# Science

**Sample Question Paper 6**
**(Class 10) (Term – 1) (Session 2021-22)**

**Time: 1 hour 30 minutes** **Number of Questions: 50**

**General Instructions**

1. The Question Paper contains three sections.
2. Section A has 24 questions, Attempt any 20 questions.
3. Section B has 24 questions, Attempt any 20 questions.
4. Section C has 12 questions, Attempt any 10 questions.
5. All questions carry equal marks.
6. There is no negative marking.

**SECTION – A**

**Section - A consists of 24 questions. Attempt any 20 questions from this section.**
*The first attempted 20 questions would be evaluated.*

1. The reaction in which a substance or substances undergo change to produce new substances with new properties is called.
[A] A biochemical reaction
[B] A nuclear reaction
[C] A physical reaction
[D] A chemical reaction

2. Which one of the following process involve chemical reactions?
[A] Storing of Oxygen gas under pressure in a gas cylinder.
[B] Liquification of air.
[C] Keeping petrol in a China dish in the open.
[D] Heating copper wire in the presence of air at high temperature.

3. Which of the following reactions is an endothermic reaction?
[A] Burning of coal.
[B] Decomposition of vegetable matter into compost.
[C] Process of respiration.
[D] Decomposition of calcium carbonate to form quick lime and carbon dioxide.

4. In the double displacement reaction between aqueous potassium iodide and aqueous lead nitrate, yellow precipitate of lead iodide is formed. While performing the activity if lead nitrate is not available, which of the following can be used in place of Lead Nitrate?
[A] Lead sulphate
[B] Lead Acetate
[C] Ammonium nitrate
[D] Potassium sulphate

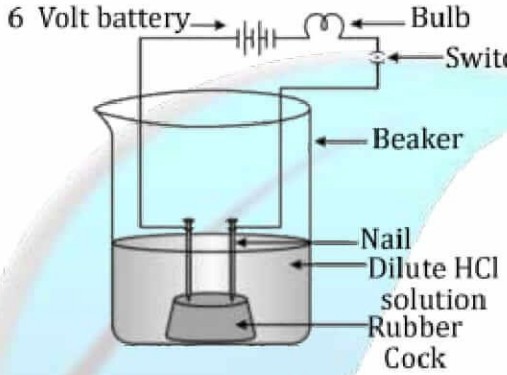
5. Electrolysis of water is a decomposition reaction. The mole ratio of hydrogen and oxygen gases liberated during electrolysis of water is:
[A] 1:1
[B] 2:1
[C] 4:1
[D] 1:2

6. Which gas is evolved, when hydrochloric acid is added in the first test tube containing small pieces of marble and then in second test tube containing zinc granules?
[A] $H_2$ is first test tube, $O_2$ in the second test tube.
[B] $CO_2$ in the first test tube, $H_2$ in the second test tube.
[C] $O_2$ in the first test tube, $Cl_2$ in the second test tube.
[D] $Cl_2$ in the first test tube, $CO_2$ in the second test tube.

7. Which of the following statement is correct about an aqueous solution of an acid and a base?
(i) Higher the pH, stronger the acid.
(ii) Higher the pH, weaker the acid
(iii) Lower the pH, stronger the base.
(iv) Lower the pH, weaker the base.
[A] (ii) & (iii)
[B] (i) & (iii)
[C] (i) & (iv)
[D] (ii) & (iv)

8. Which of the following are present in a dilute aqueous solution of hydrochloric acid?
[A] $H_3O^+ + Cl^-$
[B] $H_3O^+ + OH^-$
[C] $Cl^- + OH^-$
[D] Unionized HCl

9. In an attempt to demonstrate electrical conductivity through an electrolyte, the following Apparatus was set up. In which among the following statement is / are correct?




(i) Bulb will not glow because electrolyte is not acidic
(ii) Bulb will glow because NaOH is a strong base and furnishes ions for conduction
(iii) Bulb will not glow because circuit is incomplete
(iv) Bulb will not glow because it depends upon the type of electrolytic solutions
[A] (i) & (iii)
[B] (ii) & (iv)
[C] (ii) only
[D] (iv) only

10. Chlorine gas reacts with _____ to form bleaching powder.
[A] dry $Ca(OH)_2$
[B] dil. Solution of $Ca(OH)_2$
[C] Conc. Solution of $Ca(OH)_2$
[D] dry CaO

11. Which of the following statements about the autotrophs is incorrect?
[A] They synthesise carbohydrates from carbon dioxide and water in the presence of Sunlight and chlorophyll.
[B] They Store carbohydrates in the form of starch
[C] They convert carbon dioxide and water into carbohydrates in the absence of Sunlight
[D] They constitute the first trophic level in food chains

12. Riya joined Aerobic classes in her neighbourhood along with her friend. On the very first day, her instructed told them to always do this exercise in a well-ventilated room. She later found out the reason why her instructed had said so. A student noted down few statements about aerobic and anaerobic respiration. Select the row containing in correct information:

| | Aerobic Respiration | Anaerobic Respiration |
|---|---|---|
| [A] | It takes place in presence of oxygen. | It takes place in absence of oxygen. |
| [B] | End products are carbon dioxide, water, and energy. | End products are carbon dioxide and energy. |
| [C] | Large amount of energy released. | Less amount of energy released. |
| [D] | It takes place in Mitochondria | It takes place in yeast & human muscles cells. |

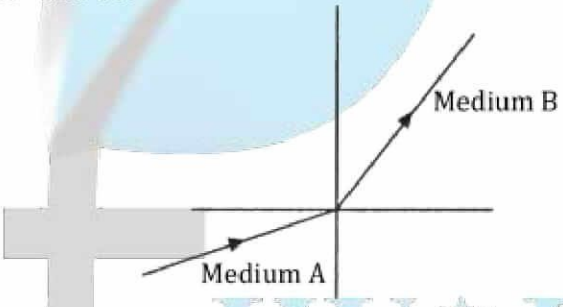
13. The remaining undigested food material is eliminated via _____ in case of Amoeba.
[A] Absorption
[B] Digestion
[C] Egestion
[D] Ingestion

14. In humans, however, we respire anaerobically when the heart and lungs cannot work fast enough to provide enough oxygen around the body to breakdown the glucose. This causes formation of:
[A] Ethanol
[B] Carbon dioxide
[C] Lactic Acid
[D] All the above

15. Terrestrial organisms use _____ for respiration.
[A] Atmospheric $CO_2$
[B] Atmospheric $O_2$
[C] Stored oxygen
[D] Store $CO_2$

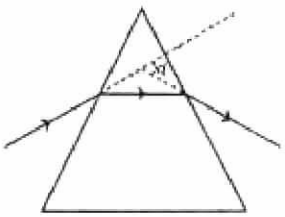
16. Which of the following statement is correct about excretion in human beings?
(i) Kidneys are the primary excretory organ
(ii) Nitrogenous waste such as urea or uric acid are removed from blood in the Kidneys.
(iii) The basic filtration unit in the Kidney is a cluster of very thin-walled blood capillaries.
(iv) Urine is stored in the urethra until the urge of passing it out.
[A] Both (i) & (ii)
[B] Both (i) & (iii)
[C] (i), (iii) & (iv)
[D] (i), (ii) & (iii)

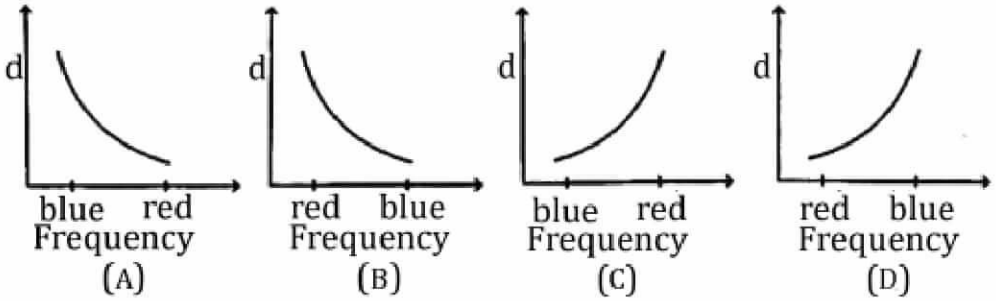
17. A light ray enters from medium "A" to medium "B" as shown in the figure. The refractive index of medium "B" relative to "A" will be:




[A] Greater than Unity
[B] Less than Unity
[C] Equal to Unity
[D] Zero

18. Light rays are deviated by a prism:
The deviation angle d is measured for light rays of different frequencies, including blue light & red light. Which graph is correct?

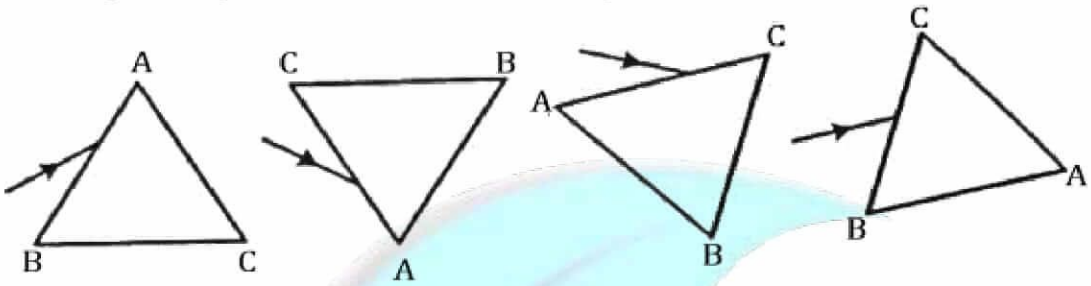




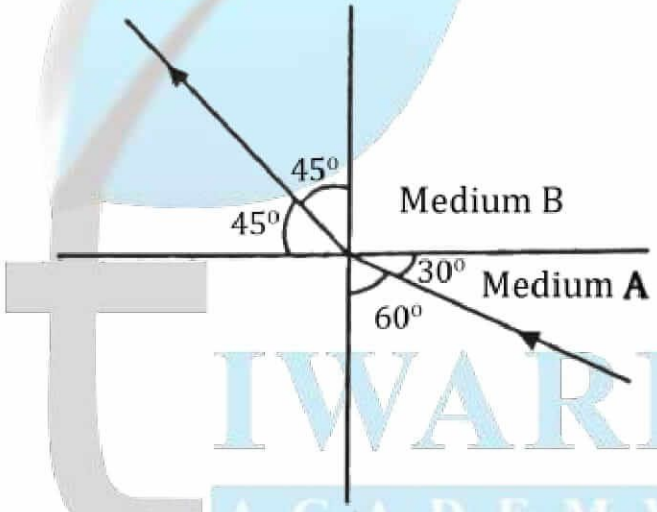

19. Where an object should be placed in front of the concave mirror, so that its image be erect and larger in size?
[A] At the centre of curvature (C) of the mirror
[B] At the focus point (f) of the mirror
[C] In between the centre of curvature (C) and the focus point (f) of the mirror
[D] In between the pole (P) and the focus point (f) of the mirror

20. Which of the following lenses would you prefer to use while reading small letters found in a dictionary?
[A] A convex lens of focal length 50 cm
[B] A concave lens of focal length 50 cm
[C] A convex lens of focal length 5 cm
[D] A concave lens of focal length 5 cm

21. A prism ABC (with BC as base) is placed in different orientation. A narrow beam of white light is incident on the prism as shown in the figure. In which of the following cases, after dispersion the third colour from the top corresponds to the colour of the sky?




22. Figure shows a ray of light as it travels from medium "A" to medium "B". Refractive index of the medium "B" relative to medium "A" is:




[A] $\sqrt{3}/\sqrt{2}$
[B] $\sqrt{2}/\sqrt{3}$
[C] $1/\sqrt{2}$
[D] $\sqrt{2}$

23. The sky appears dark to passengers flying at very high altitude mainly because:
[A] Scattering of light is not enough at such Heights
[B] There is no atmosphere at great Heights
[C] The size of molecules is smaller than the wavelength of visible light
[D] The light gets scattered towards the earth.

24. A teacher sets up the stand carrying a convex lens of focal length 15 cm at 42.7 cm mark on the optical bench. He asks four students A, B, C and D to suggest the position of screen on the optical bench so that a distinct image of a distant tree is obtained almost immediately on it. The positions suggested by the students. As the correct position of the screen was suggested by:
[A] 12.7 cm
[B] 29.7 cm
[C] 57.7 cm
[D] 72.7 cm

## SECTION - B

**Section - B consists of 24 questions (Sl. No. 25 to 48). Attempt any 20 questions from this section.**

*The first attempted 20 questions would be evaluated.*

25. Which of the following are not ionic compounds?
(i) KCL
(ii) HCL
(iii) $CCL_4$
(iv) NaCL
[A] (i) and (ii)
[B] (ii) and (iii)
[C] (iii) and (iv)
[D] (i) and (iii)

26. Which of the following non-metal is liquid at room temperature?
[A] Mercury
[B] Carbon
[C] Phosphorus
[D] Bromine

27. Galvanization is a method of protecting iron from rusting by coating with a thin layer of
[A] Gallium
[B] Aluminium
[C] Zinc
[D] Silver

28. Which of the following metal will not give $H_2$ (g) with $H_2O$?
[A] $Na(s)+2\ H_2O \rightarrow$
[B] $Mg(s)+ H_2O \rightarrow$
[C] $Zn(s) + H_2O \rightarrow$
[D] $Cu + H_2O \rightarrow$

29. Which metal can be displaced by copper from its salt solution?
(i) Silver
(ii) Zinc
(iii) Iron
(iv) Mercury
Correct option are:
[A] (i) and (ii)
[B] (i) and (iii)
[C] (ii) and (iii)
[D] (i) and (iv)

30. If copper is kept in open air, it slowly loses its shining brown surface and gains a green coating. It is due to the formation of:
[A] $CuSO_4$
[B] $CuSO_3$
[C] $Cu(NO_3)_2$
[D] CuO

***Question No. 31 to 35 consists of two segments*** **– Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:**

[A] Both **A** and **R** are **True** and **R** is the correct explanation of **A**.
[B] Both **A** and **R** are **True** and **R** is NOT the correct explanation of **A**.
[C] **A** is **True** but **R** is **false**
[D] **A** is **False** but **R** is **true.**

31. Assertion (A): When zinc is added to dilute hydrochloric acid, hydrogen is given off:
Reason(R): Hydrogen chloride molecules contain hydrochloric acid and hydrogen atoms.
[A] Both A and R are True and R is the correct explanation of A.
[B] Both A and R are True and R is NOT the correct explanation of A.
[C] A is True but R is false
[D] A is False but R is true.

32. Assertion (A): Sky appears in blue colour.
Reason(R): Blue colour is sunlight travelling through atmosphere undergoes maximum scattering.
[A] Both A and R are True and R is the correct explanation of A.
[B] Both A and R are True and R is NOT the correct explanation of A.
[C] A is True but R is false
[D] A is False but R is true.

33. Assertion (A): The image formed by a concave mirror is certainly real if the object is virtual.
Reason(R): The image formed by a concave mirror is certainly virtual if the object is real.
[A] Both A and R are True and R is the correct explanation of A.
[B] Both A and R are True and R is NOT the correct explanation of A.
[C] A is True but R is false
[D] A is False but R is true.

34. Assertion (A): In humans, there is a complex respiratory system.
Reason(R): Human skin is impermeable to gases.
[A] Both A and R are True and R is the correct explanation of A.
[B] Both A and R are True and R is NOT the correct explanation of A.
[C] A is True but R is false
[D] A is False but R is true.

35. Assertion (A): To dilute sulphuric acid, acid is added to water and not water to acid.
Reason(R): Specific heat of water is quite large.
[A] Both A and R are True and R is the correct explanation of A.
[B] Both A and R are True and R is NOT the correct explanation of A.
[C] A is True but R is false
[D] A is False but R is true.

36. Which of the following statement(s) is (are) correct?
(i) Pyruvate can be converted into ethanol and carbon dioxide by yeast.
(ii) Fermentation takes place in aerobic bacteria.
(iii) Fermentation takes place in mitochondria
(iv) Fermentation is a form of anaerobic respiration.
[A] (i) and (iii)
[B] (ii) and (iv)
[C] (i) and (iv)
[D] (ii) and (iii)

37. When air is blown from mouth into a test tube containing lime water, the lime water turns milky due to the presence of:
[A] Oxygen
[B] Carbon dioxide
[C] Nitrogen
[D] Water vapour

38. Which of the following statements about the autotrophs is incorrect?
[A] They synthesize carbohydrates from carbon dioxide and water in the presence of sunlight and chlorophyll
[B] They store carbohydrates in the form of starch
[C] They convert carbon dioxide and water into carbohydrates in the absence of sunlight
[D] They constitute the first trophic level in food chains.

39. Which of these statements is correct about alveoli?
[A] They form a very large surface area.
[B] They have a very thin wall.
[C] They are covered with blood capillaries.
[D] All of these

40. What prevents back flow of blood inside the heart during contraction?
[A] Valves in heart
[B] Thick muscular walls of ventricles
[C] Thin walls of atria
[D] All of the above

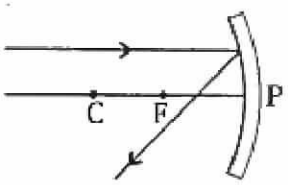
41. Oxygen liberated during photosynthesis comes from:
[A] Water
[B] Chlorophyll
[C] Carbon dioxide
[D] Glucose

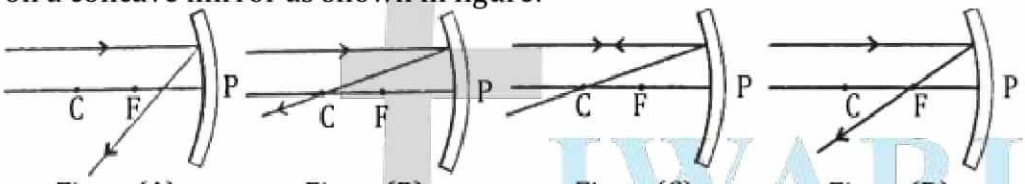
42. The internal (cellular) energy reserve in autotrophs is:
[A] Glycogen
[B] Protein
[C] Starch
[D] Fatty acid

43. Which one of the following materials cannot be used to make in a lens?
[A] Water
[B] Glass
[C] Plastic
[D] Clay

44. Muskaan performed an activity using a concave mirror of a focal length 20 cm. She placed the object at 30 cm in front of the mirror. Where is the image likely to be formed?
[A] 10 cm behind the mirror
[B] 10 cm in front of the mirror
[C] 60 cm in front of the mirror
[D] 60 cm behind the mirror

45. Which of the following ray diagram is correct for the ray of light incident on a concave mirror as shown in figure:




Figure(A) Figure(B) Figure(C) Figure(D)

[A] Figure (A)
[B] Figure (B)
[C] Figure (C)
[D] Figure (D)

46. Consider the following properties of the virtual images:
(i) Cannot be projected on the screen
(ii) Are formed by both concave & convex lens
(iii) Always erect
(iv) Always inverted
The correct properties are:
[A] (i) & (iv)
[B] (i) & (ii)
[C] (i), (ii), (iii)
[D] (i), (ii) & (iv)

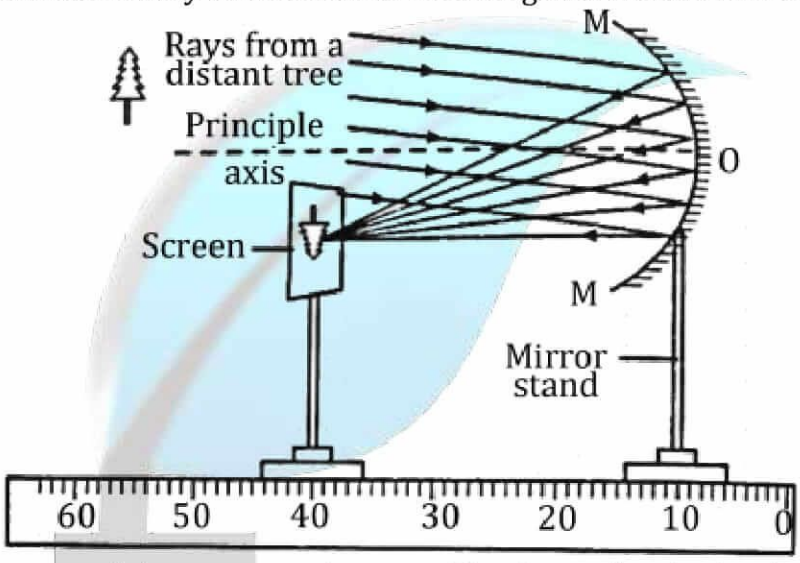
47. Two lenses, a convex lens of focal length 20 cm & a concave lens of a focal length 25 cm, are held to close each other. The focal length of the combination of the lenses is:
[A] +45 cm
[B] – 5 cm
[C] – 45 cm
[D] + 100 cm

48. The solution of one of the following compounds will not conduct electricity. This compound is:
[A] NaCl
[B] $CCl_4$
[C] $MgCl_2$
[D] $CaCl_2$

## SECTION – C

**Section - C consists of three Cases followed by questions. There are a total of 12 questions in this section. Attempt any 10 questions from this section.**
*The first attempted 10 questions would be evaluated.*

**Case – 1:**
There are numerous uses of concave Mirrors in daily life. It is used in the aircraft landing to guide the airplane, it is used as a torch to reflect the light rays, it is used during shaving to get an erect and enlarged image of the face, etc. A student had a concave mirror with him and wanted to know its focal length. So, he performed an activity to find out the focal length of the concave mirror.




49. The radius of curvature of the concave mirror used by the student in the above activity is:
[A] 60 cm
[B] 40 cm
[C] 30 cm
[D] 10 cm

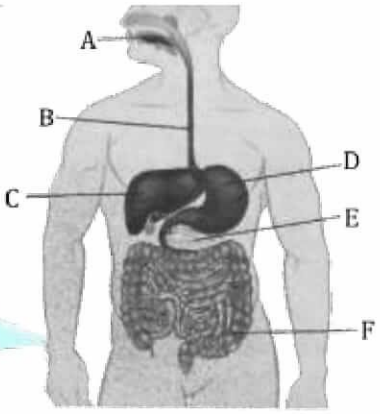
50. Select the correct observation:
(i)Image of the distant tree is formed by the concave mirror at its focus.
(ii) Image of the distant tree is formed by the concave mirror at its centre of curvature.
(iii) Image is virtual and laterally inverted
(iv) Image is real and inverted
[A] Both (i) and (iii)
[B] Both (ii) and (iii)
[C] Both (i) and (iv)
[D] Both (ii) and (iv)

51. It is desired to obtain an erect image on an object, using concave mirror of radius of curvature 40 cm. Two students give their ideas in a tabular form as given below:

| | First Student | Second Student |
|---|---|---|
| [A] | Range of object distance should be from 0 cm to less than 20 cm | Range of object distance should be from 0 cm to less than 40 cm |
| [B] | Image can be obtained at a screen placed at the position of formation of the image. | Image cannot be obtained at a screen placed at the position of formation of the image. |
| [C] | Image will be larger than the object. | Image will be of same size as the object. |
| [D] | Image will be formed behind the mirror. | Image will be formed behind the mirror. |

52. If the object is kept at 40 cm, the position and nature of image formed will be:
[A] Real, inverted and enlarged image will be formed 40 cm in front of the mirror.
[B] Real and inverted image will be formed 40 cm in front of the mirror of same size as object.
[C] Virtual, erect, and enlarged image will be formed 40 cm behind the mirror.
[D] Virtual and erect image will be formed 40 cm behind the mirror of same size as object.

**Case – 2:**
The given diagram is of human digestive system. Study the diagram and answer the questions.



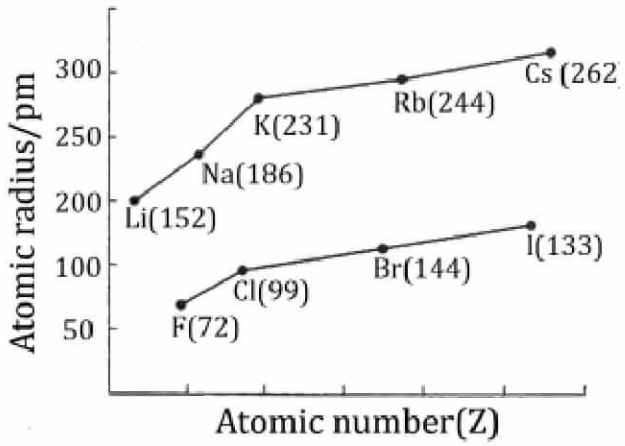

53. Which of these correctly represent the labels B, C, D, and E?
[A] B- Oesophagus, C- Liver, D- Stomach, E- pancreas
[B] B- Pancreas, C- Oesophagus, D- Liver, E- Stomach
[C] B- Stomach, C- Pancreas, D- Oesophagus, E- Liver
[D] B- Liver, C- Stomach, D- Pancreas, E- Oesophagus

54. The secretion that is released by label C is:
[A] Bile
[B] Pepsin
[C] Saliva
[D] Gastric juice

55. Name the digestive juice that lacks enzyme but helps in digestion.
[A] Bile juice
[B] Pancreatic juice
[C] Ptyalin
[D] Pepsin

56. The digestion of food starts in "which labelled"?
[A] Oesophagus
[B] Liver
[C] Stomach
[D] Mouth

**Case – 3:**
**Metallic Character**: The ability of an atom to donate electrons and form positive ion (cation) is known as electro positivity or metallic character. Down the group, metallic character increases due to increase in atomic size and across the period, from left to right electro positivity decreases due to decrease in atomic size.
**Non-metallic Character**: The ability of an atom to accept electrons to form a negative ion (anion) is called non-metallic character or electro negativity.
The elements having high electro-negativity have a higher tendency to gain electrons and form anion. Down the group, electronegativity decreases due to increase in atomic size and across the period, from left to right electronegativity increases due to decrease in atomic size.



57. Which of the following correctly represents the decreasing order of metallic character of alkali metals plotted in the graph?
[A] Cs > Rb > Li > Na > K
[B] K> Rb > Li > Na > Cs
[C] Cs > Rb > K> Na > Li
[D] Cs > K> Rb > Na > Li

58. Hydrogen is placed along with alkali metals in the modern periodic table though it shows non-metallic character
[A] as hydrogen has one electron and readily loses electron to form negative ion
[B] as hydrogen can easily lose on electron like alkali metals to form positive ion
[C] as hydrogen can gain one electron easily like halogens to form negative ion
[D] as hydrogen shows the properties of non-metals

59. Which of the following has highest electronegativity?
[A] F
[B] CI
[C] Br
[D] I

60. Identify the reason for the gradual change in electronegativity in halogens down the group.
[A] Electronegativity increases down the group due to decrease in atomic size
[B] Electronegativity decreases down the group due to decrease in tendency to lose electrons
[C] Electronegativity decreases down the group due to increase in atomic radius/ tendency to gain electron decreases
[D] Electronegativity increases down the group due to increase in forces of attractions between nucleus and valence electrons