

Science

Sample Question Paper 9 (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. An aqueous solution 'A' phenolphthalein solution colour is pink. On addition of an aqueous solution 'B' to 'A', the pink colour disappears. The following statement is true for solution 'A' and 'B'.

- [A] A is strongly basic and B is a weak base.
[B] A is strongly acidic and B is a weak acid.
[C] A has pH greater than 7 and B has pH less than 7.
[D] A has pH less than 7 and B has pH greater than 7.

2. Identify the basic salt from the following salts:

- [A] Na_2CO_3 [B] NH_4Cl
[C] NaNO_3 [D] KCl

3. Which of the following salts does not contain water of crystallisation?

- [A] Blue vitriol [B] Baking soda
[C] Washing soda [D] Gypsum

4. Common salt besides being used in kitchen can also be used as the raw material for making

- (i) Washing soda.
(ii) Bleaching powder
(iii) Baking soda.
(iv) Slaked lime.

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

5. During the preparation of hydrogen chloride gas on a humid day, the gas is usually passed through the guard tube containing calcium chloride. The role of calcium chloride taken in the guard tube is to-

- [A] Absorb the evolved gas. [B] Moisten the gas.
[C] Absorb moisture from the gas. [D] Absorb Cl^- ions from the evolved gas.

6. Which among the following statements is incorrect for magnesium metal?

- [A] It burns in oxygen with a dazzling white flame
- [B] It reacts with cold water to form magnesium oxide and evolves hydrogen gas
- [C] It reacts with hot water to form magnesium hydroxide and evolves hydrogen gas
- [D] It reacts with steam to form magnesium hydroxide and evolves hydrogen gas

7. Which one of the following metals does not react with cold as well as hot water?

- [A] Na
- [B] Ca
- [C] Mg
- [D] Fe

8. Electrical wires have a coating of an insulating material. The material, generally used is

- [A] Sulphur
- [B] Graphite
- [C] PVC
- [D] All can be used.

9. Which of the following metals exist in their native state in nature?

- [A] Cu and Au
- [B] Au and Zn
- [C] Au and Ag
- [D] Zn and Ag

10. Which of the following reaction is balanced?

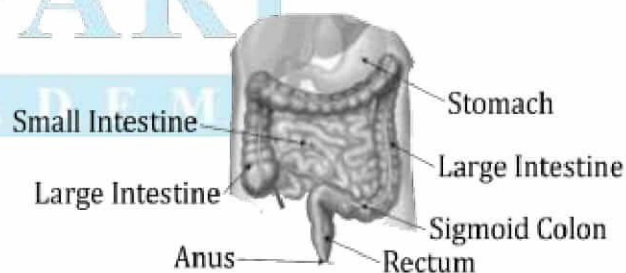
- [A] $\text{Mg (aq)} + \text{H}_2\text{SO}_4 \text{ (aq)} \rightarrow \text{MgSO}_4 \text{ (aq)} + \text{H}_2\uparrow$
- [B] $\text{Mg (s)} + \text{H}_2\text{SO}_4 \text{ (aq)} \rightarrow \text{MgSO}_4 \text{ (aq)} + \text{H}_2\uparrow$
- [C] $\text{Mg (s)} + \text{H}_2\text{SO}_4 \text{ (l)} \rightarrow \text{MgSO}_4 \text{ (l)} + \text{H}_2\text{(g)}$
- [D] $\text{Mg (s)} + \text{H}_2\text{SO}_4 \text{ (l)} \rightarrow \text{MgSO}_4 \text{ (s)} + \text{H}_2$

11. Which among the following organisms shows parasitic nutrition?

- [A] Cuscuta
- [B] Bacteria
- [C] Amoeba
- [D] Goat

12. In which part of elementary canal, food is finally digested?

- [A] Stomach
- [B] Mouth cavity
- [C] Large intestine
- [D] Small intestine



13. Break down of pyruvate to give carbon dioxide, water and energy takes place in?

- [A] Cytoplasm
- [B] Mitochondria
- [C] Chloroplast
- [D] Nucleus

14. The product of the alcoholic fermentation is

- [A] Ethyl alcohol
- [B] Methyl alcohol
- [C] Propanol
- [D] Butane

15. Which of these statements is correct about transpiration?

- i. It causes absorption of mineral salts.
- ii. It regulates plant temperature.
- iii. It causes wilting and injury in plants.
- iv. It causes ascent of sap.
- [A] (i) and (iv) only
- [B] (i), (ii) and (iii) only
- [C] (i), (ii) and (iv) only
- [D] All of these

16. Which of these represent the correct pathway of "carbon dioxide" after the exchange of gases in lungs?

- [A] Alveolus → bronchiole → bronchus → trachea → nose
- [B] Alveolus → bronchus → bronchiole → trachea → nose
- [C] Trachea → bronchus → bronchiole → alveolus → nose
- [D] Trachea → bronchiole → bronchus → alveolus → nose

17. _____ mirrors can be used to burn a piece of paper using the reflected rays of the sun.

- [A] A plane mirror
- [B] A concave mirror
- [C] A convex mirror
- [D] All of the above

18. What is the image formed when a convergent beam of light is incident on a plane mirror?

- [A] Upright and Real
- [B] Upright and Virtual
- [C] Inverted and Virtual
- [D] Inverted and Real

19. Read the given statements carefully.

I. A light wave enters from first medium into second medium.

II. Its velocity in second medium is double of that in first medium.

For the phenomenon of total internal reflection to take place, the angle of incidence must be greater than a certain value. This value is _____:

- [A] 90°
- [B] 60°
- [C] 45°
- [D] 30°

20. At noon the sun appears white as

- [A] Light is least scattered.
- [B] All the colours of the white light are scattered away.
- [C] Blue colour is scattered the most.
- [D] Red colour is scattered the most.

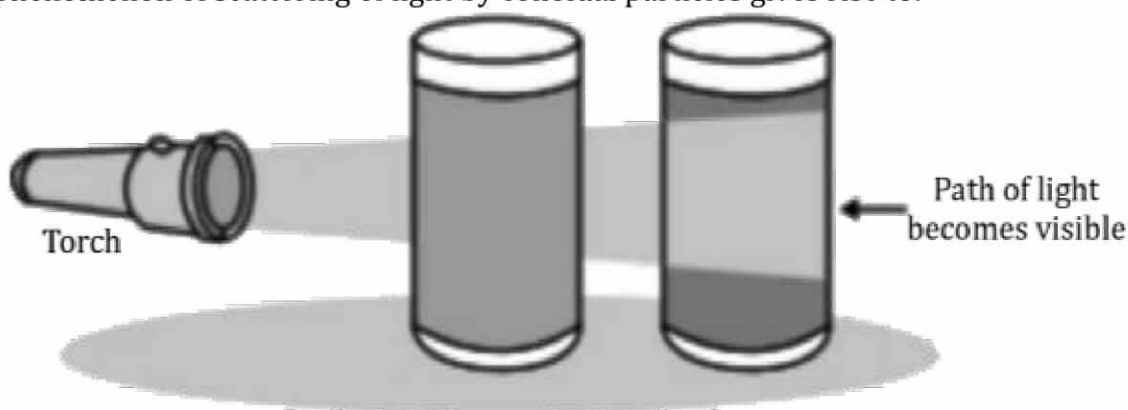
21. Twinkling of stars is due to atmospheric

- [A] Dispersion of light by water droplets
- [B] Refraction of light by different layers of varying refractive indices
- [C] Scattering of light by dust particles
- [D] Internal reflection of light by clouds

22. Which of the following phenomena contributes significantly to the reddish appearance of the sun at sunrise or sunset?

- [A] Dispersion of light
- [B] Scattering of light
- [C] Total internal reflection of light
- [D] Reflection of light from the earth.

23. The phenomenon of scattering of light by colloidal particles gives rise to:



- [A] Tyndall effect.
[C] Reflection of light

- [B] Dispersion effect
[D] Refraction of light.

24. Light travel fastest in:

- [A] Air
[C] Glass

- [B] Vacuum
[D] Diamond

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. Identify "a" and "b" on the given equation:



- [A] (a) is 3 and (b) is 4
[C] (a) is 2 and (b) is 5

- [B] (a) is 4 and (b) is 3
[D] (a) is 3 and (b) is 5.

26. Choose odd one out:

- [A] Carbon + Oxygen → Carbon dioxide.
[B] Hydrogen + Chlorine → Hydrogen Chloride.
[C] Glucose → Carbon dioxide + Water.
[D] Sulphur + Oxygen → Sulphur dioxide.

27. Which of the following are combination reactions?

- (i) $2\text{KClO}_3 + \text{Heat} \rightarrow 2\text{KCl} + 3\text{O}_2$
(ii) $\text{MgO} + \text{H}_2\text{O} \rightarrow \text{Mg}(\text{OH})_2$
(iii) $4\text{Al} + 3\text{O}_2 \rightarrow 2\text{Al}_2\text{O}_3$
(iv) $\text{Zn} + \text{FeSO}_4 \rightarrow \text{ZnSO}_4 + \text{Fe}$

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

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

28. During the preparation of hydrogen chloride gas on a humid day, the gas is usually passed through the guard tube containing calcium chloride. The role of calcium chloride taken in the guard tube is to:

- [A] absorb the evolved gas
[C] absorb moisture from the gas
- [B] moisten the gas
[D] absorb Cl^- ions from the evolved gas.

29. Which of the following statements is not correct?

- [A] All metal carbonates react with acid to give a salt, water, and carbon dioxide
- [B] All metal oxides react with water to give salt and acid
- [C] Some metals react with acids to give salt and hydrogen
- [D] Some non-metal oxides react with water to form an acid

30. Which of the following statements is true for acids?

- [A] Bitter and change red litmus to blue
- [B] Sour and change red litmus to blue
- [C] Sour and change blue litmus to red
- [D] Bitter and change blue litmus to red.

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): Lemon juice is sour in taste.

Reason (R): Lemon juice is acidic in nature.

- [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): Platinum, Gold and Silver are used to make jewellery.

Reason (R): Platinum, gold and silver are least reactive metals.

- [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): Plants excrete various waste products during their life process.

Reason (R): They produced urea just like human beings.

- [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): Although the surfaces of a goggles, lenses are curved, it does not have any power.

Reason (R): In case of goggle, both the curve surfaces have equal radii of curvature.

- [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): Higher the refractive index of prism, lower will be the angle of deviation.

Reason (R): The angle of deviation is inversely proportional to the angle of prism.

[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 oxide of iron would be obtained on prolonged reaction of iron with steam?

[A] FeO

[B] Fe₂O₃

[C] Fe₃O₄

[D] Fe₂O₃ and Fe₃O₄



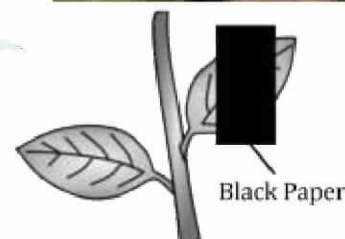
37. The given experimental setup shows that

[A] Respiration take place in leaves.

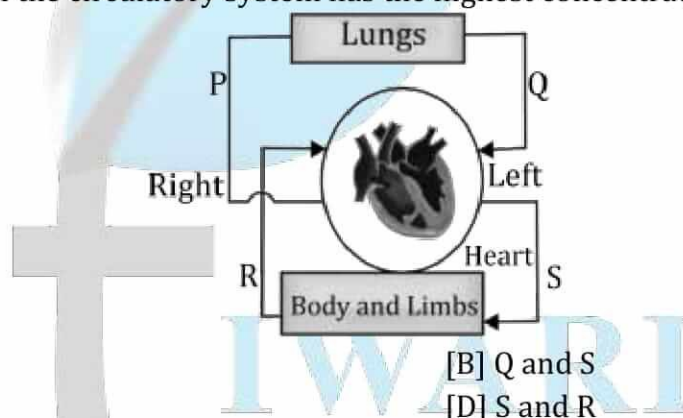
[B] Transpiration take place in leaves.

[C] Sunlight is essential for the process of photosynthesis.

[D] Trophic movements take place in leaves.



38. Which of the parts of the circulatory system has the highest concentration of oxygen?



[A] P and Q

[C] R and P

[B] Q and S

[D] S and R

39. _____ is the structural and functional unit of the excretory system.

[A] Neuron

[B] Nephron

[C] Alveoli

[D] Cell



40. Study the given statements:

I - The component "P" transports digested food.

II - The component "Q" helps in clotting of blood.

Identify "P" and "Q"

	I	II
[A]	Red Blood Cells	White Blood Cells
[B]	Plasma	Platelets
[C]	White Blood Cells	Lymph
[D]	Platelets	White Blood Cells

41. _____ is the common phase between aerobic and anaerobic respiration.
- [A] Glycolysis
[B] Krebs's cycle
[C] TCA cycle
[D] EMP pathway
42. A mirror has a focal length of + 15 cm. It is a:
- [A] Convex mirror
[B] Concave mirror
[C] Plane mirror
[D] None of these.
43. When a convergent beam of light is incident on a plane mirror, then image formed is _____ and _____.
- [A] Upright and real
[B] Upright and virtual
[C] Inverted and virtual
[D] Inverted and real.
44. Which of these quantities remains constant during the refraction of light?
- [A] Wavelength
[B] Speed
[C] Frequency
[D] Velocity.
45. In case of concave mirror, the distance between a real object and its real image, when the object is placed at the centre of curvature is:
- [A] F
[B] 2F
[C] 4F
[D] Zero
46. _____ always produces a diminished image of an object.
- [A] A convex mirror
[B] A concave mirror
[C] A convex lens
[D] Bi-convex lens
47. The correct lens formula is:
- [A] $\frac{1}{f} = \frac{1}{u} - \frac{1}{v}$
[B] $\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$
[C] $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$
[D] $\frac{1}{v} = \frac{1}{u} - \frac{1}{f}$
48. The term used to refer the extent to which image of an object can be magnified is:
- [A] Refraction
[B] Refractive Index
[C] Magnification
[D] Dispersion

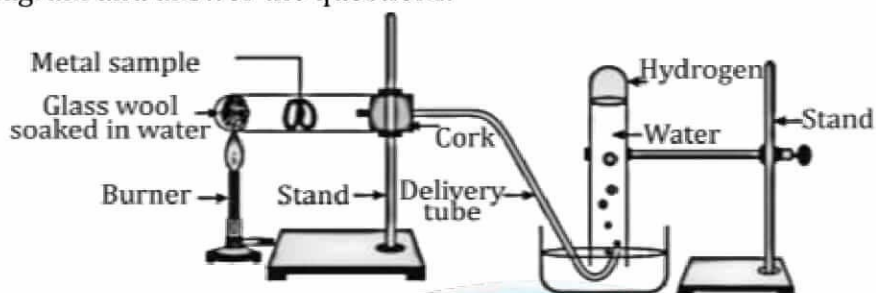
SECTION - C

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:

Study the given diagram and answer the questions.



Reaction of metal with steam

49. The metal sample in the above diagram can be:

- [A] Aluminium
- [C] Copper

- [B] Lead
- [D] Silver

50. Which of these gases is released when metals react with water?

- [A] Nitrogen
- [C] Hydrogen

- [B] Oxygen
- [D] Chlorine

51. Which of the following is the test for the above gas released?

- [A] Lights a glowing splint.
- [B] Turns limewater milky as white precipitate.
- [C] Turns blue Litmus red and then leaches it.
- [D] Gives a squeaky Pop with a lit splint.

52. The reactivity order of metals towards water is:

- [A] $\text{Zn} > \text{Fe} > \text{Al} > \text{Na} > \text{Ca}$
- [C] $\text{Al} > \text{Na} > \text{Ca} > \text{Zn} > \text{Fe}$

- [B] $\text{Na} > \text{Ca} > \text{Zn} > \text{Fe} > \text{Al}$
- [D] $\text{Fe} > \text{Al} > \text{Na} > \text{Ca} > \text{Zn}$

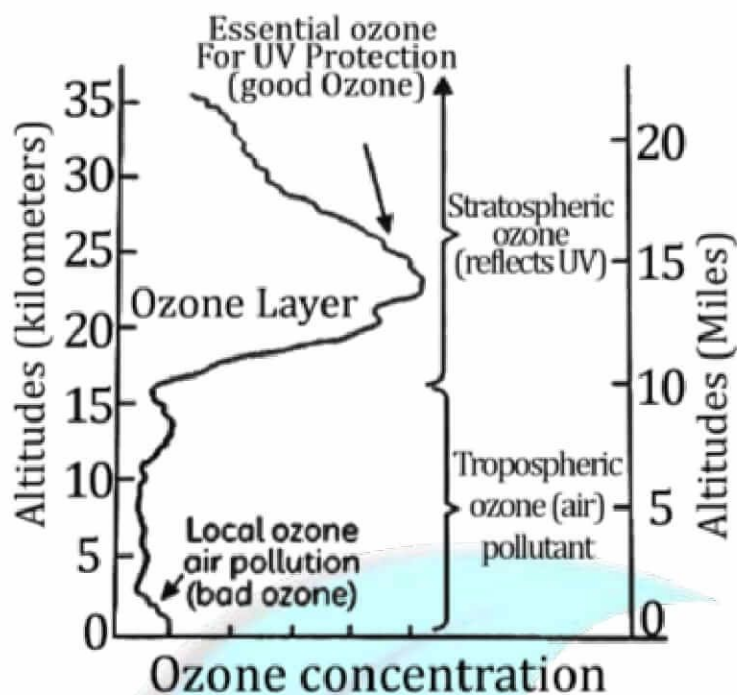
Case - 2:

Ozone (O_3) is a gas which is present naturally within Earth's atmosphere and is formed of three oxygen atoms. In the figure we see a standard profile of ozone gas concentration through the Earth's atmosphere, extending from ground level up to 40 kilometres in altitude.

Ozone plays a different role in atmospheric chemistry at different heights in the Earth's atmosphere. We can differentiate this profile into two key zones:

Tropospheric ozone is that which is present in the lower atmosphere. Throughout most of the troposphere, ozone concentrations are relatively low (as shown in the diagram). Ground-level ozone can have negative impacts on human health and is therefore commonly referred to as 'bad' ozone.

Stratospheric ozone is that which is present in the upper atmosphere. As shown in the diagram, concentrations of ozone are higher in the stratosphere than in the troposphere. The stratosphere includes the zone termed the 'ozone layer'. In the ozone layer, it is often referred to as 'good' ozone since it plays a crucial role in absorbing potentially dangerous ultraviolet (UV-B) radiation from the Sun.



53. Ozone at higher atmosphere is a product of:

- [A] Ultraviolet radiation acting on free Oxygen.
- [B] Infrared radiation acting on oxygen molecule.
- [C] Infrared radiation acting on free Oxygen.
- [D] Ultraviolet radiation acting on oxygen molecule.

54. Select the incorrect statements regarding ozone gas:

- (i) It is present only in troposphere.
 - (ii) It is present in very small quantities in stratosphere.
 - (iii) It can be beneficial or harmful, depending upon its location and concentration.
 - (iv) It shields the surface of the earth from ultraviolet (UV) radiation from the Sun.
- [A] Both (i) and (ii)
 - [B] Both (ii) and (iii)
 - [C] (i), (ii) and (iii)
 - [D] (ii), (iii) and (iv)

55. Which of the following products contain ozone-depleting substances?

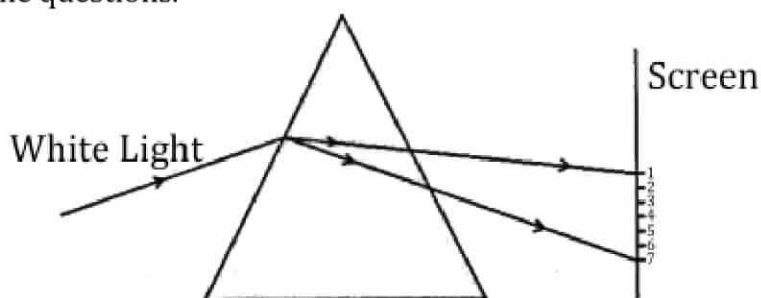
- [A] Motorbike, car with AC, Pesticides, Fire extinguisher AC, refrigerator.
- [B] Car with AC, refrigerator, fire extinguisher, and aerosol sprays.
- [C] Motorbike, aerosol sprays, Pesticides, Fire extinguisher.
- [D] Heater, car with AC, Pesticides, Fire extinguisher.

56. Which of the following is not the consequence of ozone layer depletion?

- [A] Increased ultraviolet rays.
- [B] Malignant melanoma-Another form of skin cancer.
- [C] Cataracts and other eye damage.
- [D] Tides.

Case - 3:

A narrow beam of white light is passing through a glass prism as shown in the diagram. Study the diagram and answer the questions.



57. Which of the following statement is correct about constituents of white light based on above observations?

- [A] White light consists of seven colours.
- [B] Violet colour suffers minimum deviation.
- [C] Red light suffers maximum deviation.
- [D] All the colours of the white light move with different speed in vacuum.

58. The cause of dispersion of light is

- [A] All the colours of light travel with the speed more than the speed of light.
- [B] All the colours have different angles of deviation.
- [C] All the colours do not travel with the same speed of light.
- [D] All the colours have the same wavelength.

59. Read the following statements carefully

- (i) The prism behaves same as that of rectangular glass slab.
- (ii) All the colours have different angles of deviation in case of dispersion through prism.
- (iii) All the colours travel with the same speed of light in glass.
- (iv) Dispersion of light is observed in case of rectangular glass slab.

Which of the above statement/s is true?

- [A] Only (ii)
- [B] (i) and (ii) only
- [C] (i), (ii) and (iv) only
- [D] All of the above.

60. In nature, this phenomenon is observed in

- [A] Formation of rainbow
- [B] Twinkling of stars
- [C] Blue colour of sky
- [D] Constellation position.