

**Sample Question Paper 10 (Answers)**  
**(TERM - I) (Session 2021-2022)**  
**Class X**  
**Science (086)**  
**SECTION - A**

**Section - A consists of 24 questions.**

*The first attempted 20 questions would be evaluated.*

1. ANSWER: [A]

Explanation: By equating the number of atoms both sides, the balanced equation will be:

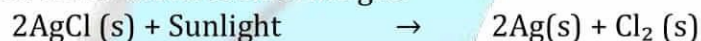


2. ANSWER: [B]

Explanation: When blue crystals of ferrous sulphate ( $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ ) are heated, then 7 water molecules are lost & anhydrous ferrous sulphate is formed.

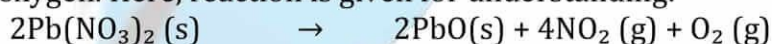
3. ANSWER: [C]

Explanation: When silver chloride, AgCl is placed in sunlight for some time, then silver chloride changes into grey coloured silver metal & chlorine gas.



4. ANSWER: [C]

Explanation: You should know that, when lead nitrate is heated, it decomposes into lead monoxide, nitrogen dioxide, and oxygen. Here, reaction is given for understanding:



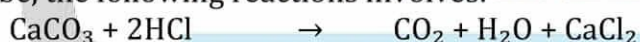
So, brown fumes evolved are of nitrogen dioxide.

5. ANSWER: [D]

Explanation: Iron is more reactive than copper. Hence, Cu will not displace iron from iron sulphate and no reaction will take place.

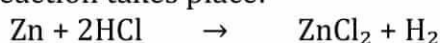
6. ANSWER: [B]

Explanation: In first test tube, the following reactions involves:



$\text{CO}_2$  Gas is evolved here.

In second test tube the following reaction takes place:



Here,  $\text{H}_2$  Gas is evolved.

7. ANSWER: [B]

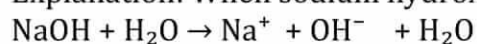


So, X =  $\text{NH}_4\text{Cl}$  & Y =  $2\text{H}_2\text{O}$

When base  $\text{Ca}(\text{OH})_2$  combines with ammonium salt,  $\text{NH}_4\text{Cl}$ , then it liberates ammonia gas and forms calcium chloride,  $\text{CaCl}_2$  and water.

8. ANSWER: [B]

Explanation: When sodium hydroxide is mixed with water, then ionisation takes place,



Hydroxide ions are formed and a lot of heat is generated or released during dissolution.

9. ANSWER: [B]

Explanation: When Sodium hydrogen carbonate is added to citric acid then an odourless Carbon dioxide gas is evolved. Carbon dioxide turns lime water milky. It is non supporter of combustion and is absorbed by strong alkalis like NaOH.

10. ANSWER: [D]

Explanation: Universal indicator is mixture of many indicators. Its colour is red at pH=3. Here, according the question you should go with the option [D].

11. ANSWER: [A]

Explanation:  $\text{HNO}_3$  on reaction metals (except Mn, Mg) does not give hydrogen gas.

Because it is strong oxidising agent so, as soon as hydrogen gas is formed in the reaction between metals and dil.  $\text{HNO}_3$ , the nitric acid oxidises this hydrogen to water.

12. ANSWER: [B]

Explanation: A mixer of Conc. HCl & Conc.  $\text{HNO}_3$  in the ratio of 3:1, is known as "Aqua-Regia". Gold dissolve only in Aqua-regia.

13. ANSWER: [D]

Explanation: As copper is more reactive than silver, so, it will displace silver from silver nitrate solution.

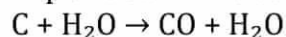
14. ANSWER: [B]

Explanation: We know that, when aluminium stipe kept immersed in freshly prepared ferrous sulphate -  $\text{FeSO}_4$ , the change in colour observed, the green solution slowly turns into brown.

Because Al is more reactive than Fe, it displaces iron from its sulphate solution and form aluminium sulphate which is responsible for brown colour. Hence, you should go with the option [B].

15. ANSWER: [D]

Explanation: The Gaseous mixture of CO, &  $\text{H}_2$  known as water gas.



16. ANSWER: [B]

Explanation: Yeast, Mushroom, Bread mould, fungi having heterotrophic mode of nutrition. They breakdown the dead organic matter in to small particles out side their body then absorbed it.

17. ANSWER: [B]

Explanation: Amylase, also called ptyalin breakdown starch into simpler sugars & works at a pH of 6.7 If food reach in lime juice is taken the action of ptyalin on starch is reduced as lime juice creates acidic condition and enzymes does not function in acidic conditions.

18. ANSWER: [A]

Explanation: We know that, lactic acid is formed from glucose inside the muscle's cells, during vigorous physical exercise. Because, there is lack of  $\text{O}_2$  in the body. Remember, that - muscle cells respire anaerobically to produce lactic acid. Here, your answer will be option [A].

19. ANSWER: [A]

Explanation: Transport of food in a plant accomplished by using the energy stored in ATP, whereas transport of water and minerals takes place via diffusion and transpiration pull.



20. ANSWER: [C]

Explanation: The dialyser functions as kidney but does not perform selective reabsorption.

21. ANSWER: [B]

Explanation: The distance of image is equal to the distance of object from plane mirror. Therefore, the distance of image from mirror will be 10 cm.

22. ANSWER: [B]

Explanation: The focal length of spherical mirror is half of the radius of curvature i.e.,  
 $f = r/2$

23. ANSWER: [A]

Explanation: The image will be formed between pole (p) and Focus (f) behind mirror, virtual and erect.

24. ANSWER: [C]

Explanation: If the light rays coming from a point actually meet or converge at a point after reflection or refraction, then the image formed is called a "real image".

### SECTION - B

**Section - B consists of 24 questions (Sl. No. 25 to 48).**

*The first attempted 20 questions would be evaluated.*

25. ANSWER: [C]

Explanation: In beakers A and B, heat is given, so the temperature of the solution rises, so it is an exothermic reaction whereas in beaker C the heat is absorbed by the water, hence the temperature drops, so it is an endothermic process.

26. ANSWER: [D]

Explanation: The reactions which require energy in the form of heat, light or electricity to break down the reactants are called endothermic reactions.

27. ANSWER: [B]

Explanation: A double displacement reaction is a reaction in which two different atoms or groups of atoms are exchanged. In this reaction sodium and barium were exchanged with each other.

28. ANSWER: [A]

Explanation: When dilute hydrochloric acid is added to iron filings, hydrogen gas and iron chloride are produced. The reaction is as follows:  $\text{Fe(s)} + 2\text{HCl(aq)} \rightarrow \text{FeCl}_2\text{(aq)} + \text{H}_2$

29. ANSWER: [C]

Explanation: You should know that, the standard state for hydrogen and oxygen is gas and for water is liquid at reaction temperature. Hence, you should choose the option [C].

30. ANSWER: [A]

Explanation: Remember, the pH value of water is 7. Acetic acid ( $\text{CH}_3\text{COOH}$ ) is a weak acid while hydrochloric acid (HCl) is a strong acid. Hence, the correct increasing order of acidic strength is water < acetic acid < hydrochloric acid. Hence, your answer will be option [A].

31. ANSWER: [A]

Explanation: In exothermic reactions, heat is released along with the formation of products.

32. ANSWER: [C]

Explanation: Ammonium nitrate is salt of strong acid & weak base.

33. ANSWER: [B]

Explanation: The electrical conductivity of an alloy is less than that of pure metals due to existence of impurities than pure metals.

34. ANSWER: [D]

Explanation: Glomerular filtration occurs as the pressure of blood flowing in glomerular capillaries is higher than that of filtrate. The process takes advantage of pressure, hence does not require energy expenditure by kidney cells.

35. ANSWER: [C]

Explanation: Property of a lens depends on the refractive index of the surrounding medium.

36. ANSWER: [D]

Explanation: Calcium reacts slowly with water. The reaction forms calcium hydroxide,  $\text{Ca(OH)}_2$  and hydrogen gas ( $\text{H}_2$ ). Remember, that the calcium metal sinks in water and after an hour or so bubbles of  $\text{H}_2$  are observed, stuck to the surface of the metal.

37. ANSWER: [B]

Explanation: You must be aware that the lungs supply oxygenated blood to the left atrium of the heart. Gradually, it contracts and blood is allowed to enter the next chamber (the left ventricle) as it expands. When the left lower chamber of the heart contracts, blood is pumped into the body through the aorta. Oxygenated and deoxygenated blood is easily separated by the heart. Deoxygenated blood from the body reaches the upper chamber of the right atrium of the heart and it expands. This transports the blood to the right ventricle, which in turn pumps it to the lungs for oxygenation. Here, you should go with option [b].

38. ANSWER: [B]

Explanation: The wall of the alimentary canal consists of muscular layers. The rhythmic contraction and relaxation of these muscles move the food forward. This is called peristalsis, which occurs throughout the abdomen. It is a type of movement that facilitates the movement of food within the alimentary canal.

39. ANSWER: [A]

Explanation: Oxygen is evolved during the process of photosynthesis.

40. ANSWER: [D]

Explanation: Arteries carry blood from the heart to various organs of the body. They generally carry oxygen rich blood except for pulmonary artery. Pulmonary artery is the only artery that carries carbon dioxide rich blood from heart to lungs.

41. ANSWER: [B]

Explanation: The breakdown of glucose (a six- carbon molecule) into a three-carbon molecule called pyruvate takes place in the cytoplasm whereas the process of aerobic respiration takes place in mitochondria.



42. ANSWER: [B]

Explanation: Here, the sized of the object.

$$h = 10 \text{ mm} = 1 \text{ cm}$$

$$\text{Size of the image } h_1 = 5 \text{ mm} = 0.5 \text{ cm}$$

$$\text{Distance of image from the pole of mirror } v = -30 \text{ cm}$$

Let distance of object =  $u$  and Focal length =  $f$

$$\text{Using mirror formula: } \frac{1}{v} + \frac{1}{u} = \frac{1}{f}$$

Therefore, the value of " $u$ " is needed for that magnification formula will be used:

$$\text{Magnification (m)} = \frac{h_1}{h} = -\frac{v}{u}$$

$$\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$$

$$\text{Putting all the values in mirror formula: } \frac{1}{(-30)} + \frac{1}{(-60)} = \frac{1}{f}$$

$$\text{Or, } \frac{2+1}{-60} = \frac{1}{f}$$

$$\frac{1}{f} = \frac{3}{-60}$$

$$\text{Or, } f = -20 \text{ cm}$$

43. ANSWER: [C]

Explanation: When electricity is passed through an aqueous solution of sodium chloride (called brine), it decomposes to form sodium hydroxide. The process is called the chloralkaline process because of the products formed-chlor for chlorine and alkali for sodium hydroxide.

44. ANSWER: [D]

Explanation: To obtain the image by a convex lens, it is necessary to keep the object at  $X$  ( $2F$ ). If the image is to be formed at  $2F$  in the case of a convex lens, the object has to be placed at  $X$  ( $2F$ ).

45. ANSWER: [A]

Explanation: According to Snell's law,  $\sin i / \sin r = \mu$

This means  $\sin(i) \propto \sin(r)$ .

For a given medium ( $\mu$ ) is constant. Therefore,  $\sin(i)$  increases linearly with  $\sin(r)$ .

46. ANSWER: [D]

Explanation: Light is an electromagnetic wave because it can travel even in vacuum and it has all other characteristics of EM waves. So, it is a transverse wave. It travels in a straight line and particles vibrates perpendicular to the direction of propagation of light waves. Hence, your answer will be option [D].

47. ANSWER: [D]

Explanation: The laws of reflection hold good for light reflected for any smooth surface i.e., all mirrors regardless of their shape.

48. ANSWER: [C]

Explanation: Ionic compounds are generally soluble in water (polar solvent) and insoluble in solvents such as kerosene, petrol, etc., (non polar solvents).

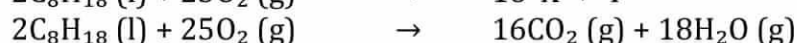
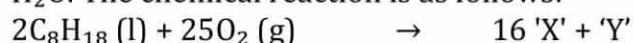
### SECTION - C

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

**Case - 1:**

49. ANSWER: [D]

Explanation: The complete combustion of gasoline in full supply of air results in production of  $\text{CO}_2$  and  $\text{H}_2\text{O}$ . The chemical reaction is as follows:



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50. ANSWER: [C]

Explanation: Oxidation is the addition of oxygen to a substance or the removal of hydrogen from a substance. The reaction in which heat energy is produced is called exothermic reaction.

51. ANSWER: [A]

Explanation: The process of respiration in the human body and decomposition of vegetable matter involves evolution of energy.

52. ANSWER: [A]

Explanation: The limited supply of air leads to incomplete combustion of fuel, which in turn leads to the production of black smoke.

**Case - 2:**

53. ANSWER: [B]

Explanation: As, light is scattered by the air molecules present in atmosphere and blue colour has shorter wavelength, so it is scattered most and the earth would appear blue.

54. ANSWER: [A]

Explanation: For example, at sunrise and sunset, the distance between us and the Sun is greater. Therefore, the light has to travel the longest distance during these times.

55. ANSWER: [C]

Explanation: The sky appears blue due to excessive scattering of blue light by the air molecules.

56. ANSWER: [A]

Explanation: Red light being of longest wavelength scatters least and reaches our eye while blue colour scatters most.

**Case - 3:**

57. ANSWER: [C]

Explanation: When pesticides and other non-biodegradable chemicals enter the food chain, these get accumulated progressively at each trophic level and this is known as biological magnification.

58. ANSWER: [D]

Explanation: The concentration of harmful chemical pollutants such as DDT and other pesticides increases progressively at each trophic level. Therefore, tertiary consumers which occupy the highest trophic level will have the highest concentration and producers which occupy the lowest trophic level will have the lowest concentration of harmful chemical pollutants.

59. ANSWER: [B]

Explanation: Biodegradable wastes are organic in origin whereas non-biodegradable wastes are plastics, metals etc. Enter the food chain as non-biodegradable waste and grow biologically as we move up the food chain.

60. ANSWER: [A]

Explanation: DDT is a non-bio degradable pesticide and when sprayed, it finds its way to soil from where it enters the food chain, the concentration of DDT increases progressively as we go up the trophic level due to biological magnification.