

Sample Question Paper – 2 (TERM - I)

Class X (Session - 2021-22)

Subject- Science

Time: 90 Minutes

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

Q1: Before burning in air, the magnesium ribbon is cleaned by rubbing with a sand paper to:

- (a) Make the ribbon surface shinier
- (b) Remove the layer of magnesium oxide from the ribbon surface
- (c) Remove the layer of magnesium carbonate from the ribbon surface
- (d) Remove the moisture from the ribbon surface

Q2: The number of protons in an atom of an element A is 19 then, the number of electron in its ion

A^+ is:

- (a) 18
- (b) 19
- (c) 20
- (d) 21

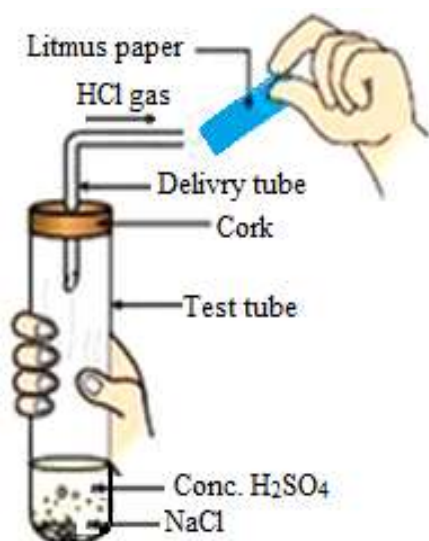
Q3: Some fruits like mango, lemon, raw grapes, orange, etc., have a sour taste due to the presence of:

- (a) Acetic acid
- (b) Citric acid
- (c) Lactic acid
- (d) Oxalic acid

Q4: The respiration process during which glucose undergoes slow combustion by combining with oxygen in the cells of our body to produce energy, is a kind of:

- (a) Exothermic process
- (b) Endothermic process
- (c) Reversible process
- (d) Physical process

Q5: The figure given below represents the experiment carried out between conc. sulphuric acid and sodium chloride, which react with each other to form HCl gas.



Blue litmus paper is brought near the mouth of the delivery tube to check the presence of HCl acid but no change is observed in the color of litmus paper because:

- (a) The litmus paper used is dry
- (b) The litmus paper used is moist
- (c) Blue litmus paper does not change its color with an acid
- (d) The litmus paper is kept very close to the mouth of the delivery tube

Q6: A chemical reaction does not involve:

- (a) Formation of new substances having entirely different properties than that of the reactants
- (b) Breaking of old chemical bonds and formation of new chemical bonds
- (c) Rearrangement of the atoms of reactants to form new products
- (d) Changing of the atoms of one element into those of another element to form new products

Q7: Which of the following phenomena occur, when a small amount of acid is added to water?

- i. Ionisation
- ii. Neutralisation
- iii. Dilution
- iv. Salt formation

- (a) (i) and (ii)
- (b) (i) and (iii)
- (c) (ii) and (iii)
- (d) (ii) and (iv)

Q8: Which of the following indicators turn red in an acidic solution?

- i. Phenolphthalein
- ii. Litmus
- iii. Turmeric
- iv. Methyl orange

Choose the correct option:

- (a) (i) and (ii)
- (b) (ii) and (iii)
- (c) Only (ii)
- (d) (ii) and (iv)

Q9: All the methods mentioned below can be used to prevent the food from getting rancid except:

- i. Storing the food in the air-tight containers
- ii. Storing the food in refrigerator
- iii. Keeping the food in clean and covered containers
- iv. Always touching the food with clean hands

- (a)(i) and (ii)
- (b)(i) and (iii)
- (c)(i), (iii) and (iv)
- (d)(iii) and (iv)

Q10: Which of the following represent the correct order of decreasing reactivity?

- (a) $Mg > Al > Zn > Fe$
- (b) $Mg > Zn > Al > Fe$
- (c) $Al > Zn > Fe > Mg$
- (d) $Mg > Fe > Zn > Al$

Q11: In which mode of nutrition an organism de-rives its food from the body of another living organism by harming but without killing it?

- (a) Saprotrophic nutrition
- (b) Parasitic nutrition
- (c) Holozoic nutrition
- (d) Autotrophic nutrition

Q12 The contraction and expansion movement of the walls of the food pipe is called:

- (a) translocation
- (b) transpiration
- (c) peristaltic movement
- (d) digestion

Q13: The breakdown of pyruvate to give carbon di-oxide, water and energy takes place in

- (a) cytoplasm
- (b) mitochondria
- (c) chloroplast
- (d) nucleus

Q14: The respiratory pigment in human beings is:

- (a) carotene
- (b) chlorophyll
- (c) haemoglobin
- (d) mitochondria

Q15: Which of the following statement(s) is (are) true about respiration?

- A) During inhalation, ribs move inward and the diaphragm is raised
- B) In the alveoli, exchange of gases takes place i.e., oxygen from alveolar air diffuses into blood and carbon dioxide from blood into alveolar air sacs
- C) C shaped rings are present in alveoli
- D) None

Q16: If saliva lacks salivary amylase the process which will get affected is:

- 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

Q17: Two thin lenses of power $+2.5D$ and $-0.5 D$ are placed in contact. The power and focal length of the lens combination is:

Option	Power of Combination	Focal length of Combination
(a)	$+2.0D$	$+50 \text{ cm}$
(b)	$-2.0D$	-50 cm
(c)	$+3.0D$	$+33.33 \text{ cm}$
(d)	$-3.0D$	-33.33 cm

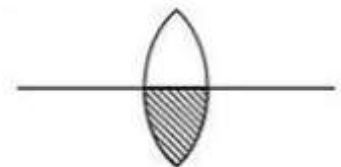
Q18: An object is placed at a large distance in front of a concave mirror of radius of curvature 40 cm . What is the distance of image from the mirror?

- (a) 40 cm
- (b) 20 cm
- (c) 60 cm
- (d) 80 cm

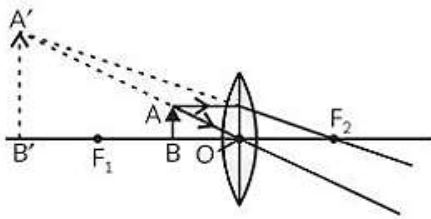
Q19: The lower half of the lens is covered with black paper.

What will be the effect on the image formed on screen?

- (a) The lower half of the image disappears.
- (b) The upper half of the image disappears.
- (c) The image remains same.
- (d) The image becomes less brighter than before.



Q20:



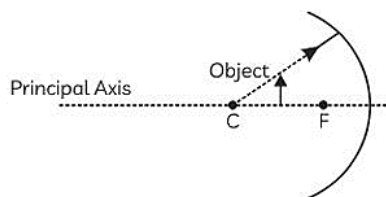
The above lens has a focal length of 10 cm. The object of height 2 mm is placed at a distance of 5 cm from the pole. Find the height of the image.

- (a) 4 cm
- (b) 6.67 mm
- (c) 4 mm
- (d) 3.33 mm

Q21: If the real image of a candle flame formed by a lens is three times the size of the flame and the distance between lens and image is 80 cm, at what distance should the candle be placed from the lens?

- (a) -80 cm
- (b) -40 cm
- (c) $-\frac{40}{3}$ cm
- (d) $-\frac{80}{3}$ cm

Q22:



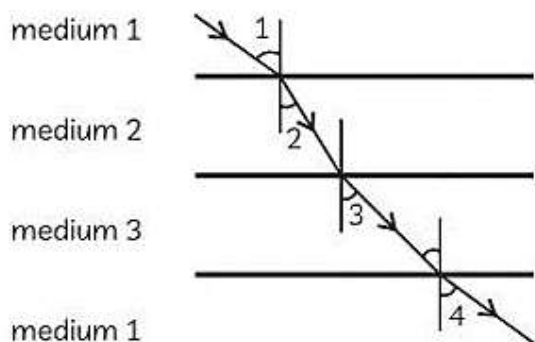
While looking at the above diagram, Nalini concluded the following:

- (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)

Q23: In the above diagram light is travelling through different media. It is noted by a scientist that $\angle 1 = \angle 3 = \angle 4$ but $\angle 2 < \angle 1$. Which of the following statement would be correct?



- (a) Medium 1 is the denser than medium 3 but it's density is equal to medium 2 .
- (b) Medium 2 is the rarest medium.
- (c) Medium 3 is denser than medium 1.
- (d) Medium 1 and 3 are essentially the same medium, but medium 2 is denser than 1 and 3 .

Q24: The refractive index of flint glass is 1.65 and that for alcohol is 1.36 with respect to air. What is the refractive index of the flint glass with respect to alcohol?

- (a) 0.82
- (b) 1.21
- (c) 1.11
- (d) 1.01

SECTION B

Q25: Which of the following gases is used in the storage of fat and oil containing foods for a long time?

- (a) Carbon dioxide gas
- (b) Nitrogen gas
- (c) Oxygen gas
- (d) Neon gas

Q26: Which of the following pairs will give displacement reactions?

- (a) NaCl solution and copper metal
- (b) MgCl₂ solution and aluminium metal
- (c) FeSO₄ solution and silver metal
- (d) AgNO₃ solution and copper metal

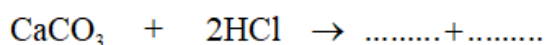
Q27: Which of the following pairs of reactants will go undergo a displacement reaction?

- (a) CuSO₄ + Fe
- (b) ZnSO₄ + Fe
- (c) MgSO₄ + Fe
- (d) Ca(SO₄)₂ + Fe

Q28: An element X is soft and can be cut with the help of a knife. It is very reactive to air and cannot be kept open in the air. It reacts vigorously with water. Identify the element from the following:

- (a) Mg
- (b) Na
- (c) P
- (d) Ca

Q29: Identify the products of the following reaction:



- (a) Calcium hydrogen carbonate and chlorine gas
- (b) Calcium chloride and water
- (c) Calcium oxide, carbon dioxide and water
- (d) Calcium chloride, carbon dioxide and water

Q30: An ant's sting can be treated withwhich will neutralise the effect of the chemical injected by the ant's sting into our skin.

Choose the correct option from the following to be filled in the blank space:

- (a) Methanoic acid
- (b) formic acid
- (c) Baking soda
- (d) Caustic soda

Q31: Consist of two statements – Assertion (A) and Reason (R).

Answer these question selecting the appropriate option given below:

Assertion (A) : The acid must always be added to water with constant stirring.

Reason (R) : Mixing of an acid with water decreases the concentration of H^+ ions per unit volume.

- (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

Q32: Consist of two statements – Assertion (A) and Reason (R).

Answer these question selecting the appropriate option given below:

Assertion (A) : The aqueous solutions of glucose and alcohol do not show acidic character.

Reason (R) : Aqueous solutions of glucose and alcohol do not give H^+ ions.

- (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

Q33: For the following question two statements are given, one labelled as Assertion (A) and the other labeled as Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.

Assertion (A): Artificial kidney is a device used to remove nitrogenous waste products from the blood through dialysis.

Reason (R): Reabsorption does not occur in artificial kidney.

- (a) Both A and R are true and R is the correct explanation of A.
- (b) Both A and R are true, but R is not the correct explanation of A.

- (c) A is true, but R is false.
- (d) A is false, but R is true.

Q34: The phenomenon of dispersion proves that:

- (a) light does not pass through an opaque medium and absence of the light causes shadow.
- (b) light moves in the straight line.
- (c) light passes through a transparent medium.
- (d) white light is made up of seven constituent colours.

Q35: Which among the following represents the chemical formula for 'Plaster of Paris'?

- (a) $\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$
- (b) $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O}$
- (c) $\text{CaSO}_4 \cdot \text{H}_2\text{O}$
- (d) $\text{CaSO}_4 \cdot 10\text{H}_2\text{O}$

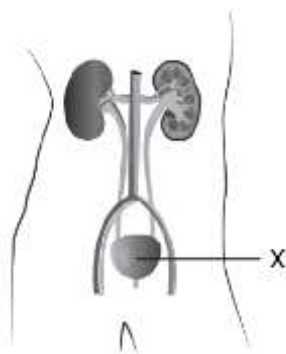
Q36: Which among the following is necessary to carry out the blood coagulation in a cut or wound?

- (a) White Blood Cells
- (b) Blood plasma
- (c) Platelets
- (d) Red blood cells

Q37: The cellular energy reserves in autotrophs (higher organisms) are___.

- (a) glycogen
- (b) starch
- (c) protein
- (d) fatty acids

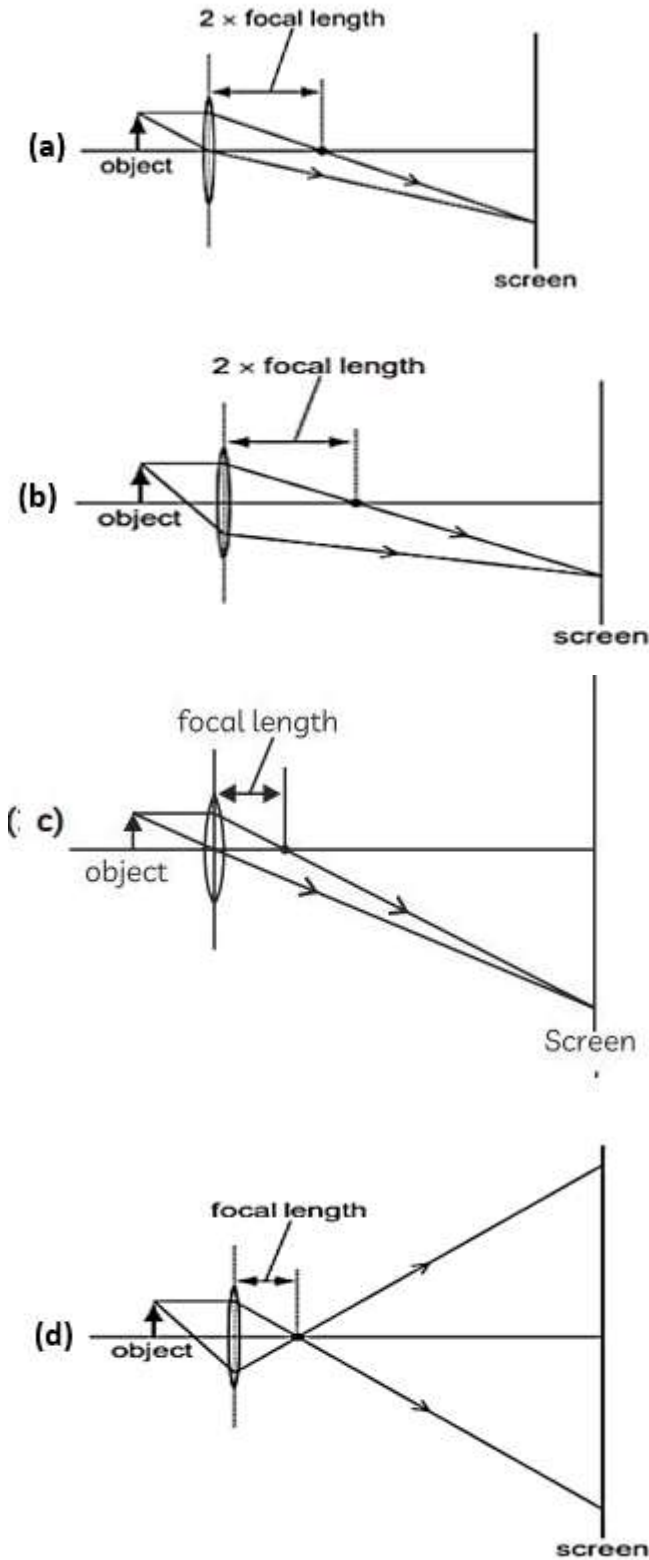
Q38: The image shows the excretory system in humans



What is the importance of the labelled part in the excretory system?

- (a) It produces urine.
- (b) It filters waste from the blood.
- (c) It stores the urine till urination.
- (d) It carries urine from the kidney to the outside.

Q39: Which diagram shows correct image formation of an object on a screen by a converging lens?



Q40: Rays from Sun converge at a point 15 cm in front of a concave mirror.

Where should an object be placed so that size of its image is equal to the size of the object?

- (a) 30 cm in front of the mirror
- (b) 15 cm in front of the mirror
- (c) Between 15 cm and 30 cm in front of the mirror
- (d) More than 30 cm in front of the mirror

Q41: An adult human on an average produces how much urine per day?

- (a) 1-2L
- (b) 1-5L
- (c) 2-5L
- (d) 4-5L

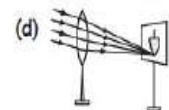
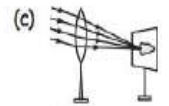
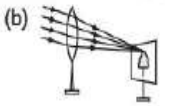
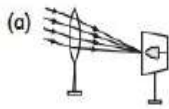
Q42: When a breed of cattle with red coats is crossed with the same breed with coats, the offspring all have coats with mixture of red and white hairs, a condition called roan. If roan cows were crossed with a red-coated bull, the theoretical ratio of the offspring would be

- (a) all red
- (b) all roan
- (c) 1-red: 1-roan
- (d) 3 red: 1-roan

Q43: If speed of light in vacuum = 3×10^8 m/sec and Refractive index of water = $4/3$, what is the speed of light in water

- (a) 4.50×10^8 m/sec
- (b) 1.75×10^8 m/sec
- (c) 2.25×10^8 m/sec
- (d) 3.65×10^8 m/sec

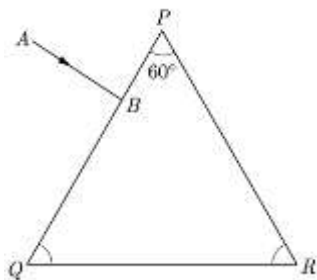
Q44: Students were asked to determine the focal length of the given convex lens. Four students performed an experiment and obtained an image of a tree, position at same distance from the lens. Which diagram is the correct representation for the formation of the image?



Q45: Which one of the following statements is correct?

- (a) The rainbow is produced by the reflection of white sun light by water drops in the atmosphere.
- (b) The blue colour of the sky is due to scattering of light.
- (c) The stars appear higher in the sky than actually are due to scattering of light.
- (d) The planets twinkle at night due to atmospheric refraction of light.

Q46: In given figure, a light ray AB is incident normally on one face PQ of an equilateral glass prism. The angle of incidence at face PR is :



- (a) 60°
- (b) 30°
- (c) 45°
- (d) 90°

Q47: How many times does a ray of light bend on passing through a prism?

- (a) Once
- (b) Twice
- (c) Thrice
- (d) Four times

Q48: Copper sulphate crystals when heated strongly, lose their water of crystallization to give anhydrous copper sulphate accompanied by a change in color from:

- (a) Blue to green
- (b) Blue to white
- (c) Blue to sky blue
- (d) Blue to grey

Section - C

Case Study:

On the basis of reactivity of different metals with oxygen, water and acids as well as displacement reactions, the metals have been arranged in the decreasing order of their reactivities. This arrangement is known as activity series or reactivity series of metals.

The basis of reactivity is the tendency of metals to lose electrons. If a metal can lose electrons easily to form positive ions, it will react readily with other substances. Therefore, it will be a reactive metal. On the other hand, if a metal loses electrons less rapidly to form a positive ion, it will react slowly with other substances. Therefore, such a metal will be less reactive.

Q49: Which of the following metals is less reactive than hydrogen?

- (a) Copper
- (b) Zinc
- (c) Magnesium
- (d) Lead

Q50: Which of the following metals is more reactive than hydrogen?

- (a) Mercury
- (b) Platinum
- (c) Iron
- (d) Gold

Q51: Which of the following metals reacts vigorously with oxygen?

- (a) Zinc
- (b) Magnesium
- (c) Sodium
- (d) Copper

Q52: Which of the following represents the correct order of reactivity for the given metals?

- (a) $\text{Na} > \text{Mg} > \text{Al} > \text{Cu}$
- (b) $\text{Mg} > \text{Na} > \text{Al} > \text{Cu}$
- (c) $\text{Na} > \text{Mg} > \text{Cu} > \text{Al}$
- (d) $\text{Mg} > \text{Al} > \text{Na} > \text{Cu}$

Case Study:

The excretory system is a passive biological system that removes excess, unnecessary materials from the body fluids of an organism, so as to help maintain internal chemical homeostasis and prevent damage to the body.

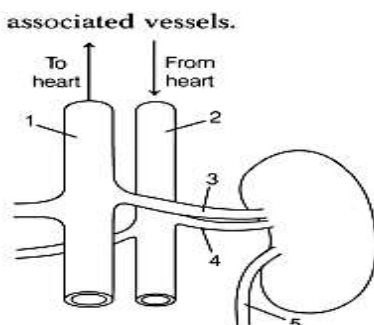
Q53: Which among the following is the storage organ for urine?

- (a) ureter
- (b) kidney
- (c) urinary bladder
- (d) urethra

Q54: The main function of ureter is

- (a) contain urine till is released out
- (b) carry urine from kidney to urinary bladder
- (c) guard the urethra
- (d) Passage through which urine is excreted out of the body.

Q55: The diagram shows the kidney and its associated vessels



Which structure have the most and least urea concentration?

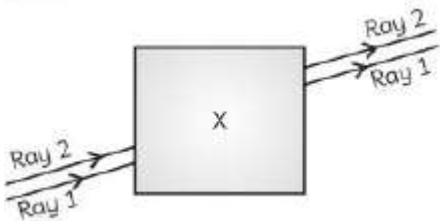
	Most	Least
(a)	1	2
(b)	4	1
(c)	4	2
(d)	5	3

Q56: Identify the correct path of urine in the human body.

- (a) Kidney → urinary bladder → urethra → ureter
- (b) Urinary bladder → ureter → kidney → urethra
- (c) Kidney → ureter → urethra → urinary bladder
- (d) Kidney → ureter → urinary bladder → urethra

Case Study :

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.



Q57: 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 diverging lens
- (d) a triangular prism

Q58: She measured the angles of incidence for both the rays on the left side of the box to be 48.6° . 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?

(use the value: $\sin 48.6^\circ \approx 0.75$)

- (a) 45°
- (b) 40°
- (c) 30°

(d) 60°

Q59: 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 of sine 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.

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.

Q60: 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 statements