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UNIVERSAL EDUCATION CENTRE

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SCIENCE 10TH

(i)Question numbers **1** to **4** in **Section-A** are **one mark** questions. These are to be answered in **one word** or in **one sentence**.

(ii) Question numbers **5** to **11** in **Section-A** are **two marks** questions. These are to be answered in about **30 words** each.

(iii) Question numbers **12** to **23** in **Section-A** are **three marks** questions. These are to be answered in about **50 words** each.

(iv) Question numbers **24** to **27** in **Section-A** are **five marks** questions. These are to be answered in about **70 words** each.

(v) Question numbers **28** to **43** 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**

1. Draw the electron dot structure of ethene molecule.
2. In a human eye, name the following parts –
   (i) a thin membrane which allows light to enter the eye.
   (ii) the muscles which help in changing the focal length of eye lens.
3. Consider a geographical area bearing grasshopper, hawk, snake, grass and frog. Mention the trophic level of snake.
4. Write any one example of biotic and abiotic component of our ecosystem.
5. (a) State the Modern Periodic Law. (b) Write the electronic configuration of N(7), F(9) (the number given in parenthesis is the atomic number).
6. (i) How do you calculate the valency of an element from its electronic configuration ?
   (ii) How does the valency of an element vary in going down a group of Periodic Table.
7. List two reasons for growing plant by vegetative propagation.
8. What is meant by puberty ? At which age human male and female attain puberty ?
9. State Snell's Laws of refraction.
10. Why do stars twinkle ? Explain with the help of diagram.
11. Explain why white light is dispersed into its seven – colour components by a prism. How can we recombine them as a beam of white light ?
12. (a) For what purpose is the 'Khadin' technique used in Rajasthan ?
    (b) Mention at least two advantages of this technique.
13. Why should the fossil fuels be used judiciously ?
14. (i) Draw the structure of cyclohexane. (ii) What is indicated by (a) yellow sooty flame (b) blue flame in the burner ? (iii) Write the products of combustion of ethanol ?
15. Calcium, Magnesium and Strontium have been but together in the same group of Periodic Table on the basis of their similar chemical properties. (i) Mention those properties. (Any two).
    (ii) Out of the three elements, which one will have atom of biggest size and why ?
16. (a) Why are testes located outside the abdominal cavity in a sac called scrotum ?
    (b) What are secondary sexual characters in humans ? Name one such character of male and female.
17. How is the sex of a new born genetically determined in humans ? "In human beings, the statistical probability of getting either a male or female child is 50 : 50". Justify this statement.
18. Distinguish between inherited and acquired characters. Give one example for each type.
19. What are fossils? List two information provided by the fossils about the evolution.
20. (a) A ray of light passing through centre of curvature of a concave mirror is incident on its reflecting surface. What is the angle of incidence and angle of reflection of this ray of light ?
    (b) An object, 1.0 cm in size, is placed at 20.0 cm in front of a concave mirror of focal length 25.0 cm. Find the nature, position and the size of the image.

21. (a) Define focus of a concave mirror with the help of a diagram.
(b) Which type of mirror is used in the headlights of vehicles and why ? Illustrate this application with the help of a diagram.

22. (a) Why does power to see clearly near objects as well as far off objects diminishes with age ? Name the defects that are likely to arise in eye in such a condition ?
(b) The far point of a myopic eye is 60 cm. Find the focal length of the lens used to correct it.

23. (a) What happens when a pollen grain falls on the stigma ?
(b) Draw a well labeled diagram showing germination of pollen grain on stigma .

24. (i) Define functional group in a carbon compound. Identify the functional group present in CH_3Cl, C_2H_5OH, HCOOH and $CH_3CH_2CH_2CHO$ (ii) Write the chemical equation for the reaction between methane and chlorine. Mention the essential condition for this reaction to take place. Why this reaction considered a substitution reaction?

OR

(i) Write names of following carbon compounds (a) $CH_3 - CH_2 - CH_2 - OH$ (b) $CH_3\,CO\,CH_2\,CH_3$
(ii) With the help of balanced chemical equations explain. What happens when ethanol is heated with
(a) alkaline solution of potassium permanganate,
(b) excess concentrated sulphuric acid at 443 K. Write the names of the products obtained.
(iii) Differentiate between saturated and unsaturated hydrocarbons. Why are ethene (C_2H_4) and ethyne (C_2H_2) unsaturated hydrocarbons ? Write their structural formulae.

25. (a) Describe the female reproductive system with the help of a labelled diagram. (b) What is implantation ?

OR

(a) Describe menstrual cycle. (b) Name and explain the method by which rhizopus reproduces.

26. A convex lens forms three times magnified image of an object.
(a) What can be the possible positions of the object in front of it ? (b) Draw the corresponding ray diagrams.
(c) Also write the nature and position of the image formed.

OR

(a) The radius of curvature of a concave mirror is 42 cm. What is its focal length? Find the distance at whichimage of an object placed at a distance of 6 cm from it will be formed. Also write the nature of the image so formed.
(b) What is meant by the statement that the refractive index of diamond is 2.42 ?
(c) Refractive index of water, kerosene, Ice and glass are 1.33, 1.44, 1.31, and 1.5 respectively. Arrange these in decreasing order of optical density.

27. (a) Explain the process of regeneration with the help of an example and suitable diagram.
(b) Differentiate between regeneration and reproduction (c) How does a hydra reproduce

OR

(a) What is meant by DNA copying ? (b) What is the importance of DNA copying in reproduction ?
(c) Why is variation beneficial to species ? Illustrate with the help of an example

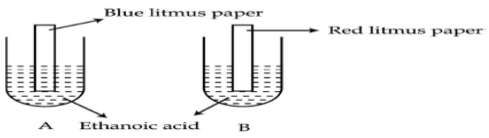
SECTION – B

28. Colour of zinc metal is :
(a) reddish brown (b) dark grey (c) blackish grey (d) silver

29. What happens when aluminium metal is dropped in copper sulphate solution.
(a) No reaction takes place (b) The colour of the solution changes from blue to colourless (c) The colour of the solution changes from blue to light green(d) The colour of the solution changes from blue to dark green.

30. On mixing 10 mL of acetic acid and 10 mL water in a beaker, a student would observe that
(i) acetic acid forms a separate layer above water (ii) water forms a separate layer above acetic acid
(iii) a white precipitate is formed which settles at the bottom (iv) a clear, transparent solution is formed.

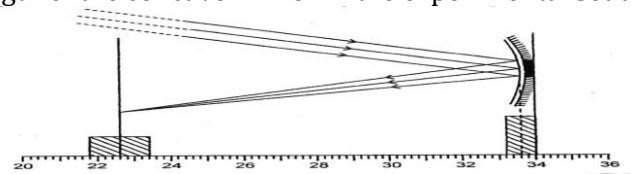
31. A student dipped a strip of blue litmus paper and red litmus paper each, into a solution of ethanoic acid as shown in the figure :



He observed that the colour of the litmus paper
(i) changed in test tube A but not in B (ii) changed in test tube B but not in A
(iii) changed in both the test tubes (iv) did not change in either of the test tubes.
Correct observation is
(a) (i) (b) (ii) (c) (iii) (d) (iv)

32. The odour of acetic acid resembles
(a) Kerosene (b) Paint (c) Vinegar (d) Rotten egg

33. The focal length of the concave mirror in the experimental set up shown below is :

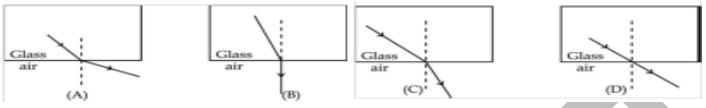


(a) 10.3 cm (b) 11.0 cm (c) 11.4 cm (d) 12.2 cm

34. A student obtained a blurred image of a distant object on a screen using a concave mirror. In order to obtain a distinct image on the screen he should shift the mirror :
(a) towards the screen (b) away from the screen (c) to a position very far away from the screen
(d) either towards or away from the screen depending upon the position of the object.

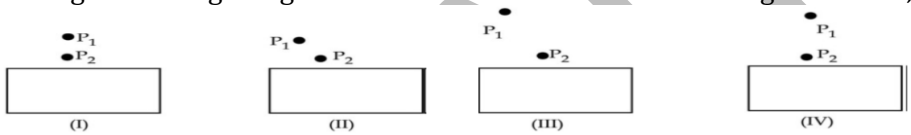
35. To determine the focal length of a convex lens, four students A, B, C and D obtained the image of a distant building on a screen. They measured the distances as given below between :
(A) screen and the building (B) lens and the building (C) lens and the screen (D) building and its image
The correct value of focal length will be determined by :
(a) A (b) B (c) C (d) D

36. Four students traced the path of a ray of light, from glass to air as given below. The correct path of refracted ray is shown in



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

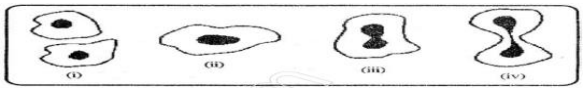
37. The two dots P1 & P2 shown in each of the following diagrams, I, II, III, IV denote the position of two pins in respect of distance and direction for performing an experiment on tracing the path of a ray of light passing through a rectangular glass slab. In which one of the following four cases,



I , II, III and IV one is likely to get best result ?
(a) (I) (b) (II) (c) III (d) (IV)

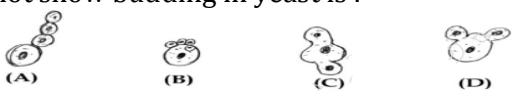
38. After observing the slide of binary fission of amoeba, a student was asked to identify the organelle which divides first during binary fission ?
(i) Nucleus (ii) Mitochondria (iii) Golgi apparatus (iv) Vacuole
(a) (i) (b) (ii) (c) (iii) (d) (iv)

39. Shown below are some diagrams showing binary fission in amoeba but these, are not in right sequence. Correct sequence is



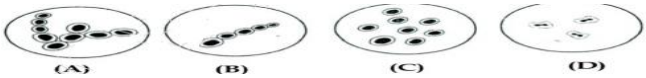
(a) i, iii, iv, ii (b) ii, iii, iv, I (c) iv, iii, ii,I (d) iii, iv, ii, i

40. One of the following diagram which does not show budding in yeast is :



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

41. Given below are diagrams drawn by four students to show budding in yeast : Which of the diagram does not show budding ?



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

42. The water absorbed by raisins is calculated as :
(a) Wt. of dry raisin - Wt. of wet raisin (b) Wt. of wet raisin - Wt. of dry raisin
(c) Wt. of wet raisin + Wt. of dry raisin (d) (Wt. of wet raisin - Wt. of dry raisin) x 100

43. Raisins absorb water by :
(a) Exosmosis (b) Endosmosis (c) Diffusion (d) Plasmolysis

ALL THE BEST