

**Sample Question Paper 6 (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: [D]

Explanation: A reaction in which a substance is changed to one or more new substance is called a chemical reaction.

2. ANSWER: [D]

Explanation: A chemical reaction is a change in which one or more substance or reactants react to form new substance with entirely different properties. Heating of copper in presence of air at high temperature gives copper oxide. Such as:



3. ANSWER: [D]

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

4. ANSWER: [B]

Explanation: Lead Nitrate it is also a soluble salt in water. It can be used in the place of Lead Acetate.



Hence, your answer will be option [B].

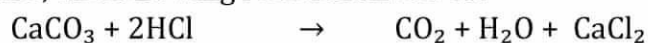
5. ANSWER: [B]

Explanation: You must know that during electrolysis the water decomposes to make hydrogen and oxygen gases in the ratio 2:1 by volume, respectively. As



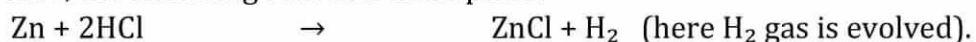
6. ANSWER: [B]

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



CO<sub>2</sub> gas is evolved here.

In second test tube, the following reaction takes place:



7. ANSWER: [D]

Explanation: The pH of solution decreases from 7 – 0 level, the hydrogen ions concentration in the solution goes on increasing and hence the strength of acid goes on increasing. As the pH of solution increases from 7 – 14 level the Hydroxide Ion concentration in the solution goes on increasing due to which the strength of base also goes on increasing. You should choose option [D] as an answer.

8. ANSWER: [A]

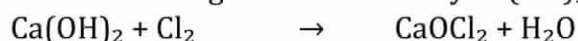
Explanation: In a dilute aqueous solution of hydrochloric acid, H<sub>3</sub>O<sup>+</sup> + Cl<sup>-</sup> ions are present.

9. ANSWER: [C]

Explanation: Bulb will glow because NaOH is a strong base and strong acids or bases are good conductors of electricity as they ionize completely in aqua solution to give ions that furnishes ions for conduction.

10. ANSWER: [A]

Explanation: You must know that - chlorine gas reacts with dry  $\text{Ca(OH)}_2$  to form bleaching powder.



You should choose option [D] as an answer.

11. ANSWER: [C]

Explanation: As we know that “autotrophs” can convert carbon dioxide and water into carbohydrates only in the presence of Sunlight. Hence, your answer will be answer [C].

12. ANSWER: [B]

Explanation: As we know that carbon dioxide, water and energy are produced as the end products of anaerobic respiration. The end products of anaerobic respiration are  $\text{C}_2\text{H}_5\text{OH}$ ,  $\text{CO}_2$  and energy in case of fermentation in yeast and lactic acid and energy in human muscle cells.

13. ANSWER: [C]

Explanation: Egestion involves elimination of the remaining undigested food Material by rupturing of cell wall at any time.

14. ANSWER: [C]

Explanation: Lactic acid ( $\text{C}_3\text{H}_6\text{O}_3$ ) is formed when we respire anaerobically. Condition is that, when the heart and lungs cannot work fast enough to provide enough oxygen around the body to breakdown the glucose.

15. ANSWER: [B]

Explanation: Terrestrial organisms use atmospheric oxygen in order to respire. Hence, your answer will be answer [B].

16. ANSWER: [D]

Explanation: As urine is actually stored in the urinary bladder, which is a muscular organ and under our nervous control. The only incorrect statement is that urine is stored in the urethra. You should go with the option [D].

17. ANSWER: [A]

Explanation: Remember, light rays, in “B” medium go towards normal, so it has greater refractive index and lesser velocity of light with respect to medium A. Hence, refractive index of “B” medium with respect to “A” medium is greater than Unity. You should go with the option [D].

18. ANSWER: [D]

Explanation: Frequency is related to wavelength by relation. In dispersion through a prism, the red deviates least while blue deviates more. Therefore, the wavelength of red is more than blue light. Your answer will be option [D].



19. ANSWER: [D]

Explanation: The object should be placed between the pole (p) and the focus point (f) of the mirror. You should go with the option [D].

20. ANSWER: [C]

Explanation: For reading small letters, a convex lens of focal length 5 cm should be used. You must know two sentences in the context of this question. Such as

1) Magnification is also higher for convex lenses having shorter focal length.

2) A magnified image of an object will be obtained when it is placed between the optical centre and focus of a convex lens.

Hence, your answer will be option [C].

21. ANSWER: [B]

Explanation: If we project a narrow beam of light to prism, at different orientation, in a certain case we can see that from bottom the third colour is blue which is the colour of sky. So, we can obtain the correct situation in case [B].

22. ANSWER: [A]

Explanation: Here, angle of incidence =  $60^\circ$

Angle of refractive =  $r = 45^\circ$

Refractive index of the medium B relative to medium A

$$N = \sin(i)/\sin(r) = \sin 60^\circ/\sin 45^\circ$$

$$= \sqrt{3}/2 \text{ by } 1/\sqrt{2}$$

$$= \sqrt{3}/\sqrt{2}$$

23. ANSWER: [A]

Explanation: As you know that the thickness of atmosphere is low, at very high altitude. So, there are less number of particles present for scattering. Therefore, the sky appears dark to the passengers. So, your answer will be option [A].

24. ANSWER: [C]

Explanation: The incident rays coming from the distant tree placed will be parallel to the principal axis and as we know the rays parallel to the principal axis, after refraction by convex lens, will pass through the principal focus.

Therefore, a distinct image will be obtained immediately when distance between screen and lens is equal to focal length:

$$= 42.7 \text{ cm (position of lens on optical bench)} + 15 \text{ cm (focal length of lens)}$$

$$= 57.7 \text{ (the position of screen on optical bench)}$$

### 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. ANSWER: [B]

Explanation: HCL and  $\text{CCL}_4$  are not ionic compounds because they are formed by sharing of electrons. These are covalent compounds.

26. ANSWER: [D]

Explanation: You must know that the non-metals are gases and a few are solids and bromine is the only non-metal which is liquid at room temperature.

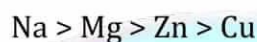
27. ANSWER: [C]

Explanation: We know that zinc layer prevents iron from getting rusted. Through galvanization method, iron is covered by a coat of zinc. Where there is no chance to corrosion of Iron metal.

28. ANSWER: [D]

Explanation: Metals placed below the hydrogen in reactivity series, will not give  $H_2(g)$  with water ( $H_2O$ ).

Decreasing order of reactivity of metals is



29. ANSWER: [D]

Explanation: Silver and mercury are less reactive than copper and as copper will displace those metals from its salt solution which are less reactive than it.

30. ANSWER: [B]

Explanation: Copper gets a green coating due to the formation of a mixture of copper carbonate ( $CuCO_3$ ) and copper hydroxide when it reacts with carbon dioxide gas and the moisture present in air. This is called tarnishing of copper.

31. ANSWER: [B]

Explanation: The metal zinc readily reacts with hydrochloric acid to produce hydrogen gas ( $H_2$ ) and zinc chloride ( $ZnCl_2$ ).

32. ANSWER: [A]

Explanation: Blue colour has the least wavelength. The sky appears blue due to scattering of blue colour by dust particles. Hence, your answer should be option [A].

33. ANSWER: [C]

Explanation: The image of real object may be real in case of concave mirror.

34. ANSWER: [B]

Explanation: As we know that metabolic process occurs in human beings. This process demands more oxygen to maintain their high metabolic rates. Therefore, our body has, evolved a complex respiratory system as to meet this need. Hence your answer would be option [B].

35. ANSWER: [A]

Explanation: You will be surprised to know that when water is added to an acid it produces very large amount of heat. Sometimes even causes burning or break the container. Hence, people are advised to add concentrated acid to water in very slow manner. Hence, your answer will be option [A].



36. ANSWER: [C]

Explanation: Yeast is a unicellular organism which brings out ethanol ( $C_2H_5OH$ ) fermentation. The first stage is break down of one molecule of glucose into two molecules Pyruvate that occurs in cytoplasm. Because of limited oxygen availability, Pyruvate remains in cytoplasm where Pyruvate decarboxylase and alcohol dehydrogenase enzymes carry out the second phase of anaerobic respiration and produce ethanol ( $C_2H_5OH$ ) and carbon dioxide ( $CO_2$ ). Hence, your answer will be option [C].

37. ANSWER: [B]

Explanation: As we know that when the exhaled air rich in carbon dioxide is blown from mouth into test tube. The lime water turns milky on passing  $CO_2$  gas into it due to formation of insoluble calcium carbonate ( $CaCO_3$ ). As it reacts with lime water (calcium hydroxide -  $Ca(OH)_2$ ) to produce calcium carbonate and water.

38. ANSWER: [C]

Explanation: Plants are called Autotrophs. As they obtain the required energy & carbon from carbon dioxide ( $CO_2$  gas) and sunlight. As sunlight is necessary for all living beings. They make carbohydrates from  $CO_2$  gas &  $H_2O$ . Hence, you should go with the option [C].

39. ANSWER: [D]

Explanation: You must know that alveoli play a crucial role of respiration. It has a large surface area with very thin walls which is richly supplied with blood vessels. Your answer will be option [D].

40. ANSWER: [A]

Explanation: We must know the following points regarding this answer:

- 1) Valve prevent backside flow of the blood.
  - 2) You must know that valves ensure that blood does not flow backwards when the atria or ventricles contract.
  - 3) Similarly, atrioventricular (AV) valve between atrium and ventricle directs the flow of blood and prevents any backflow into atria.
  - 4) Semilunar valves, which is present between ventricles and their attached vessels, serve to prevent the backflow of blood to ventricles from their respective attached vessels.
- Therefore, your answer should be option [A].

41. ANSWER: [A]

Explanation: As we know that, the oxygen during photo- synthesis comes from splitting of water molecules into hydrogen and oxygen gas.

42. ANSWER: [C]

Explanation: The food prepared in the plant (which are called autotrophs) by the process of photosynthesis is glucose that gets stored in various plant parts in the form of starch.

43. ANSWER: [D]

Explanation: As clay is opaque. And hence, it does not let light to pass through it. So, your answer will be option [D].

44. ANSWER: [C]

Explanation: In the given question,  $u = -30$  cm and  $f = -20$  cm. so, the object lies between F (20 cm) & C (40 cm).

Therefore, a real image is formed beyond C that is beyond 40 cm.

Formula is: (Try to understand) -

$$1/f = 1/v + 1/u$$

$$= -1/20 = 1/v - 1/30$$

$$= 1/v = -1/20 + 1/30$$

$$= (-3+2)/60$$

$$= -1/60$$

$$V = -60$$

So, your answer will be option [C].

45. ANSWER: [D]

Explanation: In this question, the concave mirror, an incident ray parallel to the principle axis passes through F, after reflection.

46. ANSWER: [C]

Explanation: A virtual image is formed when reflected rays appeared to meet. Remember that virtual images cannot be obtained taken on a screen. Plane mirrors, convex mirrors & concave lens always forms virtual image. There are always erect.

47. ANSWER: [D]

Explanation: The power of combination of two lenses is  $P = P_1 + P_2$ ,

Where  $P_1$  is the power of the convex lens of focal length 20 cm &  $P_2$  is power of concave lens of focal length of 25 cm.

As Power =  $P = 1/f$  (in meters)

Therefore,  $P = 1/f_1 + 1/f_2$

$$= +100/20 - 100/25 = +1$$

48. ANSWER: [B]

Explanation: Because it is covalent compound formed by sharing of electrons. Whereas, in other three compounds are ionic compounds & they conduct electricity in their molten state.

### SECTION - C

**Section - C consists of three Cases followed by questions. There are a total of 12 questions in this section. The first attempted 20 questions would be evaluated.**

#### Case - 1:

49. ANSWER: [A]

Explanation: The focal length of the mirror is the distance between the pole of the mirror & the screen where the clear image of the distant object is formed. As the mirror stand is at 10cm & screen is at 40 cm, therefore, focal length =  $40 - 10 = 30$  cm

As the image of a distant object is formed by a concave mirror at its focus. Radius of curvature =  $2f = 60$  cm.



50. ANSWER: [C]

Explanation: A concave mirror forms a real & inverted image of the distant object at its focus as shown in the figure above. Image is real as the rays of the light intersect at the focus after reflection from the concave mirror.

51. ANSWER: [D]

Explanation: A concave mirror form sand erect and virtual image of an object only when the object is placed between the pole & focus of the mirror.

As focal length of the mirror

$$= 20 \text{ cm} = 40/2 \text{ cm}$$

Therefore, range of object distance = 0 cm to less than 20 cm

If object is placed at focus 20 cm. It will form a real inverted and highly magnified image of the object.

52. ANSWER: [B]

Explanation: As the object is kept at 40 cm or  $2f$ . Image will also be formed at  $2f$ . It will be a real and inverted image will be formed in front of the mirror and image will be of same size as object.

### Case - 2:

53. ANSWER: [A]

Explanation: In the given picture of human digestive system, Oesophagus is shown B, Liver is C, Stomach is D, and pancreas is E.

54. ANSWER: [A]

Explanation: Label C represents liver. Bile juice secreted by liver, which is stored in gall bladder.

55. ANSWER: [A]

Explanation: Bile juice doesn't contain any enzyme. It helps in digestion of fats.

56. ANSWER: [D]

Explanation: Label A represents mouth. The digestion of food starts in mouth.

### Case - 3:

57. ANSWER: [C]

Explanation:  $\text{Cs} > \text{Rb} > \text{K} > \text{Na} > \text{Li}$  - represents the decreasing order of metallic character of alkali metals. Down the group metallic character increases due to increase in atomic size.

58. ANSWER: [B]

Explanation: As hydrogen can easily loss 1 electron; like alkali metals to form positive ions. That's why hydrogen is placed along with alkali metals in the modern periodic table. Though, it shows non-metallic character.

59. ANSWER: [A]

Explanation: Fluorine has the highest electronegativity. As a fluorine is the smallest and first element of its group. So, down the group of electro-negativity decreases due to increase atomic size.

60. ANSWER: [C]

Explanation: In halogens, the electronegativity decreases down the group due to increase in atomic radius and decrease in tendency to gain electron.