QUESTION BANK

CLASS- X (SCIENCE)

1. CHEMISTRY

Q1- When a magnesium ribbon is burnt in air, the ash formed is

A) Black
B) White
C) Yellow
D) Pink

Q2- When crystals of lead nitrate are heated strongly in a dry test tube

A) Crystals immediately melt
B) A brown residue is left
C) White fumes appear in the tube
D) A yellow residue is left

Q3- Consider equations: $Ca^{+2}(aq) + 2OH^{-}(aq) \rightarrow Ca(OH)_2(s)$. Precipitate of calcium hydroxide will be of

A) Green colour
B) Blue colour
C) Brown colour
D) White colour

Q4- Which one of the given processes involves chemical reactions?

A) Storing of oxygen gas under pressure in a gas cylinder
B) Keeping petrol in a China dish in the open
C) Liquefaction of air
D) Heating copper wire in the presence of air at high temperature

Q5- In which of the given chemical equations, the abbreviations represent the correct states of the reactants and products involved at reaction temperature?

A) $2H_2(l) + O_2(l) \rightarrow 2H_2O(g)$
B) $2H_2(g) + O_2(l) \rightarrow 2H_2O(g)$
C) $2H_2(g) + O_2(g) \rightarrow 2H_2O(l)$
D) $2H_2(g) + O_2(g) \rightarrow 2H_2O(g)$

Q6. Magnesium ribbon is rubbed before burning because it has a coating of

(a) basic magnesium carbonate
(b) basic magnesium oxide

(c) basic magnesium sulphide
(d) basic magnesium chloride

Q7. In the decomposition of lead (II) nitrate to give lead (II) oxide, nitrogen dioxide and oxygen gas, the coefficient of nitrogen dioxide (in the balanced equation) is
(a) 1
(b) 2
(c) 3
(d) 4

Q8. We store silver chloride in a dark coloured bottle -
(a) a white solid.
(b) undergoes redox reaction.
(c) to avoid action by sunlight.
(d) none of the above.

Q9. Select the oxidising agent for the following reaction:
$H_2S + I_2 \rightarrow 2HI + S$
(a) I_2
(b) H_2S
(C) HI
(d) S

Q10. Which of the following is an endothermic process?
(a) Dilution of sulphuric acid
(b) Sublimation of dry ice
(c) Condensation of water vapours
(d) Respiration in human beings

Q11. Dilute hydrochloric acid is added to granulated zinc taken in a test tube. The following observations are recorded. Point out the correct observation.
(a) The surface of metal becomes shining
(b) The reaction mixture turns milky
(c) Odour of a pungent smelling gas is recorded
(d) A colourless and odourless gas is evolved

Q12. A substance 'X' is used in white-washing and is obtained by heating limestone in the absence of air. Identify 'X'.
(a) $CaOCl_2$

(b) $Ca(OH)_2$
(c) CaO
(d) $CaCO_3$

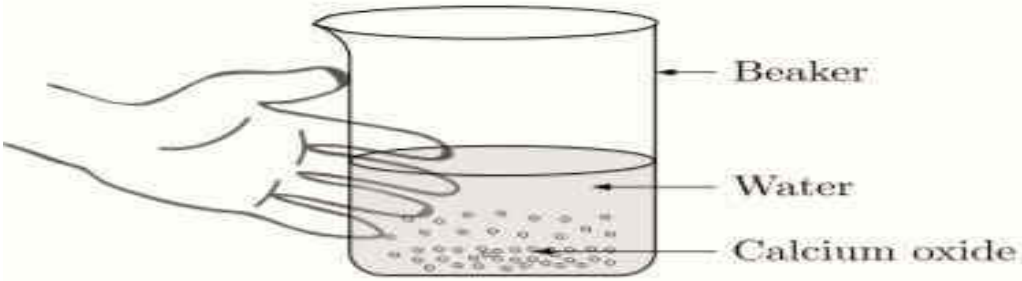
Q13. Which of the following are exothermic processes?
(i) Reaction of water with quick lime
(ii) Dilution of an acid
(iii) Evaporation of water
(iv) Sublimation of camphor (crystals)
(a) (i) and (ii)
(b) (ii) and (iii)
(c) (i) and (iv)
(d) (ii) and (iv)

Q14. An element X on exposure to moist air turns reddish-brown and a new compound Y is formed. The substance X and Y are
(a) X = Fe, Y = Fe_2O_3
(b) X = Ag, Y = Ag_2S
(c) X = Cu, Y = CuO
(d) X = Al, Y = Al_2O_3

15. Ammonium chloride when heated gives NH_3 and HCl which on cooling again forms NH_4Cl. This reaction is called:
(a) Ionic dissociation
(b) Thermal decomposition
(c) Thermal dissociation
(d) Double decomposition.

Q16. The chemical reaction involved in the corrosion of iron metal is that of:
(a) Oxidation as well as displacement
(b) Oxidation as well as a combination
(c) Reduction as well as combination
(d) Reduction as well as displacement.

Q17. Calcium oxide reacts vigorously with water.



Identify the incorrect statements.
1. It is an endothermic reaction.
2. Slaked lime is produced.
3. Quick lime is produced.
4. It is an exothermic reaction.
5. It is a combination reaction.

(a) 1 and 2
(b) 3 and 4
(c) 1 and 3
(d) 2, 4 and 5

Q18. Which among the following statement(s) is(are) true?
Exposure of silver chloride to sunlight for a long duration turns grey due to
1. the formation of silver by decomposition of silver chloride.
2. sublimation of silver chloride.
3. decomposition of chlorine gas from silver chloride.
4. oxidation of silver chloride.

(a) Only 1
(b) 1 and 3
(c) 2 and 3
(d) Only 4

Q19. Oxygen gas reacts with hydrogen to produce water. The reaction is represented by the equation:
$O_2(g) + H_2(g) \longrightarrow H_2O(l)$
The above reaction is an example of
1. Oxidation of hydrogen
2. Reduction of oxygen
3. Reduction of hydrogen
4. Redox reaction

(a) 1, 2 and 3
(b) 2, 3 and 4
(c) 1, 3 and 4
(d) 1, 2 and 4

Q20. Barium chloride on reacting with ammonium sulphate forms barium sulphate and ammonium chloride. Which of the following correctly represents the type of the reaction involved?

1. Displacement reaction
2. Precipitation reaction
3. Combination reaction
4. Double displacement reaction

(a) Only 1
(b) Only 2
(c) Only 4
(d) 2 and 4

Q21. Compound *A* on strong heating in a boiling tube gives off reddish brown fumes and a yellow residue. When the aqueous solution of *A* is treated with few drops of sodium hydroxide solution, a white precipitate appeared. Identify the cation and anion present in the compound *A*.

(a) Copper(II) and nitrate
(b) Lead(II) and chloride
(c) Zinc and sulphate
(d) Lead(II) and nitrate

Q22. Which of the statements about the reaction below are incorrect?

$2PbO(s) + C(s) \rightarrow 2Pb(s) + CO_2(g)$

(i) Lead is getting reduced.
(ii) Carbon dioxide is getting oxidised.
(iii) Carbon is getting oxidised.
(iv) Lead oxide is getting reduced.

(a) (i), (ii) and (iii)

(b) (i) and (iii)

(c) (i) and (ii)

(d) All statements are incorrect

Q23. The given reaction indicates that:

$Cu + 2AgNO_3 \rightarrow Cu(NO_3)_2 + 2Ag$

(a) Copper is more reactive than silver.

(b) Silver is more reactive than copper.

(c) Both are equally reactive.

(d) None of the above

24. Chemical equation is a method of representing a chemical reaction with the help of symbols and formulae of the substances involved in it. In a chemical equation, the substances which combine or react are called reactants and new substances produced are

(i) Consider the following reaction:

$pMg_3N_2 + qH_2O \longrightarrow rMg(OH)_2 + sNH_3$

When the equation is balanced, the coefficients p, q, r, s respectively are

(a) 1, 3, 3, 2 (b) 1, 6, 3, 2

(c) 1, 2, 3, 2 (d) 2, 3, 6, 2

25. (ii) Which of the following information is not conveyed by a balanced chemical equation?

(a) Physical states of reactants and products

(b) Symbols and formulae of all the substances involved in a particular reaction

(c) Number of atoms/molecules of the reactants and products formed

(d) Whether a particular reaction is actually feasible or not

(iii) The balancing of chemical equations is in accordance with

(a) law of combining volumes

(b) law of constant proportions

(c) law of conservation of mass

(d) both (b) and (c).

(iv) Which of the following chemical equations is an unbalanced one?

(a) $2NaHCO_3 \longrightarrow Na_2CO_3 + H_2O + CO_2$

(b) $2C_4H_{10} + 12O_2 \longrightarrow 8CO_2 + 10H_2O$

(c) $2Al + 6H_2O \longrightarrow 2Al(OH)_3 + 3H_2$

(d) $4NH_3 + 5O_2 \longrightarrow 4NO + 6H_2O$

(i) Which of the following reactions is a decomposition reaction?

(a) $NaOH + HCl \longrightarrow NaCl + H_2O$ (b) $NH_4CNO \longrightarrow H_2NCONH_2$

(c) $2KClO_3 \longrightarrow 2KCl + 3O_2$ (d) $H_2 + I_2 \longrightarrow 2HI$

(ii) $2Pb(NO_3)_2 \longrightarrow 2PbO + nA + O_2$

What is nA in the given reaction?

(a) $4NO$ (b) $4NO_2$ (c) $2PbNO_2$ (d) NO_2

(iii) Amino acid is formed by the decomposition of which component of our diet?

(a) Carbohydrate (b) Starch (c) Protein (d) Fat

(iv) Silver chloride on exposure to sunlight for a long duration turns grey due to

(I) the formation of silver by decomposition of silver chloride

(II) sublimation of silver chloride

(III) decomposition of chlorine gas from silver chloride

(IV) oxidation of silver chloride

The correct statement(s) is/are

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

(v) What type of chemical reaction takes place when electricity is passed through water?

(a) Thermal decomposition (b) Electrolytic decomposition

(c) Photochemical decomposition (d) Displacement reaction

Question No. 26 to 37 consist of two statements – 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

Q26. **Assertion:** Decomposition of vegetable matter into compost is an endothermic reaction.

Reason: Decomposition reaction involves breakdown of a single reactant into simpler products.

Q27. **Assertion:** Silver chloride turns grey in presence of sunlight.

Reason: Silver is one of the least reactive metals.

Q28. **Assertion**: Changing of colour of copper oxide to copper is an example of reduction.

Reason: Hydrogen is removed.

Q29. **Assertion:** Chemical equations can be made more informative.

Reason: We can write physical state of reactants and products, temperature and pressure, name of catalyst used etc.

Q30. **Assertion:** When water is added to calcium oxide, a large amount of heat is produced.

Reason: It is an endothermic reaction.

Q31. **Assertion:** Decomposition reactions are similar to combination reactions.

Reason: Both reactions need a catalyst to occur.

Q32. **Assertion:** Precipitation reactions produce insoluble salts.

Reason: Precipitation reaction is a double decomposition reaction.

Q33. **Assertion**: Carbon dioxide turns lime water milky.

Reason: Carbon dioxide sullies the water.

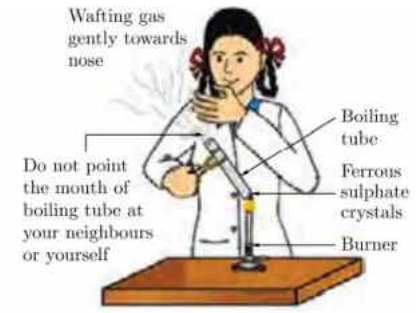
Q34. **Assertion:** Photosynthesis is considered as an endothermic reaction.

Reason: Energy gets released in the process of photosynthesis.

Q35. **Assertion:** The balancing of chemical equations is based on law of conservation of mass.

Reason: Total mass of reactants is equal to total mass of products.

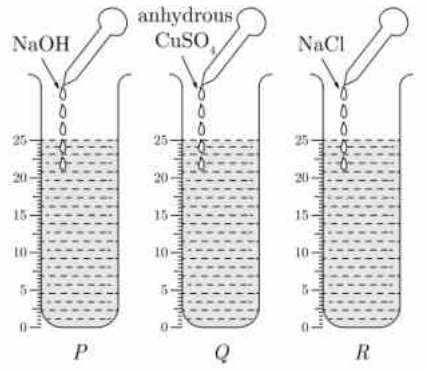
Q36. Sunita takes about 2 g ferrous sulphate crystals in dry boiling tube and heat the boiling tube over the flame of a burner or spirit lamp as shown in the figure.



The colour of crystals after heating is:

(a) Black (b) Brown (c) Green (d) Orange

Q37. Three beakers labelled as P Q, and R each containing 25 ml of water were taken. A small amount of NaOH, anhydrous CuSO4 and NaCl were added to the beakers P Q, and R respectively. It was observed that there was an increase in the temperature of the solutions contained in beakers P and Q, whereas in case of breaker R, the temperature of the solution falls. Which one of the following statements(s) is (are)

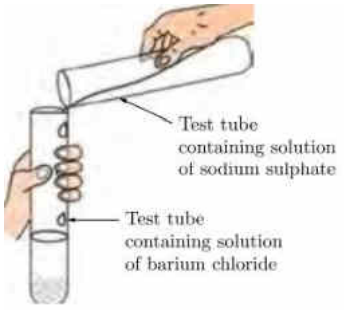


1. In beakers P and Q, exothermic process has occurred.
2. In beakers P and Q, endothermic process has occurred.
3. In beaker R, exothermic process has occurred.
4. In beaker R, endothermic process has occurred.

The correct option is-

(a) Only 1 (b) Only 2 (c) 1 and 4 (d) 2 and 3

Q38.. Sodium sulphate and barium chloride mixed together as shown in the figure.



Which colour substance is formed in the test tube?

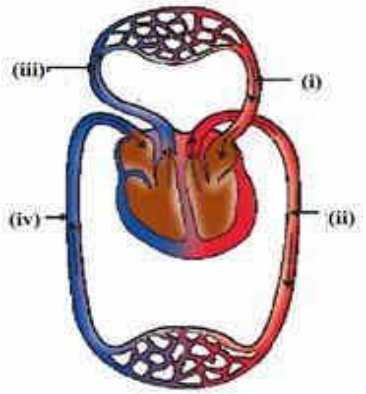
(a) White(b) Black (c) Green(d) Yellow

BIOLOGY QUESTION BANK- I

Chapter: Life Processes

Topic: TRANSPORTATION

Q1.The figure given below shows a schematic plan of blood circulation in humans with labels (i) to (iv). Identify the correct label with its functions.



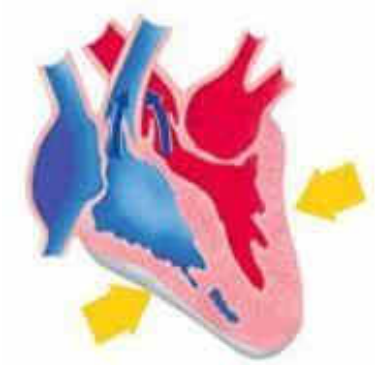
a) (i) Pulmonary vein - takes impure blood from body part.

b) (ii) Pulmonary artery - takes blood from lung to heart.

c) (iii) Aorta - takes blood from heart to body parts.

d) (iv) Vena cava takes - blood from body parts to right auricle.

Q2.Identify the phase of circulation which is represented in the diagram of heart given below. Arrows indicate contraction of the chambers shown.



a) Blood transferred to the right ventricle and left ventricle simultaneously.

b) Blood is transferred to lungs for oxygenation and is pumped into various organs simultaneously.

c) Blood transferred to the right auricle and left auricle simultaneously.

d) Blood is received from lungs after oxygenation and is received from various organs of the body.

Q3. Assertion (A) and Reason (R) type question:

This question consists of two statements – 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

Assertion: Resins and gums are stored in old xylem tissue in plants.
Reason: Resins and gums facilitate transport of water molecules.

4. Assertion (A) and Reason (R) type question:

This question consists of two statements – 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

Assertion: The muscular walls of ventricles are thicker than auricles.

Reason: This helps in preventing the back flow of blood

5. Assertion (A) and Reason (R) type question:

This question consists of two statements – 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

Assertion: In human heart, there is no mixing of oxygenated and deoxygenated blood.

Reason: Valves are present in the heart which allows the movement of blood in one direction only.

6. Assertion (A) and Reason (R) type question:

This question consists of two statements – 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

Assertion: All the arteries carry oxygenated blood from the heart to various organs.

Reason: Pulmonary vein carries oxygenated blood to the heart

7. Assertion (A) and Reason (R) type question:

This question consists of two statements – 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

Assertion: Valves are present in the arteries.

Reason: Arteries carry oxygenated blood from heart to different body parts except pulmonary artery.

8. In which of the following groups of organisms, blood flows through the heart only once during one cycle of passage through the body?

a)Rabbit, Parrot, Turtle
b) Frog, crocodile, Pigeon
c) Whale, Labeo, Penguin
d) Shark, dog fish, sting ray

9. What happens when right and left ventricle contract during pumping of blood by human heart?

a) Blood transferred to the right ventricle and left ventricle simultaneously.
b) Blood is transferred to lungs for oxygenation and is pumped into various organs simultaneously.
c) Blood transferred to the right atrium and left atrium

simultaneously.

d) Blood is received from lungs after oxygenation and is received from various organs of the body.

10. In the cardiac cycle, diastole is:

a) The number of heart beats per minute

b) The relaxation period after contraction of the heart

c) The forceful pumping action of the heart

d) The contraction period after relaxation of the heart.

11. Blood vessel carries blood from lungs to heart through:

a) Pulmonary artery

b) Pulmonary vein

c) Coronary artery

d) None of these

12. Roots of the plants absorb water from the soil through the process of:

(a) diffusion

(b) transpiration

(c) osmosis

(d) None of these

13. Which plant tissue transports water and minerals from the roots to the leaf?

(a) Xylem

(b) Phloem

(c) Parenchyma

(d) Collenchyma

14. The movement of food in phloem is called:

(a) transpiration

(b) translocation

(c) respiration

(d) evaporation

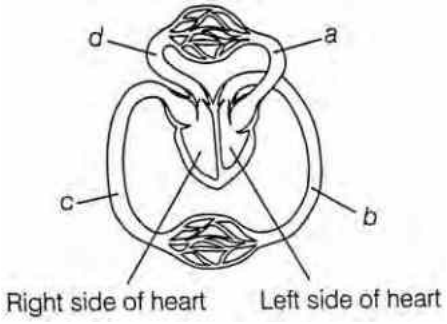
15. A blood vessel which pumps the blood from the heart to the entire body:

(a) artery

(b) capillary
(c) Vein
(d) Haemoglobin

16. Name a circulatory fluid in the human body other than blood.
(a) Platelets
(b) RBC
(c) Lymph
(d) Plasma

17. The diagram represents a part of human circulatory system.



Where is the blood pressure highest?
a) a =Pulmonary vein b) b= Aorta c) c= Venacava d) d= Pulmonary artery

18. What is the correct route for blood flow in a human?

a) Left atrium →Left ventricle → Lungs → Right ventricle → Right atrium.
b) Left atrium → Left ventricle → Right ventricle → Right atrium → Lungs.
c) Right atrium → Right ventricle → Left ventricle →Left atrium → Lungs.
d) Right atrium→ Right ventricle → Lungs → Left atrium → Left ventricle.

19. What most likely may happen if a young plant is dug up and re-planted in another place?
a) The leaves lose less water
b) The roots cannot take up mineral salts
c) The stem cannot transport water
d) The surface area of the root is reduced

20. Which of the following is not a purpose of transpiration?

a) Supplies water for photosynthesis

b) Helps in translocation of sugar in plants

c) Cools leaf surface

d) Transports minerals from the soil to all the parts of the plant

21. The table shows the characteristics of blood in one blood vessel of the body.

Oxygen concentration	Carbon dioxide concentration	Pressure
High	Low	High

Which blood vessel contains blood with these characteristics?

a)Aorta (b) Pulmonary artery (c) Pulmonary vein (d) Vena cava

22. The sites of exchange of wastes, nutrients, gases and hormones between the blood and body cells are the:

a) arteries

(b) arterioles

(c) capillaries

(d) vein

23. Which one indicates hypertension or high Blood Pressure (BP)?

(a) 120/80

(b) 110/70

(c) 130/80

(d) 140/90

24. Veins can be differentiated from arteries because the veins:

a) have valves

(b) have hard walls

(c) have pure blood in them

(d) have thick walls

25. The process of transpiration in plants helps in:

a) Opening of stomata

b) Absorption of CO_2 from atmosphere

c) Upward conduction of water and minerals

d) Absorption of O_2 from atmosphere

CASE BASED QUESTIONS

Read the following and answer the questions from (28) to (32).

All living cells need nutrients, O_2, and other essential substances. Also, the waste and harmful substances need to be removed continuously for healthy functioning of cells. So, a well developed transport system is mandatory for living organisms. Complex organisms have special fluids within their bodies to transport such materials. Blood is the most commonly used body fluid by most of the higher organisms. Lymph also helps in the transport of certain substances.

26. Which of the following does not exhibit phagocytic activity?

(a) Monocytes

(b) Neutrophil

(c) Basophile

(d) Macrophage

27. Amount of blood corpuscles in changed in dengue fever. One of the common symptoms observed in people infected with dengue fever is:

(a) significant decrease in RBC count

(b) significant decrease in WBC count

(c) significant decrease in platelets count

(d) significant increase in platelets count.

28. Why are WBCs called soldiers of the body?

(a) They are capable of squeezing out of blood capillaries.

(b) They are manufactured in bone marrow.

(c) They fight against disease causing germs.

(d) They have granular cytoplasm with lobed nucleus.

29. Name the blood cells, whose reduction in number can cause

clotting disorder, leading to excessive loss of blood from the body.
(a) Erythrocytes
(b) Neutrophils
(c) Leucocytes
(d) Thrombocytes

30. Which of the following is the correct feature of lymph?
(a) It is similar to the plasma of blood, but is colourless and contains less protein.
(b) It is similar to the WBCs of blood, but is colourless and contains more proteins.
(c) It is similar to the RBCs of blood and red in colour.
(d) It contains more fats.

QUESTION BANK CLASS X PHYSICS

CHAPTER-LIGHT

1. Consider the situation where:

   - An object is 3 cm (height)
   - Mirror is concave with 6 cm focal length.
   - Object is placed at the centre of curvature.

   Which of the following options are correct?

   A. The mirror will produce an image of magnification +1.5.

   B. The mirror will produce an image of magnification -1.

   C. The mirror will produce an image of magnification +1.

   D. The mirror will produce an image of magnification -1.5.

2. If a ray passes from air to glass in a spherical glass slab and passes through the centre of the slab without deviation, then the angle of incidence from air to glass at the point on the glass slab is.

   A. 45°

   B. 0°

   C. 90°

   D. 180°

3. NalinI draws a ray diagram for an object in front of a concave mirror. She draws a ray starting from the top of the object and falling on the mirror perpendicularly. The ray after reflection will

A. passes through focus.

B. passes through pole.

C. passes through the centre of curvature.

D. passes through any point on the principal axis

4. If the refractive index of water with respect to air is 1.33 and of that of glass with respect to air is 1.5 then

A. water is optically denser than glass.

B. air is optically densest of all the three media.

C. air's optical density is between glass and air.

D. glass is optically denser than water.

5. A convex lens has a focal length of 10 cm. The object of height 2 mm is placed at a distance of 5 cm from the pole. Find the height of the image.

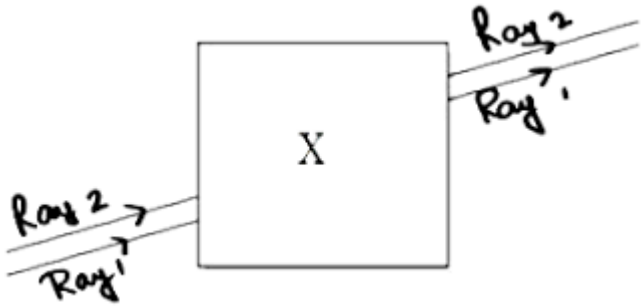
A. 4 cm

B. 6.67 mm

C. 4 mm

D. 3.33 mm

Noor, a young student, was trying to demonstrate some properties of light in her Science project work. She kept 'X' inside the box (as shown in the figure) and with the help of a laser pointer made light rays pass through the holes on one side of the box. She had a small butter-paper screen to see the spots of light being cast as they emerged.



6. What could be the 'X' that she placed inside the box to make the rays behave as shown?

A. a converging lens

B. a parallel-sided glass block

C. a plane mirror

D. a triangular prism

7. She measured the angles of incidence for both the rays on the left side of the box to be 48.60. She knew the refractive index of the material 'X' inside the box was 1.5. What will be the approximate value of angle of refraction?

A. 45^0

B. 40^0

C. 30^0

D. 60^0

(use the value: sin 48.60 ≈ 0.75)

Her friend noted the following observations from this demonstration:

i. Glass is optically rarer than air.

ii. Air and glass allow light to pass through them with the same velocity.

iii. Air is optically rarer than glass.

iv. Speed of light through a denser medium is faster than that of a rarer medium.

v. The ratio: sin of angle of incidence in the first medium to the ratio of sin of angle of refraction in the second medium, gives the refractive index of the second material with respect to the first one.

8. Which one of the combination of the above statements given below is correct.

A. ii, iv and v are correct.

B. iii and iv are correct.

C. i, iv and v are correct.

D. iii and v are correct.

9. If the object inside the box was made of a material with a refractive index less than 1.5 then the

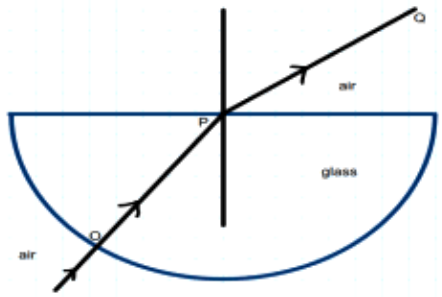
A. lateral shift of the rays would have been less.

B. lateral shift of the rays would have been more.

C. lateral shift of the rays would remain the same as before.

D. there is not enough information to comment on any of the above statement

10.



The angle of incidence from air to glass at the point O on the hemispherical glass slab is.

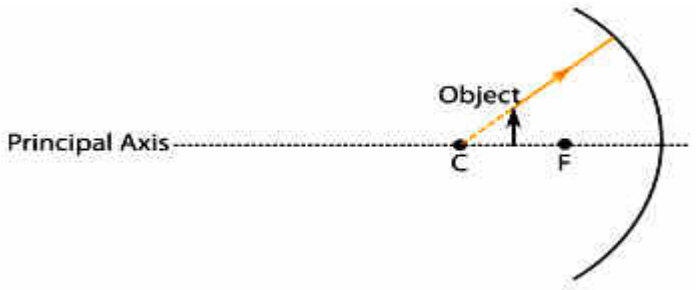
A. 45°

B. 0°

C. 90°

D. 180°

11.



While looking at the above diagram, Nalini concluded the following

i. the image of the object will be a virtual one.

ii. the reflected ray will travel along the same path as the incident ray but in opposite direction.

iii. the image of the object will be inverted.

iv. this is a concave mirror and hence the focal length will be negative.

Which one of the above statements are correct?

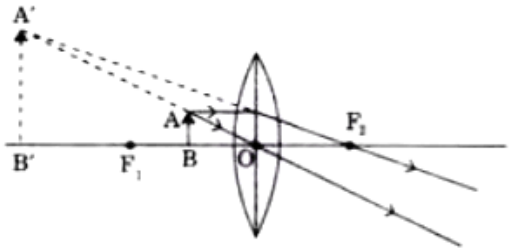
A. i and ii

B. i and iii

C. ii, iii and iv

D. i, ii, iii and iv

12.



The above lens has a focal length of 10 cm. The object of height 2 mm is placed at a distance of 5 cm from the pole. Find the height of the image.

A. 4 cm

B. 6.67 mm

C. 4 mm

D. 3.33 mm

13. What does *c* represent in the equation n= C/V

a. **the critical angle**
b. **the refractive index**
c. **the speed of light in a vacuum**
d. **the speed of light in a transparent material**

14. What is the term for the minimum angle at which a light ray is reflected back into a material and cannot pass into the surrounding medium?

a. **critical angle**
b. **incident angle**
c. **angle of refraction**
d. **angle of reflection**

15. 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

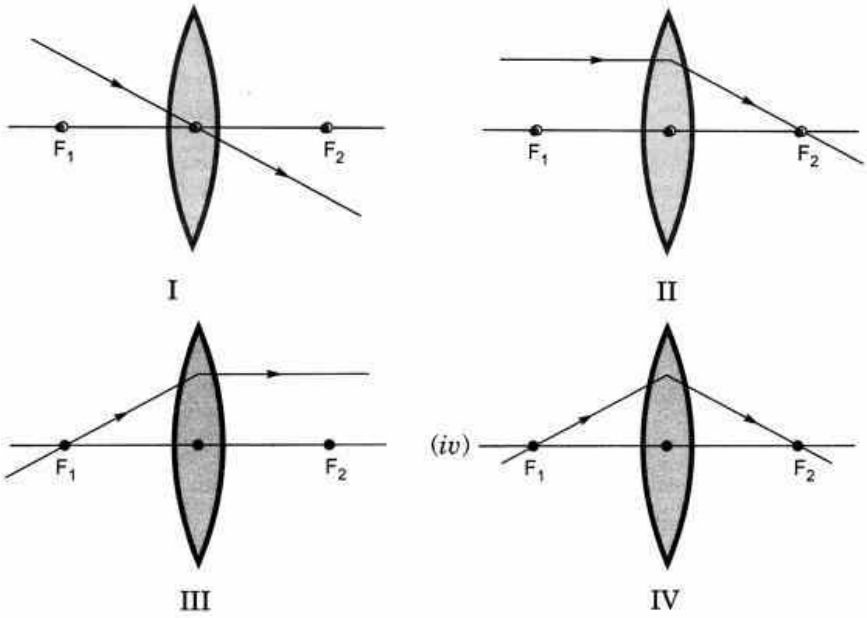
(b) Convex mirror as well as concave lens

(c) Two plane mirrors placed at 90° to each other

(d) Concave mirror as well as concave lens

16.

The diagrams showing the correct path of the ray after passing through the



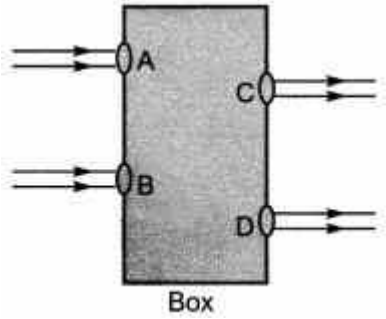
(a) II and III only

(b) I and II only

(c) I, II and III

(d) I, II and IV

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



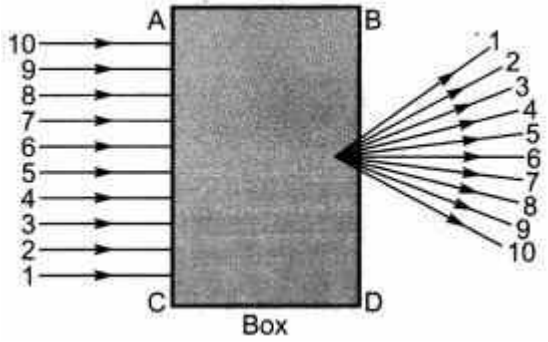
(a) A rectangular glass slab

(b) A convex lens

(c) A concave lens

(d) A prism

18. A beam of light is incident through the holes on side A and emerges out of the holes on the other face of the box as show in the figure. Which of the following could be inside the box?



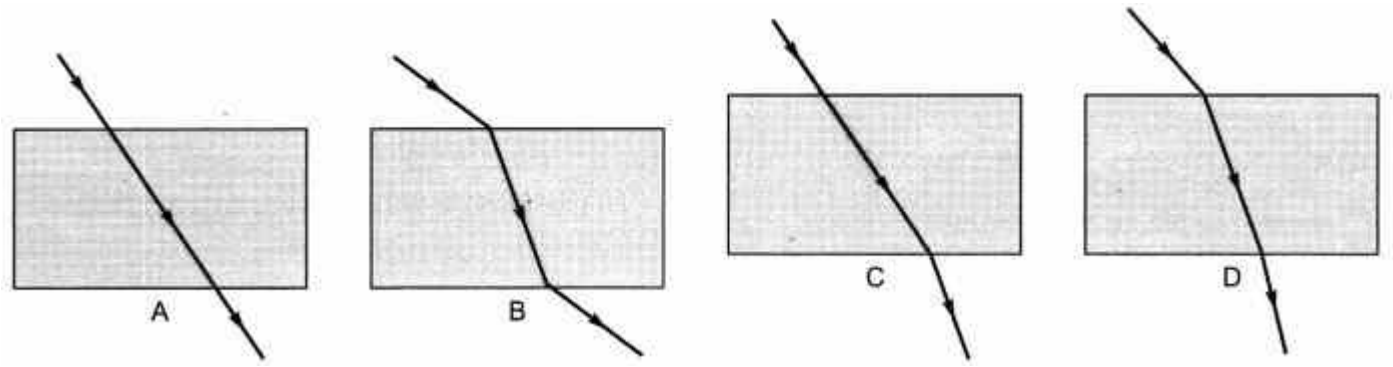
(a) Concave lens

(b) Rectangular glass slab

(c) Prism

(d) Convex lens

19. The path of a ray of light coming from air passing through a rectangular glass slab traced by four students are shown as A, B, C and D in figure. Which one of them is correct?



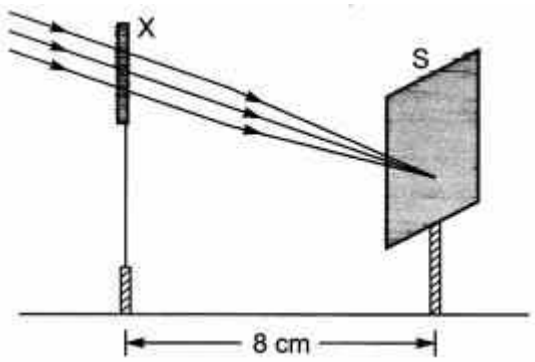
(a) A

(b) B

(c) C

(d) D

20. A student used a device (X) to obtain/focus the image of a well illuminated distant building on a screen (S) as shown alongside in the diagram. Select the correct statement about the device (X).



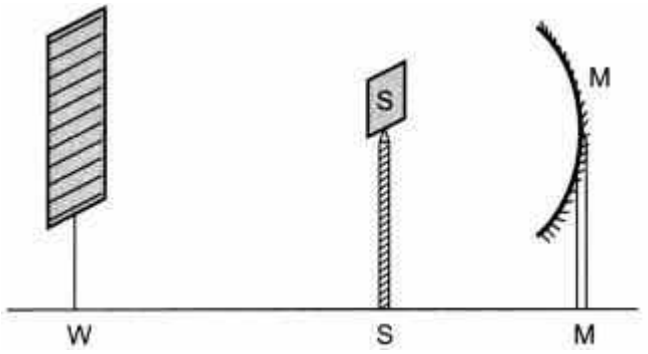
(a) This device is a concave lens of focal length 8 cm.

(b) This device is a convex mirror of focal length 8 cm.

(c) This device is a convex lens of focal length 4 cm.

(d) This device is a convex lens of focal length 8 cm.

21. A student obtains a sharp image of the distant window (W) of the school laboratory on the screen (S) using the given concave mirror (M) to determine its focal length. Which of the following distances should he measure to get the focal length of the mirror?



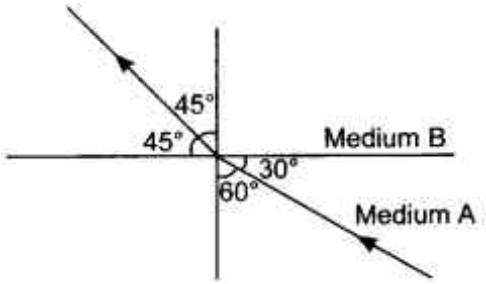
a) MW

(b) MS

(c) SW

(d) MW- WS

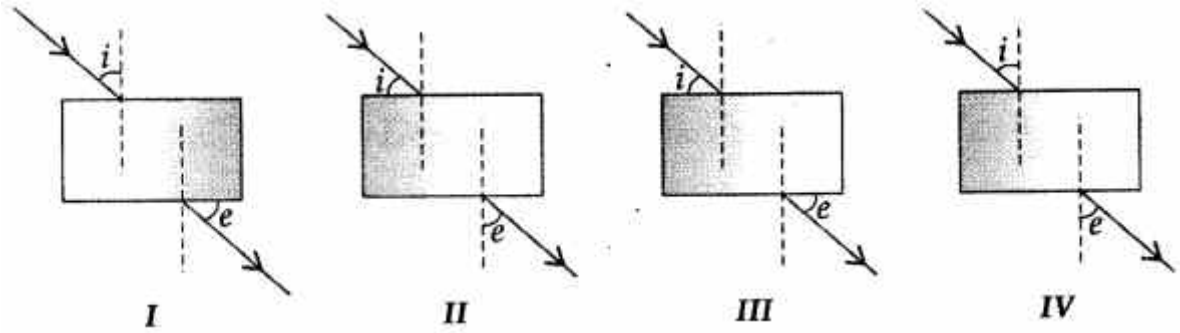
22. Figure shows a ray of light as it travels from medium A to medium B. Refractive index of the medium B relative to medium A is



(a) $\frac{\sqrt{3}}{\sqrt{2}}$ (b) $\frac{\sqrt{2}}{\sqrt{3}}$

(c) $\frac{1}{\sqrt{2}}$ (d) $\sqrt{2}$

23. A student does the experiment on tracing the path of a ray of light passing through a rectangular glass slab for different angles of incidence. He can get a correct measure of the angle of incidence and the angle of emergence by following the labelling indicated in figure:



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

The questions given below consist of an assertion and the reason. Use the following key to choose the appropriate answer.
(a) Both the Assertion and the Reason are correct and the Reason is the correct explanation of the Assertion.
(b) The Assertion and the Reason are correct but the Reason is not the correct explanation of the Assertion.
(c) Assertion is true but the Reason is false.
(d) The statement of the Assertion is false but the Reason is true.

24. Assertion (A): A ray incident along the normal retraces its path.
Reason (R): In reflection angle of incidence is equal to angle of reflection

25. Assertion (A): the **formula connecting u, v and f for a spherical mirror is valid in all situations for all spherical mirrors for all positions of the object.**
Reason (R): Laws of reflection are strictly valid for plane surfaces.

26. Assertion (A): Light travels faster in glass than in air.
Reason (R): Glass is denser than air.

27. Assertion: Incident light is reflected in only one direction from a smooth surface.
Reason: Since the angle of incidence and the angle of reflection are same, a beam of parallel rays of light falling on a smooth surface is reflected as a beam of parallel light rays in one direction only.

28. Assertion (A): Light does not travel in the same direction in all the media.
Reason (R): The speed of light does not change as it enters from one transparent medium to another.

29. Assertion (A) : A ray passing through the centre of curvature of a concave mirror after reflection, is reflected back along the same path.
Reason (R): The incident rays fall on the mirror along the normal to the reflecting surface.

30. Assertion (A): The centre of curvature is not a part of the mirror. It lies outside its reflecting surface.
Reason (R): The reflecting surface of a spherical mirror forms a part of a sphere. This sphere has a centre.