

BASANT'S SCIENCE ACADEMY
STD-X
SAMPLE PAPER
GENERAL SCIENCE

TIME-3Hrs**MAX MARK-80****SECTION A**

1. What happens when a small piece of sodium is dropped into ethanol? [1]
2. Which colour of the spectrum formed from white light deviates the least? [1]
3. Which disease is caused in human being due to depletion of ozone layer in the atmosphere? [1]
4. Name any two abiotic components of the environment. [1]
5. State two main properties of elements on which Mendeleev's periodic classification was based. [2]
6. P(86 pm),Q(231pm) R(152pm) [2]
P, Q and R are the elements, such that their atomic radii are shown in brackets. Furthermore, they have the same number of electrons in their valence shell,
(i) Do these elements belong to the same group or same period?
(ii) Arrange the elements, such that the most metallic element comes first and the least metallic element comes last.
7. Name the male and female gametes in animals. What is fertilisation and where does it take place in human females? [2]
8. Why do testes lie outside the abdominal cavity? [2]
9. State the laws of reflection. [2]
10. How does the eye regulate the light entering into it? [2]
11. Where do the parallel rays meet on passing through crystalline lens of: [2]
(i) Long-sighted eye, (ii) short sighted eye?
12. Why should we conserve forests? Suggest any two ways to conserve forests. [2]
13. Why are coal and petroleum considered to be non-renewable sources of energy? [2]
14. (a) Write the chemical equation representing the preparation of ethanol from ethene. [3]
(b) Name the product obtained when ethanol is oxidised by either chromic anhydride or alkaline potassium permanganate.
(c) Give an example of esterification reaction. [3]
15. How were the following defects of the original Mendeleev's Periodic Table resolved in the modified Mendeleev's Periodic Table? [3]
(i) Problem of anomalous pairs (ii) Position of rare earths (iii) Positions of isotopes
16. What do you know about the post fertilisation stages in plants? [3]
17. Suggest three similarities between Mendel's 'factors' and 'chromosomes'. [3]
18. How is the sex of the child determined in human beings? [3]
19. What are the factors causing variation? [3]
Why are environmental variations non-heritable?

20. Draw a ray diagram showing the path of rays of light when it enters with oblique incidence (i) from air into water (ii) from water into air. [3]
21. A convex lens of focal length 40 cm and a concave lens of focal length 50 cm are placed in contact with each other. Calculate: (i) the power of the combination, (ii) focal length of the combination. [3]
22. (i) Explain the following term used in relation to defects in vision and correction provided by [3] them: (a) Myopia
(ii) Describe with a ray diagram how a person with myopia can be helped by spectacles
23. Write the molecular formula and structural formula of the following : [5]
(i) Butanoic acid, (ii) Methanal, (iii) Propanone.
How will you convert ethanol to acetic acid?

OR

- (i) Name the reaction which is commonly used in the conversion of vegetable oils to fats. Explain the reaction involved in detail. [5]
- (ii) A compound X is formed by the reaction of a carboxylic acid $C^{i_4}O_2$ and an alcohol in presence of a few drops of H_2SO_4 . The alcohol on oxidation with alkaline $KMnO_4$ followed by acidification gives the same

carboxylic acid as used in this reaction. Give the names and structures of (a) carboxylic acid (b) alcohol and (c) the compound X. Also write the reaction.

24. Draw a labelled diagram showing the reproductive organs in a male human body along with its position. [5]

OR

With the help of a diagram, describe how fertilisation takes place in the female reproductive system. [5]

25. An object 5 cm high is held 25 cm from a converging lens of focal length 10 cm. Draw a ray diagram and find the position, size and nature of the image formed. [5]

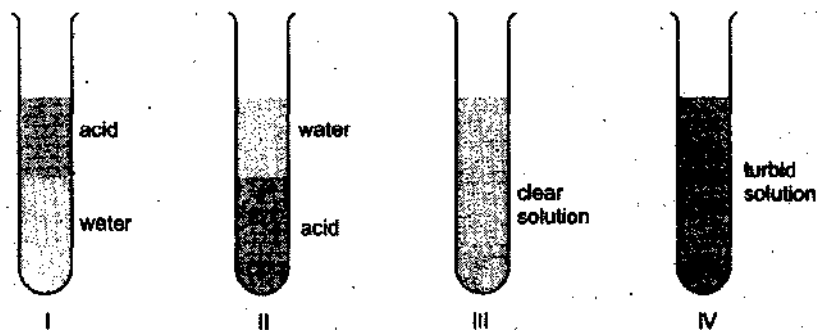
OR

Why does a light ray incident on a rectangular glass slab immersed in any medium emerges parallel to itself? Explain using a diagram. [5]

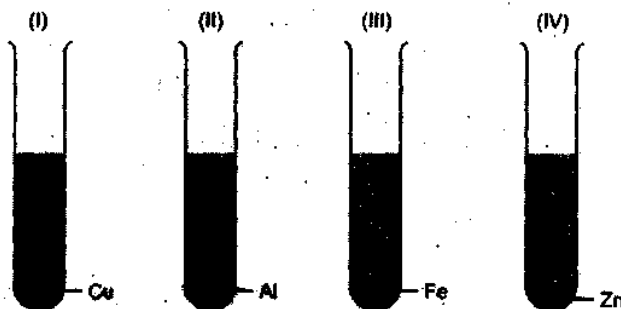
A pencil when dipped in water in a glass tumbler appears to be bent at the interface of air and water. Will the pencil appear to be bent to the same extent, if instead of water we use liquids like, kerosene or turpentine? Support your answer with reason.

SECTION-B

26. 5 ml each of acetic acid and water are mixed together and shaken well. [1]

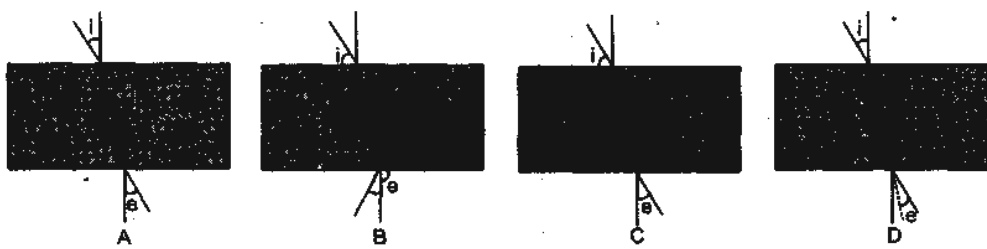


- The resulting mixture would appear as in : (a) I (b) H (b) III (d) IV
27. Solutions of ferrous sulphate, zinc sulphate, copper sulphate and aluminium sulphate were separately taken in four test tubes and some iron nails were placed in each of the solutions. After few minutes, it would be observed that the colour of: [1]
- (a) All the four solutions changed
 (b) Solutions of zinc sulphate, copper sulphate and aluminium sulphate changed and that of ferrous sulphate did not change.
 (c) Solutions of zinc sulphate and aluminium sulphate only changed.
 (d) Copper sulphate solution only changed.
28. A student takes Cu, Al, Fe and Zn strips separately in four test tubes labelled as I, II, III and IV respectively. He adds 10 ml of freshly prepared ferrous sulphate solution in each test tube and observes the colour of the metal residue in each case.

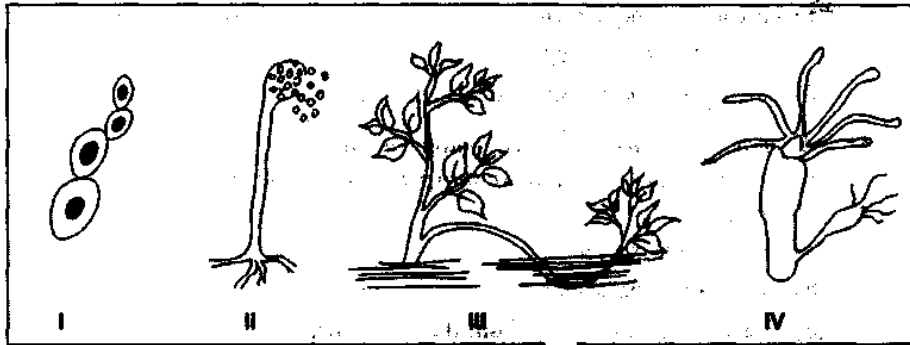


- He would observe a black residue in the test tubes : (a) (I) and (II) (b) (I) and (III) (c) (II) and (III) (d) (II) and (IV)
29. On adding sodium bicarbonate to acetic acid, you immediately : [1]

- (a) Observe a strong effervescence (b) hear a hissing sound
 (c) Get a pungent smell (d) notice formation of bubbles
30. Ethanoic acid is the constituent of: [1]
 (a) lemon juice (b) grape juice (c) table vinegar (d) beer
31. In an experiment, the image of a distant object formed by a concave mirror is obtained on a screen. To determine the focal length of the mirror, you need to measure the distance between the : [1]
 (a) mirror and the screen . (b) mirror and the object (c) object and the screen (d) mirror and the screen and also between the object, and the screen
32. A student obtains a blurred mage of an object on a screen by using a concave mirror. In order to obtain a sharp image on the screen, he will have to shift the mirror: [1]
33. A lighted bulb is placed at the principal focus of a convex lens. The beam of light emerging from the bulb is a: [1]
 (a) divergent beam (b) parallel beam (c) convergent beam (d) none of these
34. In an experiment to trace the path of a ray of light passing through a rectangular glass slab, the correct measurement of angles of incidence (i), refraction (r) and emergence (e) is shown in diagram. [1]

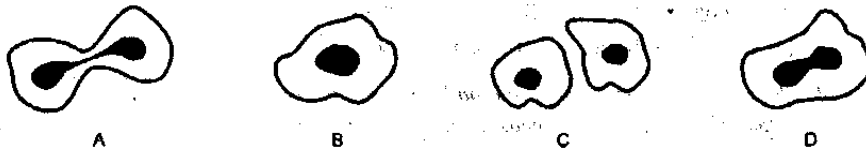


- (a) A (b) B (c) C (d) D
35. In the experiment to trace the path of a ray of light through a rectangular glass slab using pins P_1 P_2 P_3 and P_4 , four students did the following : [1]
 A: looked at heads of P_1 and P_2 while placing P_3 and heads of P_1 , P_2 and P_3 while placing P_4
 B: looked at feet of P_1 and P_2 while placing P_3 and feet of P_1 P_2 and P_3 while placing P_4
 C: looked at heads of P_1 and P_2 while placing P_3 and feet of all the pins while placing P_4
 D: looked at feet of P_1 and P_2 while placing P_3 and heads of all the pins while placing P_4
 The correct procedure is that of student: (a) A (b) B, (c) C (d) D
36. Two of the following four figures that illustrate budding are ; [1]



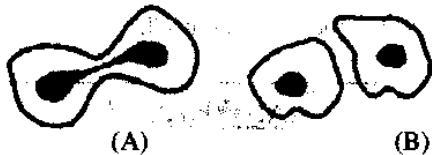
- (a) I and II (b) I and III (c) I and IV (d) II and IV

37. Given below are the stages of binary fission in Amoeba. Which one out of the following would you select as the correct sequence of these stages? [1]



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

38. The given slides A and B were identified by four students I, II, III and IV as stated below : [1]



Slide A

- X Binary fission in Amoeba
- II. budding in yeast
- III. Binary fission in Amoeba
- IV. Budding in yeast

Slide B

- Daughter cells of Amoeba
- Buds of yeast
- Buds of yeast
- Daughter cells of Amoeba

Of the above mentioned identifications of slides A & B, which one is correct?

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

39. A student dissolved 5 g of sugar in 100 ml of distilled water in beaker A. She dissolved 100 g of sugar in 100 ml of distilled water in beaker B. Then she dropped a few raisins of equal weight in each beaker. After two hours she found the raisins in A swollen and those in B shrunken. The inference drawn is that: [1]

- (a) sugar concentration in raisins is lower than that of solution A and higher than that of solution B
- (b) sugar concentration in raisins is higher than that of solution A and lower than that of solution B
- (c) in B the cell membrane of raisins was damaged resulting in leaking
- (d) in A the permeability to water of the cell membrane of raisins was enhanced

40. For determining the percentage of water absorbed by raisins in a given time, apart from water, raisins and a watch glass, we shall also require : [1]
- (a) A beaker, a graduated cylinder, a thermometer, a filter paper
 - (b) A watch glass, a graduated cylinder, a thermometer, a weighing balance
 - (c) A beaker, a thermometer, a filter paper, a weighing balance.
 - (d) A graduated cylinder, a thermometer, a weighing balance.
41. 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 : [1]
- (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.