Class - X
SUMMATIVE ASSESSMENT - II
SCIENCE

Time allowed : 3 Hours | Maximum Marks : 80

GENERAL INSTRUCTIONS.

1. *The question paper comprises of two sections, A and B. You have to attempt both the sections.*
2. *All questions are compulsory.*
3. *There is no overall choice. However internal choice has been provided in all the three questions of five marks category. Only one option in each question is to be attempted.*
4. *All Questions of section A and all questions of Section B are to be attempted separately.*
5. *Question numbers 1 to 4 in section A are one mark questions. These are to be answered in one word or one sentence.*
6. *Question numbers 5 to 13 are two marks questions, to be answered in about 30 words.*
7. *Question numbers 14 to 22 are three marks questions, to be answered in about 50 words.*
8. *Question numbers 23 to 25 are five mark questions, to be answered in about 70 words.*
9. *Question numbers 26 to 41 in section B are multiple choice questions based on practical skills. Each question is a one mark question. You have to choose one most appropriate response out of the four provided.*

SECTION A

1. When a beam of white light passes through a glass prism, state the component of white light which deviates the (i) least (ii) most.
2. "Saturated hydrocarbons burn with a blue flame while unsaturated hydrocarbons burn with a sooty flame". Why ?
3. List two main components of our environment
4. Define the term biological magnification..
5. (i) Why does the sun appear reddish early in the morning ?

   (ii) Why does the sky appear dark instead of blue to an astronaut ?
6. An object is placed at a distance of 10 cm from a concave mirror. If its image is observed at 6 cm from the mirror. Calculate focal length of the mirror.
7. (a) "Sun is the ultimate source of energy of fossil fuels", justify this statement.

   (b) Write two disadvantages of using fossil fuels.
8. (i) Write the values of far point and near point of the human eye with normal vision.

   (ii) What happens to the image distance from the eye lens in the normal eye when we increase the distance of an object from the eye ?
9. State Modern Periodic Law. How many groups and period are there in the modern Periodic table ?
10. An element X is placed in group 14. State the formula and the nature of bonding in its chloride. Draw its electron dot structure of its chloride.
11. Suggest two important measures to reduce consumption of the various natural resources.
12. List any two reasons for adopting contraceptive methods.

13. Illustrate the process of regeneration in Planaria with the help of a suitable diagram.

14. (i) Define power of a lens and write its S.I unit

    (ii) A convex lens of power 4D is placed at a distance of 40 cm from a wall. At what distance from the lens should a candle be placed so that its image is formed on the wall ?

15. A person is unable to see objects nearer than 50 cm. He wants to read a book placed at a distance of 25 cm . Name the defect of vision he is suffering from. How can it be corrected ? Draw ray diagrams for (i) the defective eye ,(ii) its correction using a suitable corrective lens.

16. (a) With the help of a ray diagram show that when light falls obliquely on a side of a rectangular glass slab, the emergent ray is parallel to the incident ray.

    (b) The refractive index of water for light going from air to water is 1.33. Find the refractive index of air for a beam of light going from water to air.

17. Describe an activity to show the formation of an ester in the school laboratory.

18. An element 'X' placed in 2nd group and 4th period of the periodic table burns in the presence of oxygen to form a basic oxide.

    (a) Identify the element

    (b) Write its electronic configuration

    (c) Write a balanced equation for the reaction when this oxide is dissolved in water.

19. 

    Name the parts A,B and C shown in the given diagram and state one function of each part.

20. Briefly explain the role of natural selection and genetic drift in speciation by citing an example.

21. Describe any three methods of tracing evolutionary relationships among organisms.

22. How do proteins control the characteristics that are inherited ? Explain with the help of an example.

23. Name the type of lens used to obtain :

    (i) an erect, enlarged and virtual image of an object.

    (ii) an erect, diminished and virtual image of an object.

    Draw labelled ray diagrams to show the formation of image in each case. Which of these lenses could also form a magnified and real image of the object? State the position of the object for which this could happen.

OR

Draw a ray diagram in each of the following cases to show the position and nature of image formed when the object is placed :

(i) Between pole and focus of a concave mirror.

(ii) between focus and centre of curvature of a concave mirror.

(iii) at the centre of curvature of a concave mirror.

(iv) between infinity and pole of a convex mirror.

(v) at infinity from a convex mirror.

24. An organic compound A on heating with Conc.H_2SO_4 forms a compound B which on addition of one mole of hydrogen in presence of Nickel forms a compound 'C'. One mole of 'C' on combustion forms 2 moles of CO_2 and 3 moles of H_2O. Identify the compounds A,B and C and write the equations for the reactions involved.

OR

Identify the compounds A to E in the following reaction sequence:-

(i) $CH_3CH_2OH \xrightarrow[\text{dil. HC}l]{kMnO_4/KOH} A + H_2O$

(ii) $CH_3CH_2OH + A \xrightarrow[\Delta]{\text{Conc. } H_2SO_4} B + H_2O$

(iii) $B + NaOH \rightarrow C + CH_3CH_2OH$

(iv) $A + NaHCO_3 \rightarrow C + D + H_2O$

(v) $CH_3CH_2OH + E \rightarrow CH_3CH_2ONa + H_2$

25. (a) What is placenta ? Mention its role during pregnancy.

(b) What will happen if the egg is not fertilized ?

(c) Colonies of yeast fail to multiply in water, but multiply in sugar solution. Give one reason for this.

OR

(a) What is vegetative propagation ? How is it advantageous ? Give suitable example.

(b) How will an organism be benefitted if it reproduces through spores ?

(c) How is regeneration different from fragmentation ?

SECTION - B

26. In an experiment on tracing the path of a ray of light through a rectangular glass slab, four students A,B,C,D used the following values of angle of incidence and the distance between the feet of the two pins (fixed on the incident ray) :

(A) (30^0, 45^0,60^0) and 1 cm

(B) (30^0, 45^0,60^0) and 6 cm

(C) (20^0, 50^0,80^0) and 2 cm

(D) (20^0, 50^0,80^0) and 5 cm

Out of these the best choice is that of student

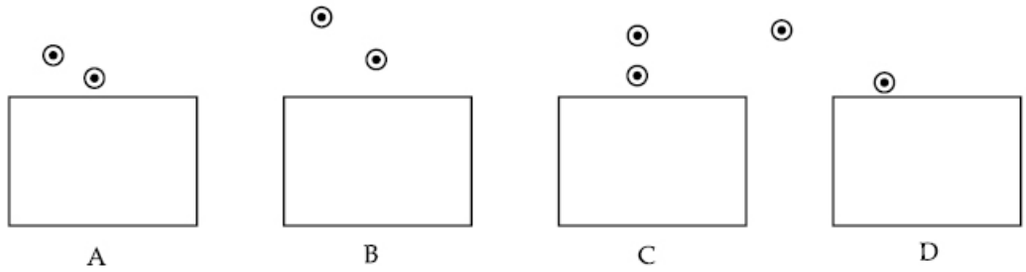
(a) A (b) B (c) C (d) D

27. A sharp image of a distant object is obtained on a screen by using a convex lens. In order to determine the focal length of the lens, we need to measure the distance between the

(a) lens and the screen (b) lens and the object

(c) object and the screen (d) lens and the screen and object and the screen

28. Out of the four set ups shown for carrying out the experiment to trace the path of a ray of light through a rectangular glass slab the best set up is :



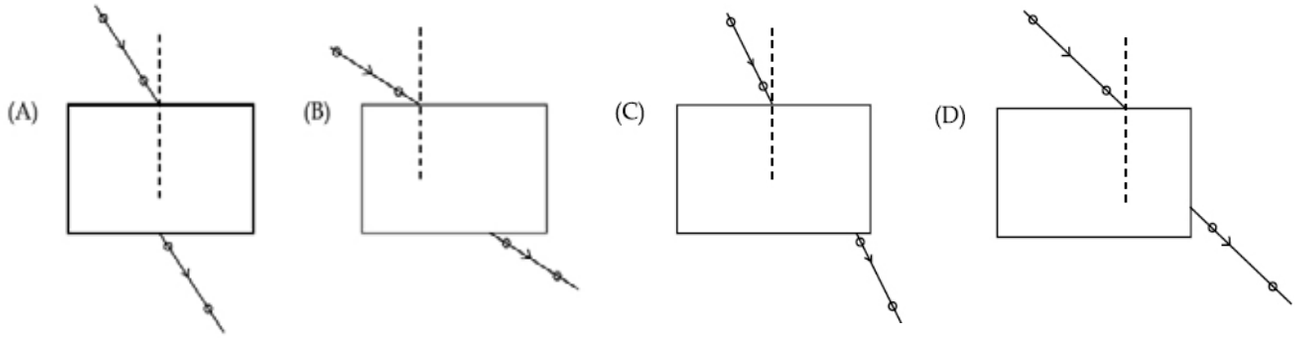
(a) A (b) B (c) C (d) D

29. Parallel rays, from a distant tree, incident on a concave mirror, form an image on the screen.

The correct formation of image on the screen is shown in

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

30. Four students A,B,C and D traced the path of a ray of light passing through a rectangular glass slab placed in air. The incident ray and the emergent ray drawn by them are given as below.



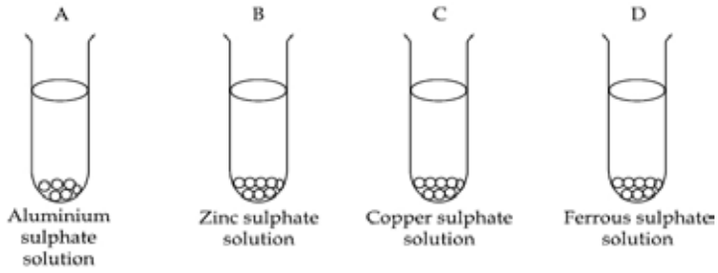
The student who traced the rays correctly is

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

31. An iron strip was dipped in aqueous solution of (i) $CuSO_4$, (ii) $ZnSO_4$, (iii) $FeSO_4$ and (iv) $Al_2(SO_4)_3$ by Sangeeta in her school laboratory. She would observe the deposition on iron in the solution (s) of

(a) $ZnSO_4$ (b) $CuSO_4$ (c) $Al_2(SO_4)_3$ (d) $CuSO_4$ and $ZnSO_4$,

32. Zinc granules are placed in each of the four solutions A,B,C and D as shown below; change in colour would be observed in



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

33. Dilute acetic acid was added to the four beakers containing following chemicals,

(I) NaCl (II) $NaHCO_3$ (III) KOH (IV) K_2CO_3

Brisk effervescence and evolution of colourless gas was observed in the beakers

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

34. 5ml of acetic acid was added to 5ml of water in a test tube. After shaking the mixture and keeping it undisturbed for about 10 minutes it is observed that

(a) the mixture turns red

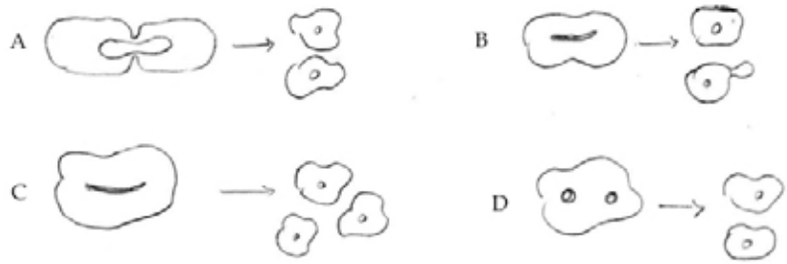
(b) a strip of red litmus paper dipped in the mixture turns blue

(c) two separate layers of water and acetic acid are seen in the test tube.

(d) a clear solution having vinegar like odour is formed.

35. Amit took a blue coloured solution in a test tube. In this solution he placed an aluminium plate and after about 2 hours he observed a reddish brown deposit on the aluminium plate. On the basis of this observation he may conclude that the solution could be of a salt of

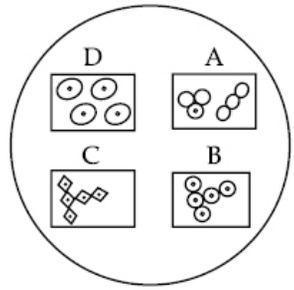
(a) sodium (b) iron (c) copper (d) zinc

36. 

Which one out of the above diagrams correctly depicts reproduction in Amoeba ?

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

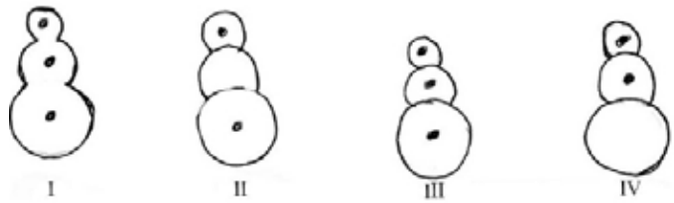
37. A student observed a slide of yeast under a microscope and saw collection of cells in different parts of the slide marked A,B,C and D as shown below :



Which of the following parts of the slide shows budding in yeast ?

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

38. Following diagrams were drawn by four different students on having observed a prepared slide of budding in yeast The correctly drawn diagram (s) is/are



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

39. One of the precautions for the experiment " To determine the percentage of water absorbed by raisins" is - " Wipe the soaked raisins gently using a filter paper before taking final mass" This precaution is important as it ensures that

(a) Only the water absorbed by the raisins is weighed (b) hands do not get wet

(c) scale pan does not get wet (d) the raisins lose water before weighing.

40. A chain of yeast cells forms because

(a) yeast cells do not separate after budding (b) Daughter cells are unable to survive without parent cells

(c) Buds reproduce as soon as they are formed (d) Daughter cells stick together with the help of mucus

41. 5g of raisins were placed in 50 ml of distilled water for 2 hours. The weight of soaked raisins was found to be 7g. The correct percentage of water absorbed by raisins is

(a) $\frac{(7-5)\text{ g}}{7\text{ g}} \times 100$ (b) $\frac{(7-5)\text{ g}}{7\text{ g}} \times \frac{1}{100}$ (c) $\frac{(7-5)\text{ g}}{5\text{ g}} \times 100$ (d) $\frac{(7-5)\text{ g}}{5\text{ g}} \times \frac{1}{100}$