

Science

Sample Question Paper 3 (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.

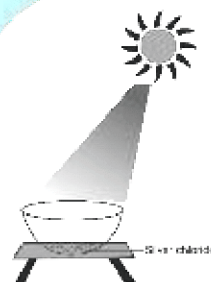
SECTION - A

Section - A consists of 24 questions. Attempt any 20 questions from this section.

The first attempted 20 questions would be evaluated.

1. The type of chemical reaction that will take place is:

- [A] Photochemical decomposition
- [B] Displacement reaction
- [C] Reduction reaction
- [D] Combination reaction



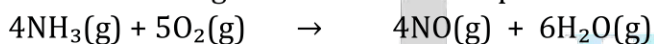
2. Write the values of "X" and "Y" are in the given equation:



- [A] 3 and 5
- [C] 4 and 2

- [B] 8 and 6
- [D] 7 and 1

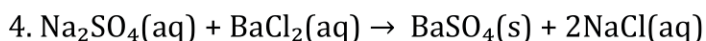
3. The following reaction is an example of:



- (i) Displacement reaction
- (ii) Combination reaction
- (iii) Redox reaction
- (iv) Neutralization reaction

- [A] (i) and (iv)
- [C] (i) and (iii)

- [B] (ii) and (iii)
- [D] (iii) and (iv)



The above reaction is an example of:

- [A] Double displacement reaction
- [C] Can be both

- [B] Displacement reaction
- [D] None of the above

5. Marbles statues are corroded or stained rainwater. Identify the main reason:

- [A] Decomposition of calcium carbonate to calcium oxide
- [B] Polluted water is basic in nature hence it reacts with calcium carbonate
- [C] Polluted water is acidic in nature
- [D] Calcium carbonate dissolves in water to give calcium hydroxide



6. While performing experiments in Chemistry lab, one should always wear a laboratory coat and be very careful while performing experiments. Some students have the bad habit of creating nuisance for other students which distract the students and may cause serious accidents, such as spilling of acid or can cause burn injuries. If a few drops of a concentrated acid accidentally spill over the hand of a student, what should be done?

- [A] Wash the hand with a saline solution
- [B] Wash the hand immediately with plenty of water and apply a paste of sodium hydrogen carbonate
- [C] After washing with plenty of water, apply a solution of sodium hydroxide on the hand
- [D] Neutralize the acid with a strong alkali

7. The approximate pH values of four salts is given below. Select the rows containing the correct information.

	Name of the Salt	pH
(i)	Potassium Sulphate	10
(ii)	Ammonium Nitrate	5
(iii)	Sodium Acetate	3
(iv)	Sodium hydrogen carbonate	8

- [A] Both (i) and (ii)
- [B] Both (ii) and (iii)
- [C] Both (iii) and (iv)
- [D] Both (ii) and (iv)

8. Zinc granules on treating with an acid "X", form zinc sulphate (ZnSO_4) salt along with the evolution of a gas "Y", which burns with a pop sound when brought near to a burning candle. Identify acid "X" and gas evolved "Y":

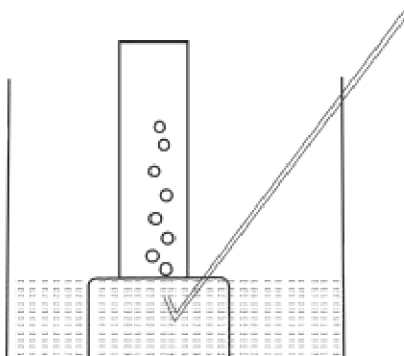
- [A] X-sulphuric acid and Y-oxygen gas
- [B] X-hydrochloric acid and Y-oxygen gas
- [C] X-sulphuric acid and Y-hydrogen gas
- [D] X-hydrochloric acid and Y-hydrogen gas

9. Baking soda is a mixture of:

- [A] Sodium carbonate and acetic acid
- [B] Sodium carbonate and tartaric acid
- [C] Sodium hydrogen carbonate and tartaric acid
- [D] Sodium hydrogen carbonate and acetic acid



10. A metal is treated with dilute sulphuric acid. The gas evolved is collected by the method shown in the figure. Name the gas evolved:



- [A] Hydrogen
- [B] Oxygen
- [C] Sulphur dioxide gas
- [D] Carbon dioxide

11. The doctor measured Rakesh's blood pressure and said it is normal now. The range of Ravi's blood pressure (systolic/diastolic) is likely to be:

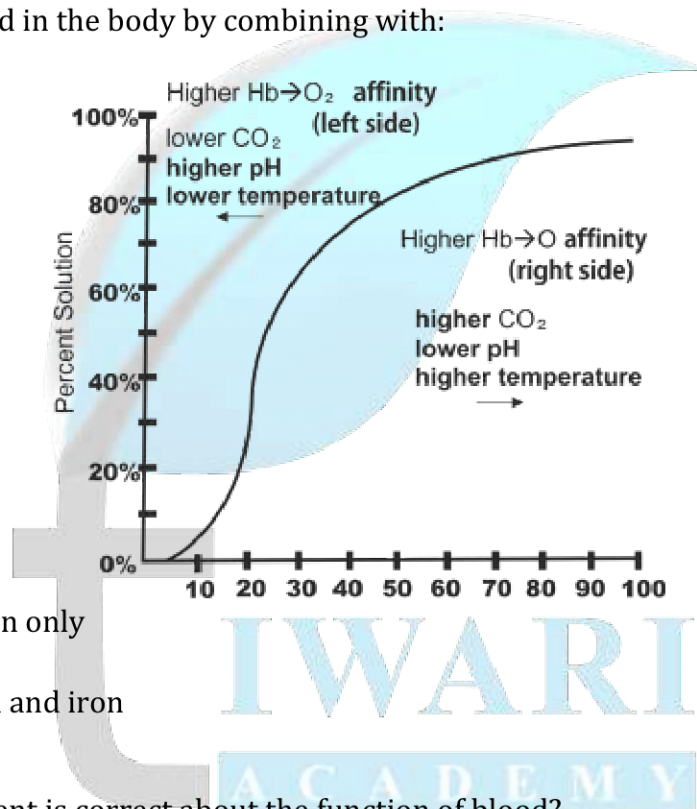
- [A] 120/80 mm of Hg
[C] 120/60 mm of Hg

- [B] 160 /80 mm of Hg
[D] 180/80 mm of Hg

12. A student noted the differences between blood and lymph in the following table. Select the row containing correct information.

	Blood	Lymph
[A] Colour	Red due to presence of only RBCs	Colourless due to presence of only WBCs
[B] Components	Plasma, RBC, WBC and platelets	Plasma and less number of WBCs
[C] Other name	Also called the tissue fluid	Also called extracellular fluid
[D] Flow	It flows through blood capillaries	It flows through arteries

13. Oxygen is transported in the body by combining with:



- [A] Haemoglobin and iron only
[B] Haemoglobin only
[C] Plasma, haemoglobin and iron
[D] None of these

14. Which of this statement is correct about the function of blood?

- [A] it helps in transportation of respiratory gases
[B] it regulates body temperature
[C] it helps in the transportation of waste products
[D] all the above

15. Which of the following statement is incorrect about transport in plants:

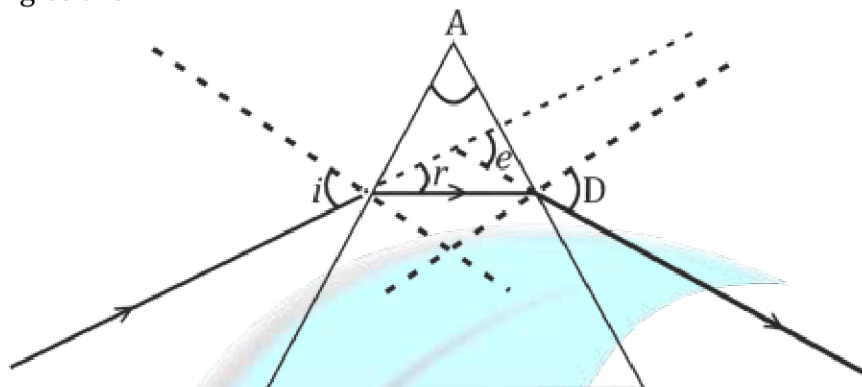
- (i) The transport in xylem is achieved by utilising energy
(ii) Transpiration helps in the absorption of water and Minerals from the roots to leaves
(iii) The transport of soluble products of photosynthesis in phloem.
(iv) Besides water, xylem also transports amino acids and other substances.
[A] Both (i) and (iii)
[B] Both (ii) and (iii)
[C] Both (i) and (iv)
[D] Both (iii) and (iv)

16. In which of the following vertebrate group/ groups, does heart not pump oxygenated blood to different parts of the body?

- [A] Pisces and amphibians
[C] Amphibians only

- [B] Amphibians and reptiles
[D] Pisces only

17. Study the following figure in which a student has marked the angle of incidence ($\angle i$), angle of refraction ($\angle r$), angle of emergence ($\angle e$), angle of prism ($\angle A$), and the angle of deviation ($\angle D$). The correctly marked angles are:



- [A] $\angle A$ and $\angle i$
[C] $\angle A$, $\angle i$ and $\angle e$ and $\angle D$

- [B] $\angle A$, $\angle i$ and $\angle r$
[D] $\angle A$, $\angle i$ and $\angle r$ and $\angle D$

18. Which of the following statements is correct?

- [A] A person with myopia can see distant objects clearly
[B] A person with hypermetropia can see nearby objects clearly
[C] A person with myopia can see nearby objects clearly
[D] A person with hypermetropia cannot see distant objects clearly

19. Given below are some common observations related to optics. Select the row containing incorrect observation and its reason.

	Observation	Reason
[A]	colour of water in deep sea	scattering of light
[B]	Apparent position of stars	atmospheric refraction
[C]	fishes appear higher than their actual depth	diffraction of light
[D]	spectrum seen on soap bubbles	Dispersion of light

20. The clear sky appears blue because:

- [A] Blue light gets absorbed in the atmosphere
[B] Ultraviolet radiations are absorbed in the atmosphere
[C] Violet and blue lights get scattered more than light of all other colours by the atmosphere
[D] Light of all other colours is scattered more than the violet and blue colour light by the atmosphere

21. A student obtained a sharp inverted image of a distant tree on the screen placed behind a convex lens. He then removed the A student obtained a sharp inverted screen and tried to look through the lens in the direction of the object. He would now observe:

- [A] A blurred image on the wall of the laboratory
[B] An erect image of the tree on the lens
[C] No image as the screen has been removed
[D] An inverted image of the tree at the focus of the lens

22. Which of the following can make a parallel beam of light when light from a point source is incident on it?

- (A) Concave mirror as well as convex lens
- (B) Convex mirror as well as concave lens
- (C) Two plane mirrors placed at 90° to each other
- (D) Concave mirror as well as concave lens

23. In torches, search lights and headlights of vehicles, the bulb is placed:

- [A] Between the pole and the focus of the reflector.
- [B] Very near to the focus of the reflector.
- [C] Between the focus and centre of curvature of Q - the reflector.
- [D] At the centre of curvature of the reflector.

24. Which of the following is not correct?

- [A] Light is an Electromagnetic wave
- [B] Light travels in a straight line
- [C] Light is a transverse wave
- [D] Light is a longitudinal wave

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 given metal is stored under kerosene to prevent oxidation?

- [A] Potassium
- [B] Magnesium
- [C] Calcium
- [D] Copper

26. Metals are refined by using different methods. Which of the following metals are refined by electrolytic refining?

- [A] Au and Cu
- [B] Au and Na
- [C] Cu and Na
- [D] Na and K

27. Generally, non-metals are not lustrous. Which of the following non-metals is lustrous?

- [A] Sulphur
- [B] Oxygen
- [C] Nitrogen
- [D] Iodine

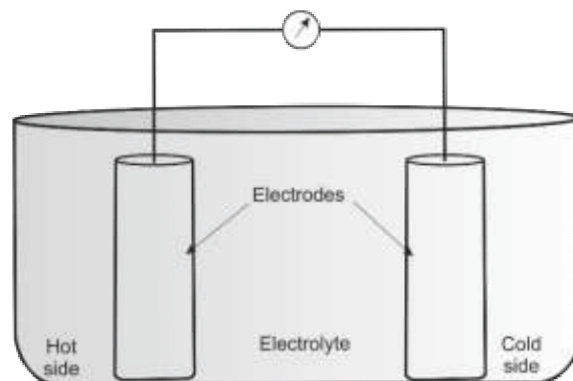
28. Stainless steel is a very useful material in our life. In stainless steel, iron is mixed with:

- [A] Ni and Cr
- [B] Cu and Cr
- [C] Ni and Cu
- [D] Cu and Au

29. An electrolytic cell consists of:

- (I) Positively charged cathode
- (II) Negatively charged anode
- (III) Positively charged anode
- (IV) Negatively charged cathode

- [A] (I) and (II)
- [B] (III) and (IV)
- [C] (I) and (III)
- [D] (II) and (IV)



30. During electrolytic refining of zinc, it gets

- [A] Deposited on cathode
- [B] Deposited on anode
- [C] Deposited on cathode as well as anode
- [D] Remains in the solution

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): Plaster of paris is used by doctors for setting fractured bones.

Reason (R): When Plaster of paris is mixed with water and applied around the fractured limbs, it sets into a hard mass.

- [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): The focal length of the convex mirror will increase, if the mirror is placed in water.

Reason (R): The focal length of the convex mirror of radius R is equal to, $f = R/2$.

- [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): When objects are observed through hot air, they appeared to be moving slightly.

Reason (R): Hotter air is optically denser and the cooler air is optically rarer.

- [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): Lipases help in emulsification of fats.

Reason (R): Lipases hydrolyses fats and oils.

- [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**

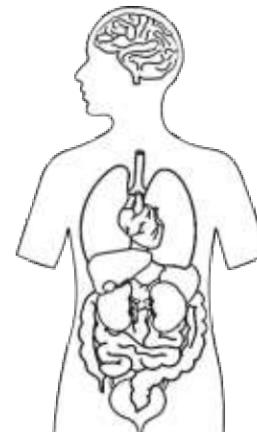
35. Assertion (A): Burning of candle is a physical change.

Reason (R): In a physical change no new substance is formed.

- [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 is the correct sequence of parts in human alimentary canal?

- [A] Mouth → stomach → small intestine → oesophagus → large intestine → oesophagus → stomach → large.
- [B] Mouth intestine → small intestine.
- [C] Mouth stomach → oesophagus → small intestine large intestine.
- [D] Mouth → oesophagus → stomach → small intestine → large intestine.



37. Which of the following substance are removed from blood in the Kidney?

- [A] Water
- [B] Urea
- [C] Sodium
- [D] Ammonia

38. Given below are some statements about transport in plants:

- (i) Xylem transports water, amino acids, and other substances in plants.
- (ii) Phloem transports soluble products of photosynthesis in plants.
- (iii) Transpiration helps in absorption of water.
- (iv) Material like sucrose is transferred into phloem tissue using energy from ATP.

Select the correct statement (s):

- [A] Both (i) and (ii)
- [B] Both (ii) and (iii)
- [C] (i), (ii) and (iv)
- [D] (ii), (iii) and (iv)

39. Which is the correct sequence of air passage during inhalation?

- [A] Nostrils → Larynx → Pharynx → Trachea → Lungs
- [B] Nasal passage → Trachea → Pharynx → Larynx → Alveoli
- [C] Larynx → Nostrils → Pharynx → Lungs
- [D] Nostrils → Pharynx → Larynx → Trachea → Alveoli

40. The blood leaving the tissues becomes richer in:

- [A] Carbon dioxide
- [B] Water
- [C] Haemoglobin
- [D] Oxygen

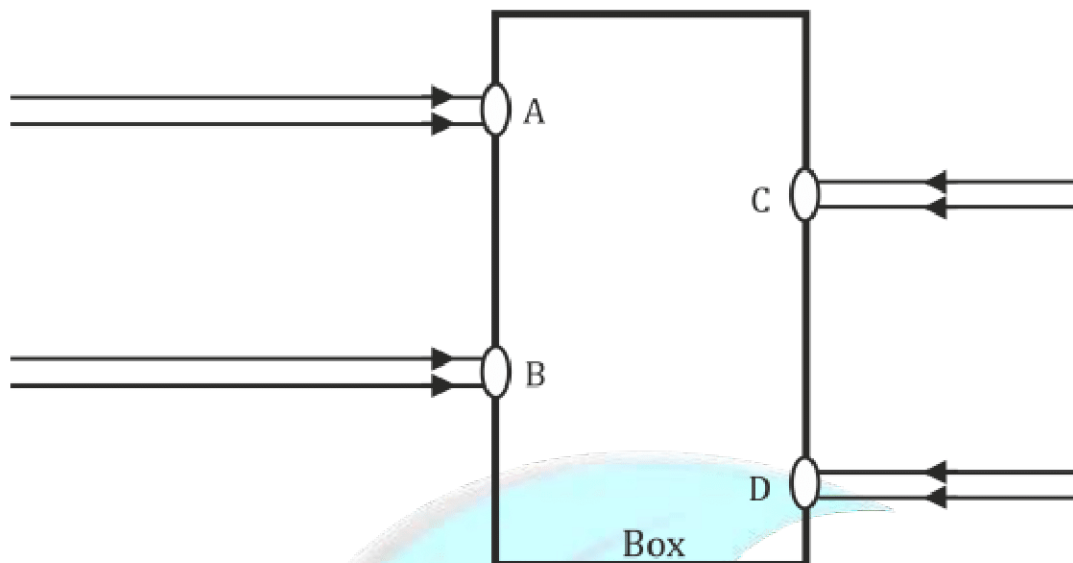
41. If salivary amylase is lacking in the saliva, which of the following events in the mouth cavity will be affected?

- [A] Proteins breaking down into amino acids
- [B] Starch breaking down into sugars
- [C] Fats breaking down into fatty acids and glycerol
- [D] Absorption of vitamins

42. During deficiency of oxygen in tissue of human beings, pyruvic acid is converted into lactic acid in the:

- [A] Cytoplasm
- [B] Chloroplast
- [C] Mitochondria
- [D] Golgi body

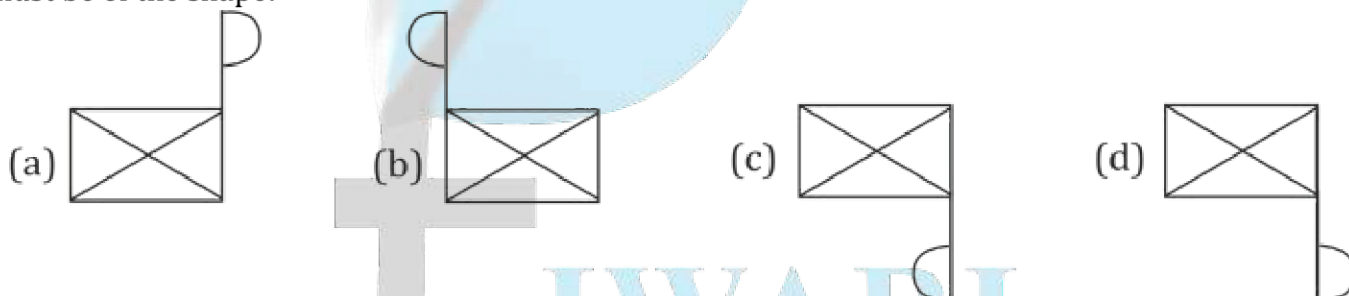
43. Beams of light are incident through the holes A and B and emerge out of the box through the holes C and D respectively, as shown in the figure. Which of the following could be inside the box?



- [A] A rectangular glass slab
[C] A concave lens

- [B] A convex lens
[D] A prism

44. If you focus a distant object of the shape , using a concave mirror, the image obtained must be of the shape:



45. An optical device has been given to a student and he determines its focal length by focusing the image of the sun on a screen placed 24 cm from the device on the same side as the sun. Select the correct statement about the device.

- [A] Convex mirror of focal length 12 cm
[B] Convex lens of focal length 24 cm
[C] Concave mirror of focal length 24 cm
[D] Convex lens of focal length 12 cm

46. A real image is formed light rays after reflection or refraction when they:

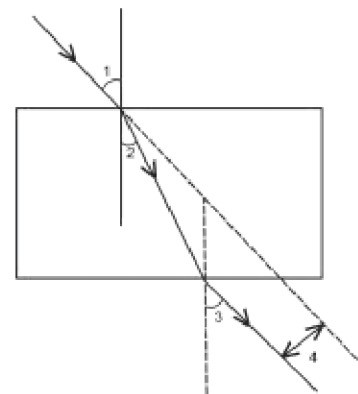
- (I) Actually, meet or intersect with each other.
(II) Actually, converge at a point.
(III) Appear to meet when they are produced in the backward direction.
(IV) Appear to diverge from a point.

Which of the above statements are correct?

- [A] (I) and (IV)
[B] (II) and (IV)
[C] (I) and (II)
[D] (II) and (III)

47. A student has traced the path of a ray of light through a glass slab as follows. If you are asked to label 1, 2, 3, and 4, the correct sequencing of labelling $\angle i$, $\angle e$, $\angle r$ and lateral displacement respectively is:

- [A] 2, 1, 3, 4
- [B] 1, 2, 3, 4
- [C] 1, 3, 2, 4
- [D] 1, 3, 4, 2



48. Generally, non- metals are not lustrous. Which of the following non-metal is lustrous?

- [A] Sulphur
- [B] Oxygen
- [C] Nitrogen
- [D] Iodine

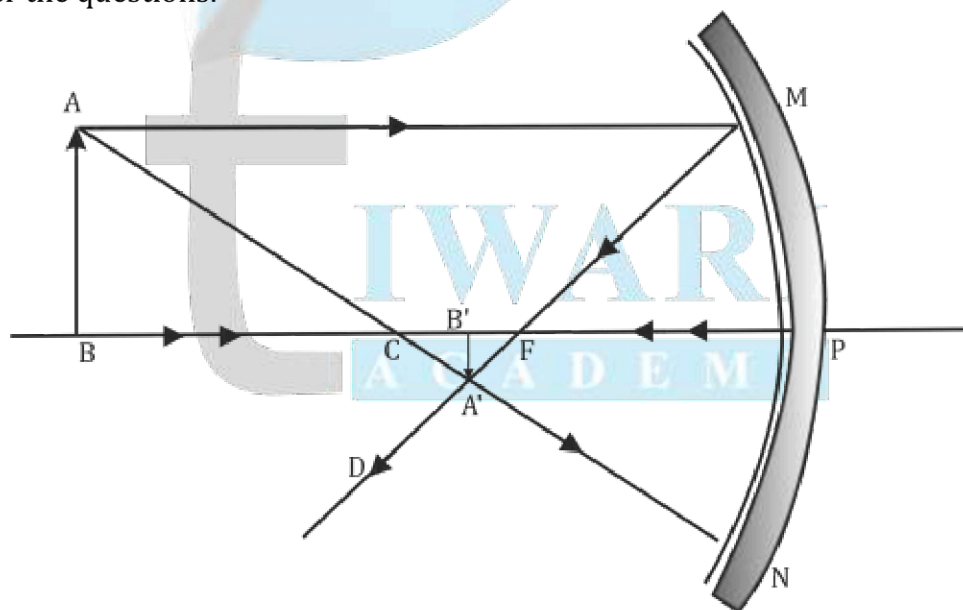
SECTION - C

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:

Following figure illustrates the ray diagram for the formation of image by a concave mirror. The position of the object is beyond the centre of curvature of the concave mirror. On the basis of given diagram answer the questions:



49. If the focal length of the concave mirror is 10 cm, the image formed will be at a distance

- [A] Between 10cm and 15cm
- [B] Between 10cm and 20cm
- [C] Beyond 20cm
- [D] At 20 cm

50. In case of concave mirror, the image distance _____ is when image is formed in front of the mirror and _____ when the image is formed behind the mirror.

- (A) Positive, negative
- (B) Negative, negative
- (C) Negative, positive
- (D) Positive, positive

51. If the size of the object in the given figure is 5 cm and the magnification produced is -0.5. The size of the image is (in cm) _____:

- (A) -2.5
(C) 2.5

- (B) -0.1
(D) 0.1

52. A negative sign in the magnification value indicate that the image is:

- [A] Real and inverted
[C] Virtual and erect

- [B] Real and erect
[D] Virtual and inverted

Case – 2:

Two students performed the following activities to understand the conditions necessary for photosynthesis.

The first student took a potted plant with variegated leaves for example, money plant or crotons. He first kept the plant in a dark room for three days and then kept it in sunlight for about six hours. He plucked a leaf from the plant and marked the green areas in it and traced them on a sheet of paper.

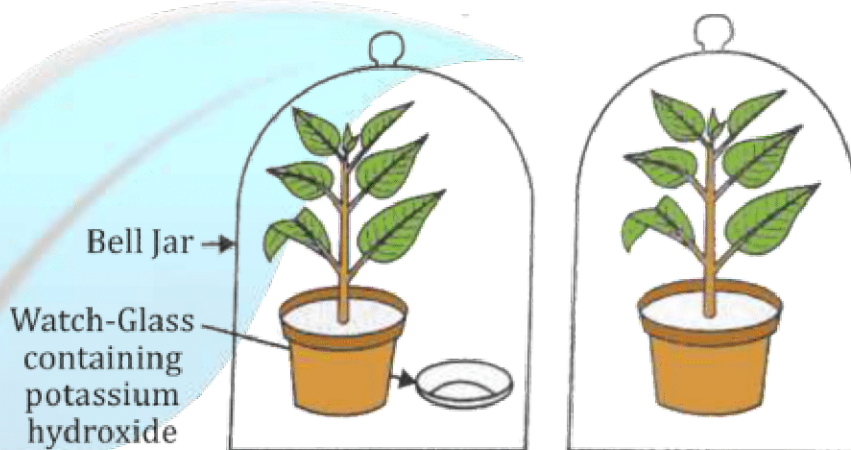
He dipped the leaf in boiling water for a few minutes. After this, he immersed it in a beaker containing alcohol and carefully placed the above beaker in a water-bath and heated till the alcohol began to boil.

He dipped the leaf in a dilute solution of iodine for a few minutes, then took out the leaf and rinsed off the iodine solution.

He based his conclusions by observing the colour of the leaf and comparing this with the tracing of the leaf done in the beginning.

The second student took two healthy potted plants which were nearly the same size and kept them in a dark room for three days. He then placed each plant on separate glass plates. He placed a watch-glass containing potassium hydroxide by the side of one of the plants and covered both plants with separate bell-jars as shown in Fig. below.

He used vaseline to seal the bottom of the jars to the glass plates so that the set-up is air- tight and kept the plants in sunlight for about two hours. He then plucked a leaf from each plant and checked for the presence of starch as in the first activity.



53. The first student noted down the following changes in colour of leaf and colour of alcohol solution after dipping the leaf in boiling alcohol. Select the correct observation:

	Colour of Leaf	Colour of Alcohol Solution
[A]	Leaf becomes colourless	No change in colour
[B]	No change in colour	No change in colour
[C]	Leaf becomes colourless	Alcohol solution turns green
[D]	No change in colour	Alcohol solution turns green

54. The second student placed a watch glass containing potassium hydroxide in one bell jar as:

- [A] Potassium hydroxide absorbs carbon dioxide gas present in the bell jar
[B] Potassium hydroxide absorbs moisture present in the bell jar
[C] Potassium hydroxide absorbs oxygen gas present in the bell jar
[D] Potassium hydroxide reacts with carbon dioxide gas to form a compound.

55. There are four statements given below, regarding the conclusions of the activities performed by the two students:

(i) The first student concluded that carbon dioxide is essential for photosynthesis.

(ii) The that chlorophyll is essential for photosynthesis.

(iii) The second that carbon dioxide is essential for photosynthesis.

(iv) The second student that water is essential for photosynthesis.

Select the correct statement(s):

[A] Both (i) and (iii)

[B] Both (ii) and (iii)

[C] Both (iii) and (iv)

[D] (i), (iii) and (iv)

56. Select the correct statement:

[A] The two leaves from the bell jars in the activity performed by the second student showed the presence of different amount of starch

[B] The second student used tape to seal the bottom of the jars to the glass plates.

[C] Both the students first dipped the leaves in boiling alcohol to kill a leaf and stop chemical reactions occurring in it.

[D] Plants are kept in the dark for three days to remove all the chlorophyll from the leaves.

Case – 3:

Everyone enjoys the spectacle of a rainbow glimmering against a dark stormy sky. How does sunlight falling on clear drops of rain get broken into the rainbow of colours we see? The same process causes white light to be broken into colours by a clear glass prism or a diamond. Sunlight, considered to be white. Actually, appears to be a bit yellow because of its mixture of wavelengths, but it does contain all visible wavelengths. The sequence of colours in rainbows is the same sequence as the colours plotted versus wavelength in Figure below. What this implies is that white light is spread out according to wavelength in a rainbow.



57. The phenomena that play a role in the formation of rainbow is:

[A] Reflection and refraction of light

[B] Refraction, absorption, dispersion and refraction of light

[C] Dispersion, refraction and reflection of light

[D] Refraction, dispersion, reflection and refraction of light

58. Select the colours in the correct ascending of wavelength:

[A] Blue, Green, Red

[B] Orange, Green, Red

[C] Blue, Yellow, Green

[D] Orange, Yellow, Green

59. Select the incorrect statements about rainbow:

(i) Rainbow is caused by scattering of sunlight by tiny water droplets, present in the atmosphere.

(ii) A rainbow is always formed in a direction opposite to that of the Sun.

(iii) The water droplets refract and scatter the incident sunlight, then reflect it internally, and finally refract it again when it comes out of the raindrop.

(iv) Different colours reach the observer's eye due to the scattering of light and internal reflection.

[A] Both (i) and (ii)

[B] Both (ii) and (iii)

[C] (i), (iii) and (iv)

[D] (ii), (iii) and (iv)

60. A spectrum of light is observed when white light is directed to a prism as:

- [A] The different colours in the white light bend away from the normal Line at different angles on entering prism.
- [B] The different colours in the white light bend towards the normal line at different angles on entering prism.
- [C] The different colours in the white light bend away from the normal at same speed to each other on entering prism.
- [D] The different colours in the white light bend towards the normal at same speed to each other on entering prism.

