Section – A

1. Draw the diagram of a flower to show its male and female reproductive parts. Label the following on it:

(i) Anther   (b) Ovary   (c) Stigma   (d) Filament

What is the function of anther? How does fusion of male and female gametes takes   place in plants?

2. A – 14 year old student is not able to see clearly the questions written on the blackboard placed at a distance of 5 m from him.

(a)   With the help of ray diagrams show how this defect can be corrected. Name the type of lens used to correct this defect.

(b)   Name the defect of vision he is suffering from.

3. What is meant by exploitation of resources with short term aims? List its four advantages.

4. (a) What is fermentation process?

(b)   How may the following be obtained from ethanol. Express giving chemical equations.

(i) Ethyl ethanoate   (ii) Sodium ethoxide   (iii) Ethanol

(c) What role is played by yeast in the conversion of cane – sugar to ethanol?

5. Explain analogous and homologous organs. Identify analogous and   homologous organs amongst the following:

Wings of an insect, wings of a bat, forelimbs of frog, forelimbs of a human.

6. Why are some substances biodegradable and some non – biodegradable.

7. On the basis of electronic structure, how will you select:

(a)   The chemically similar elements

(b)   The first chemical is a period

(c)   The chemically similar elements

8. (a) Write chemical equation for the decarboxylation reaction of ethanoic acid.

(ii) Describe with chemical equations how ethanoic acid may be obtained from:

9. Define ionization energy. Below is given the first ionization energy of elements A, B, C, D, E, F, G, H belonging to 2nd period as 1314, 1085, 500, 2000, 1680, 900, 801 and 1400 kJ mol $^{-1}$ respectively. Identify the element of 14th group.

10.   With the help of a ray diagram, explain the refraction of light through a prism. What are angle of deviation and angle of emergence? How are these angle of emergence? How are these angle angles related to the angle of incidence and the angle of prism?

11.   (a) What is the cause of blue colour of ocean?

(b) Dispersion is caused by refraction not by reflection. Why?

(c) A beam of white light on passing through a hollow prism gives no spectrum.

12. What happens when a small piece of sodium is dropped into ethanol?

13. What are chlorofluorocarbons?

14. Write the full form of IUCD.

15. A convex lens has a focal length of 40 cm. Calculate its power.

16. State four important properties of images formed by plane mirror.

17. A boy uses spectacles of focal length – 50 cm. Name the defect of vision he is suffering from. Compute the power of the lens.

18. A person is advised to wear spectacles with convex lenses. What type of defect of vision is he suffering from?

19. An object 3 cm high is placed at a distance of 20 m infront of a convex lens of focal length 12 cm. Find the position, nature and size of the image formed.

20. Write two advantages of classifying energy sources as renewable and non – renewable.

21. Suggest any four activities in daily life which are eco – friendly.

22. Describe briefly four ways in which individuals with a particular trait may increase in population.

23. Explain the structure of graphite in terms of bonding and give one property based on this structure.

24. Allotropy is a property shown by which class: substances, elements, compounds or mixtures? Give one example of allotropy.

25. Give reason as to why the atomic radii of elements increases in a group while moving from top to bottom?

Section – B

26. What is binary fission?

(a) Partially   (b) Completely

(c) Both of above   (d) None of the above

27. A slide showing several amoebae was given to a student and was asked to focus the amoeba undergoing binary fission. What will the student look for to correctly focus on a dividing amoeba?

(a) An amoeba with elongated nucleus and a constriction in the middle

(b) An amoeba covered by a cyst and many nuclei

(c) A rounded amoeba with rounded nucleus

(d) An amoeba with many pseudopodia and a small nucleus

28. A student obtains a blurred image 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:

(a) to a position very far away from the screen

(b) either towards or away from the screen depending upon the position of the object

(c) away from the screen

(d) towards the screen

29. Out of the following, the best way to do the experiment on finding the focal length of a concave mirror by obtaining the image of a distant object is to:

(a) keep both the mirror and the screen in suitable stands with the screen put behind the mirror

(b) keep both the mirror and screen in suitable stands with the screen put in front of the mirror.

(c) hold the mirror in hand and keep the screen in a stand kept behind the mirror

(d) hold the mirror in a stand and hold the screen in hand, with the screen in front of the mirror

30. In the determination of percentage of water absorbed by raisins, raisins should be soaked in water for:

(a) Overnight   (b) 5 to 10 hrs   (c) 1 to 3 hrs   (d) 3 to 5 hrs

31. What are the types of osmosis?

(a) Osmosis and endosmosis

(b) Endosmosis and exosmosis

(c) Osmosis and reosmosis

(d) Osmosis and exosmosis

32. Refraction cannot cause bending as light moves one surface to another if the incident and refraction angles I and r are related as:

(a) i= r = 90^0 (b) i= r = 0   (c) i= 90^0 , r = 0^0 (d) i ≠ v = 0

33. Which of the following can be used to find focal length of a lens?

(a) Light from sun

(b) Light from a distant tree

(c) Light from window of our lab.

(d) Object at a distance of 10 cm for a focal length of 30 cm.

34. The odour of ethanoic acid resembles with:

(a) Kerosene   (b) Oragne juice   (c) Vinegar   (d) Tomato juice

35. Acetic acid, when dissolved in water, it dissociates into ions reversibly because it is a:

(a) strong base   (b) weak base   (c) strong acid   (d) weak acid

36. 10 ml of freshly prepared iron sulphate solution was taken in each of four test tubes. Strips of copper, iron, zink and aluminium were introduced, each metal in a different test tube. A black residue was obtained in two of them. The right pair of metals forming the precipitates is:

(a) zinc and aluminium   (b) iron and aluminium

(c) copper and zinc   (d) aluminium and copper

37. Swelling of any raisins indicate that:

(a) external solution is hypotonic

(b) skin of raisins is impermeable

(c) external solution is hypertonic

(d) external solution is isotonic

38. When you place iron in copper sulphate solution, the reddish brown coating formed on the nail is:

(a) rough and granular

(b) Hard and flaky

(c) smooth and shining

(d) soft and dull

39. To determine the focal length of a concave mirror, a student focusses a distant object using the concave mirror. The best object can be:

(a) Sun   (b) A distant tree   (c) Classroom window   (d) All of these

40. 2 ml of acetic acid was added in drops to 5 ml of water. was noticed that:

(a) a clear and homogenous solution was formed

(b) A pink and clear solution was formed

(c) water formed a separate layer on the top of water

(d) the acid formed a separate layer on the of water

41. To find focal length it is advisable to

(a) Wooden bench holding the lens should be fixed horizontally

(b) Fix lens in a stand vertically

(c) The screen should be arranged slanted

(d) Both (A) and (B)