
16. (a) What are sexually transmitted diseases? Name any one which is caused by bacteria and one caused by viral infection.
(b) Mention any two methods to avoid such diseases.

17. Explain in brief the factors that can lead to the rise of new species.

18. Define the following terms for a lens with the help of diagram.

(a) Optical centre (b) Principal axis (c) Principal focus

19. What are homologous organs? How do they provide evidence in support of evolution?

20. Draw the image formation by a concave mirror of focal length 15cm for the following positions of object (diagrams may not be drawn to the scale) Indicate the nature and relative size of image

(i) object is placed at 30cm from mirror

(ii) object is placed at 10cm from mirror 15 cm(i) 30cm (ii) 10cm

21. (a) Explain the difference between a converging and diverging lens with the help of diagram. (b) Power of a lens is - 1.5 D. What is the nature of this lens?

22. (a) Draw a diagram to show the formation of image of a distant object by a myopic eye. How can such an eye – defect be rectified ? (b) State two reasons due to which this eye defect may be caused.

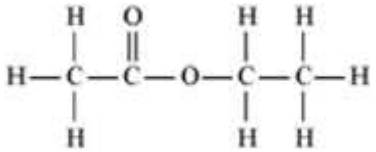
23. In human beings, the statistical probability of getting either a male or a female child is 50:50. Give reasons and explain with the help of diagram.

24. Write balanced chemical equation for the following –

(a) Methane is burned in sufficient air. (b) Ethanol is treated with sodium.

(c) Ethanoic acid is reacted with sodium hydroxide. (d) Ethanoic acid is treated with Sodium carbonate.

(e) Ethanol is mixed with Ethanoic acid in the presence of an acid.



OR

(a) Ester with molecular formula $C_4H_8O_2$ is ethyl ethanoate ($CH_3COOCH_2CH_3$). Its structural formula is represented as follows:

Write the structural formula of the corresponding alcohol and the acid.

(b) Mention the experimental conditions involved in obtaining ethene from ethanol and write the chemical equation for the above reaction and write the chemical equation for the above reaction.

(c) Explain the cleansing action of soap.

25. (a) Draw a diagram illustrating germination in a flowering plant and label – Stigma, Pollen grain, Male germ cell, Female germ cell.

(b) Describe the process of germination.

OR

(a) Draw a diagram showing longitudinal section of a flower and label – Stigma, Ovary, Anther, and Filament. (b) How is the process of pollination different from fertilization.

26. (a) Illustrate with the help of ray diagram for a concave mirror the following terms –

(i) Principal focus (ii) Center of curvature

(b) The image of a candle flame formed by a lens is obtained on a screen placed on the other side of the lens. If the image is three times the size of the flame and the distance between lens and image is 80cm, at which distance should the candle be placed from the lens? What is the nature of the lens ? Also give the nature and position of image.

OR

(a) Illustrate with the help of ray diagram for a convex mirror the following terms –

(i) Principal focus (ii) Center of curvature.

(b) An object 2cm high when placed in front of a converging mirror produces a virtual image 3cm high. If the object is placed at a distance of 8 cm from the pole of the mirror, calculate :

(i) the position of the image (ii) the focal length of the converging mirror.

27. Name any four modes of reproduction used by single organisms. With the help of a neat diagram explain the process of regeneration in Planaria. "More complex organisms cannot give rise to new individuals through regeneration". Why ?

OR

Distinguish between pollination and fertilisation. Explain why, pollination may occur without fertilization but fertilisation will not take place without pollination. Draw a neat diagram showing the process of pollination and fertilisation in a flowering plant and label the following on it.
(i) Female germ cell (ii) Male germ cell (iii) Ovary (iv) Pollen tube

SECTION –B

28. 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.

29. 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 turns brown (b) the lower end of the test tube becomes slightly warm
(c) acolourless gas with the smell of burning sulphur is observed (d) light green solution changes to blue.

30. On mixing acetic acid with water :
(a) a suspension is formed. (b) a colloidal solution is formed.
(c) a homogeneous solution is formed. (d) a heterogeneous solution is formed.

31. Acetic acid :
(a) is neutral towards litmus. (b) turns red litmus blue but does not affect blue litmus. (c) turns blue litmus red but does not affect red litmus.(d) turns the blue litmus red and red litmus blue.

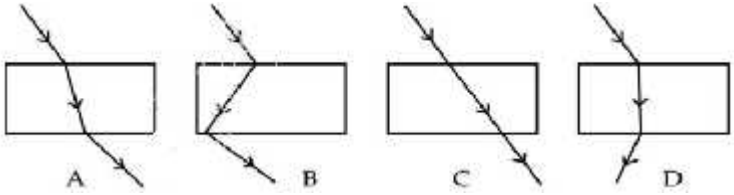
32. Gas evolved on dropping acetic acid on Na2CO3 is passed through lime water. It will be observed that –
(a) it turns milky. (b) it remain colourless. (c) a white precipitate settles at the bottom. (d) it turns brown.

33. 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

34. A teacher held a pencil close to a spherical mirror and asked four students A, B, C, D to identify the nature with the help of image that formed in the mirror. Image was erect and enlarged. The students identified it the mirror as :
(A) convex in nature. (B) concave in nature.
(C) plane mirror (D) plane at the center and concave from edges
Correct identification was done by
(a) A (b) B (c) C (d) D

35. While trying to identify convex lens from a group of glass pieces lying on a table, Asha found that there is lens that always forms a virtual and diminished image. The kind of this lens is :
(a) plano convex lens (b) double concave lens (c) double convex lens (d) plane glass sheet

36. Four students traced the path of a ray of light through a glass slab as follows – correct path was traced by-



(a) A (b) B (c) C (d) D

37. While tracing the path of a ray of light through a glass slab, Priya measured angle of incidence(i), angle of refraction(r), and angle of emergence(e) in various sets of observations which were as -

(i) $\angle i = \angle e = \angle r$ (ii) $\angle i > \angle e = \angle r$

(iii) $\angle i = \angle e > \angle r$ (iv) $\angle i < \angle e < \angle r$

Correct relation is

(a) i (b) ii (c) iii (d) iv

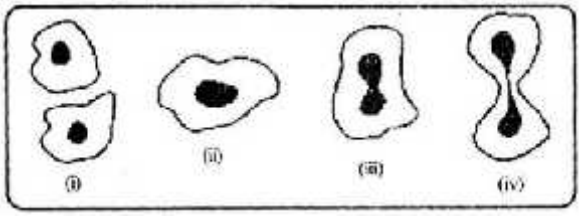
38. In binary fission of amoeba

(a) cytoplasm has to divide first before the division of nucleus. (b) cytoplasm and nucleus divide simultaneously

(c) nucleus divides first followed by division of cytoplasm

(d) development of tiny out growth divides the parent cell into two daughter cells.

39. Figure given below shows binary fission of amoeba but these are not in right sequence. Correct sequence is :



(a) i, iii, iv, ii (b) ii, iii, iv, i

(c) iv, iii, ii, I (d) iii, iv, ii, i

40. A chain of yeast cells is formed when :

(a) yeast cells do not separate after budding. (b) yeast cells are infected by a virus.

(c) yeast cells stick to each other due to mucus

(d) yeast cells are infected by a bacteria.

41. Given below are diagrams drawn by four students for budding of yeast.

The students who has drawn correct diagram-

(a) A (b) B (c) C (d) D

42. A student put five raisins each in two beakers A and B. Beaker A contained 50 ml of distilled water and beaker

B had 50 ml of saturated sugar solution. After sometime the student would observe that

(a) raisins in beaker A were more swollen than those in beaker B. (b) raisins in beaker B were more swollen than those in beaker A.

(c) raisins in both beakers A and B were equally swollen. (d) raisins in beaker A did not swell up at all.

43. The correct formula to calculate the percentage of water absorbed by raisins is (given that W1is the weight of dry raisins and W2 is the weight of soaked raisins).

(a) ——— (b)———

(c) ——— (d)———