

Sample Question Paper 3 (Answers)
(TERM – I) (Session 2021-2022)
Class X
Science (086)
SECTION – A

Section - A consists of 24 questions.

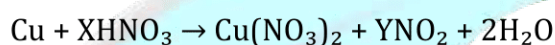
The first attempted 20 questions would be evaluated.

1. ANSWER: [A]

Explanation: The type of chemical reaction that will take place is photochemical decomposition. This is a type of decomposition reaction which involves the use of light energy for decomposition.

2. ANSWER: [C]

Explanation: In the order to find the values of X and Y, we need to balance a chemical equation by equating the number of atoms of each element on both sides in the given equation:



Element	Reactant Side	Product Side
Cu	1	1
H	X	4
N	X	Y+2
O	3X	2Y + 2

3. ANSWER: [B]

Explanation: The given reaction is a Redox reaction because oxidation and reduction both take place simultaneously. Also, it is a displacement reaction because hydrogen of NH_3 has been displaced by oxygen.

4. ANSWER: [A]

Explanation: Double displacement reaction is a reaction in which two different ions or group of atoms in the reactant molecules are displaced by each other. "Na" being more reactive than Ba displaces from its compound BaCl_2 and from NaCl .

5. ANSWER: [B]

Explanation: The atmosphere contains many oxides, which dissolve in water forming acids like sulfuric acid, nitric acid which are common due to modern pollution. Even carbon dioxide forms carbonic Acid which also does damage in a huge way. Chemically, marble is calcium carbonate.

6. ANSWER: [B]

Explanation: In such an accident, washing the hands with water will dilute the acid and wash it out. After that apply sodium hydrogen carbonate or baking soda as it is a base. This will minimise the effect of damage caused by acid to the skin.

7. ANSWER: [D]

Explanation: 4) Sodium hydrogen carbonate is a basic salt having a pH of about 8. As it is obtained from a strong base (NaOH) and a weak acid (H_2CO_3).

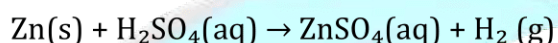
3) Sodium Acetate is a basic salt having a pH of about 9. As it is obtained from a strong base (NaOH) and a weak acid (CH_3COOH).

2) Ammonium Nitrate is an acidic salt having a pH of about 5. As it is obtained from a strong acid (HNO_3) and a weak base (NH_4OH).

1) Potassium Sulphate is a neutral salt having pH of about 7. As it is obtained from a strong base (KOH) and a strong acid (H_2SO_4).

8. ANSWER: [C]

Explanation: When an acid reacts with a metal, hydrogen gas is liberated. In the given reaction, when dilute sulphuric acid reacts with zinc granules, hydrogen gas is liberated and zinc sulphate solution is formed:



The presence of hydrogen gas is tested by bringing a lighted candle near it. When a lighted candle is brought near the test tube containing hydrogen gas, it burns with a “pop sound” making a little explosion. Hence, acid “X” is sulphuric acid and gas “Y” is hydrogen gas.

9. ANSWER: [C]

Explanation: Baking powder is a mixture of sodium hydrogen carbonate and tartaric acid carbon dioxide produced during this reaction can cause bread or cake to rise and makes them soft and spongy. When we use baking powder tartaric acid neutralizes.

10. ANSWER: [A]

Explanation: Hydrogen gas. It is soluble in water.

11. ANSWER: [A]

Explanation: In normal, individual should maintain a systolic or diastolic pressure of 120/80 mm of Hg. Blood pressure is denoted by two values. One value is above and the other values is below. The total value that is above is the systolic pressure and the one that is below is the diastolic pressure

12. ANSWER: [D]

Explanation: As we know that, Lymph drains into lymph capillaries from the intercellular spaces which join to form larger lymph vessels that finally open into larger veins.

13. ANSWER: [C]

Explanation: Haemoglobin consist of the “Haem” group where the “Fe” atom is bonded as a central atom in the complex and it is present in the blood and the blood flows in the plasma. Hence, it is the combination of Plasma, Haemoglobin, and Iron. And here, your answer will be option [C].

14. ANSWER: [D]

Explanation: Blood has many different functions, like transporting oxygen, regulating body temperature, and nutrients to the lungs and tissues, and forming blood clots to prevent excess blood loss and carrying cells and antibodies that fight infection. Hence, your answer will be option [D].

15. ANSWER: [C]

Explanation: Transportation & transpiration both are very important work of plant. Transport of water and minerals in xylem takes place by the process of osmosis is due to in ionic difference in concentration in the soil and inside the root. On the other hand, transpiration pull helps in the absorption of water to the taller parts of a plant during day time when the stomata are open.

16. ANSWER: [D]

Explanation: Fishes take in water through their mouths and force it past the gills where the dissolved oxygen is taken up by blood. Your answer will be option [D].

17. ANSWER: [A]

Explanation: The correctly marked angles are of $\angle A$ and $\angle i$.

18. ANSWER: [C]

Explanation: A person suffering from hypermetropia can see distant objects clearly but not the nearby objects. Myopia is also termed as short- sightedness. A person suffering from myopia can see nearby objects clearly but not the distant objects. Whereas hypermetropia is termed as long-sightedness.

19. ANSWER: [C]

Explanation: Diffraction of light, refers to the phenomena of blending of light around corners. Fishes appear higher than their actual depth, due to the refraction of light as light travels from water, an optically denser medium to air, a rarer medium.

20. ANSWER: [C]

Explanation: A clear cloudless day-time sky is blue because molecules in the air scatter blue light from the sun more than they scatter red light.

21. ANSWER: [D]

Explanation: An inverted image of the tree at the focus of the lens.

22. ANSWER: [A]

Explanation: Try to understand simply, when a point source of light is placed at the focus of concave mirror, then all light rays after reflection through mirror will become parallel to the principal axis. On the other hand, when this point source of light is placed at the focus of convex lens then after refraction by light rays convex lens will become parallel to the principal axis. Hence, your answer will be option [A].

23. ANSWER: [B]

Explanation: Simply understand that, the rays of light passing through the principal focus will go parallel to principal axis after reflection thus, forming a concentrated beam of light. Hence, due to this reason in torches, search lights, and headlights of vehicles, the bulb is placed very near to the focus of the reflector. Your answer should be option [B].

24. ANSWER: [D]

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

SECTION - B

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

The first attempted 20 questions would be evaluated.

25. ANSWER: [A]

Explanation: Potassium and sodium react vigorously with oxygen in air and catch fire. These metals are stored under kerosene oil to prevent oxidation.

26. ANSWER: [A]

Explanation: Copper and gold are in impure form after extraction. Copper and gold are refined by electrolytic refining method. But, Sodium and potassium are extracted by electrolytic reduction. Metals obtained after electrolytic reduction are in pure form. But

27. ANSWER: [D]

Explanation: Iodine is a non-metal with lustrous appearance and exists in solid state.

28. ANSWER: [A]

Explanation: Stainless steel is an alloy of iron (74%), nickel (8%) and chromium (18%).

29. ANSWER: [B]

Explanation: Simply understand that, there is a positively charged anode and a negatively charged cathode in an electrolytic cell. Positively charged ions (cations) are deposited at the negatively charged cathode. Negatively charged ions (anions) are deposited at the positively charged anode. Hence, your answer will be option [B].

30. ANSWER: [A]

Explanation: Ions of zinc are positively charged, thus while electrolytic refining of zinc, zinc is deposited at cathode (negatively charged pole).

Question No. 31 to 35 consists of two segments – Assertion (A) and Reason (R).

[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. ANSWER: [A]

Explanation: POP it is commonly used for setting fractured bones. Plaster of paris is mixed with water and applied around the fractured limbs, it sets into a hard mass and keeps the bone joints in a fixed position.

32. ANSWER: [D]

Explanation: Focal length of the spherical mirror does not depend on the medium in which it is placed.

33. ANSWER: [C]

Explanation: When the objects are observed through hot air, the objects appear to be moving slightly as the light refracts due to atmospheric refraction.

34. ANSWER: [D]

Explanation: Bile helps in emulsification of fats whereas lipases are the enzymes which hydrolyze fats and oils.

35. ANSWER: [D]

Explanation: Try to understand, burning of candle is a chemical change. Burning of candle melts the wax and hence the physical state of wax has changed from solid to liquid. On Again the wax combines with the atmosphere oxygen and changes to carbon dioxide, heat and light. Hence, simply you can go with option [D].

36. ANSWER: [D]

Explanation: The sequence of organs in human alimentary canal are: Mouth, oesophagus, stomach, small intestine, large intestine, and anus.

37. ANSWER: [B]

Explanation: Urea is removed by the blood in Kidneys by filtration.

38. ANSWER: [D]

Explanation: Generally, xylem & phloem done main work in plants. Transports water and minerals from the soil to different parts of the plant in upward direction by xylem. Phloem transports the products which is soluble from the leaves to different parts of the plant by using energy from ATP. Hence, you can choose the option [D] as answer.

39. ANSWER: [D]

Explanation: The whole respiratory route of air in the respiratory tract is:

Nostrils → Pharynx → Larynx → Trachea → Alveoli or air sacs.

When we inhale through our nostril or mouth, air travels down the pharynx (i.e., back of the throat), passes through your larynx (i.e., voice box) and into your trachea (i.e., windpipe). Our trachea is divided into 2 air passages called bronchial tubes they further go to alveoli sac to both lungs.

40. ANSWER: [A]

Explanation: Simply, try to understand, when the oxygenated blood passes through the capillaries of the tissue, it gives oxygen to the body cells and takes carbon dioxide, produced during cellular respiration. Thus, it becomes richer in carbon dioxide. Hence your answer will be option [A].

41. ANSWER: [B]

Explanation: If salivary amylase is lacking in the saliva, the process of starch digestion will get disturb as salivary amylase helps in digestion of starch.

42. ANSWER: [A]

Explanation: Lactic acid is formed after an aerobic respiration in muscle cells and this happens in cytoplasm.

43. ANSWER: [A]

Explanation: In the given figure, the emergent light rays are parallel and displays laterally. Therefore, a rectangular glass slab might be inside the box, because only a rectangular glass slab can change the path of light rays in such a way that the emergent rays are parallel to the incident rays and displays laterally.

44. ANSWER: [C]

Explanation: When the image of a distant object formed by a concave mirror is real and inverted and also laterally inverted. Therefore, the left side of the object will be right side in the image and vice versa and inverted (upside down). Simply you should choose the option [C] as an answer.

45. ANSWER: [C]

Explanation: Concave mirror forms real image of distant object, the sun, at its principal focus, which is in front of the mirror. Focal length is the distance between pole of the mirror and the focus, focal length = 24 cm.

Option (a) is incorrect as convex mirror always forms a virtual and erect image of the object, which will be behind the mirror.

Option (b) and (d) are incorrect as convex lens forms a real image behind the lens. You should choose option [C] as an answer.

46. ANSWER: [C]

Explanation: A real image is formed when light rays actually meet or intersect at a point after reflection or refraction.

47. ANSWER: [C]

Explanation: Angle of emergence, is the angle of the light coming out of a medium. Lateral displacement, is the perpendicular distance between the incident ray and the emergent ray. Hence, you can go with the option [C].

48. ANSWER: [D]

Explanation: Iodine is a non-metal but it is lustrous.

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: [B]

Explanation: If the focal length of the concave mirror is 10 cm, the image formed will be at a distance between 10 cm and 15 cm.

50. ANSWER: [C]

Explanation: If an image formed behind the concave mirror, the object distance is positive but if an image is formed in front of the mirror, the image distance is negative.

51. ANSWER: [A]

Explanation: As we know, magnification:

$$m = h_2/h_1$$

$$h_2 = - (0.5 \times 5) / 10 \text{ or } h_2 = -2.5$$

52. ANSWER: [A]

Explanation: Remember that a negative sign in the magnification value indicates that the image is real and inverted.

Case – 2:

53. ANSWER: [C]

Explanation: We know that, the green leaf becomes colourless because when it is immersing green leaf in alcohol, chlorophyll responsible for its green colour gets dissolved in alcohol. The colour of the alcohol solution therefore turns green.

54. ANSWER: [A]

Explanation: As the student wants to show that carbon dioxide is essential for photosynthesis, he sealed both the bell jars with Vaseline (- petroleum product) and placed KOH in one bell jar as KOH absorbs CO₂ gas present in the bell jar. The plant (in this bell jar) will not be able to perform photosynthesis or making food as carbon dioxide has been removed from the bell jar.

55. ANSWER: [B]

Explanation: The first student conclude that chlorophyll is essential for photosynthesis as green potion shows the positive starch test and second student concluded that carbon dioxide is essential for photosynthesis.

56. ANSWER: [A]

Explanation: In the first set up availability of CO₂ will be less for making starch by the plant leaves, as potassium hydroxide (KOH) absorbs the CO₂, in second plant setup, the leaves will have more amount of starch. So, the amount of starch will be different in the two leaves.

Case – 3:

57. ANSWER: [D]

Explanation: Rainbow is produced after the rain, by refraction, dispersion, total internal reflection, and again refraction process in droplets of water.

58. ANSWER: [A]

Explanation: The colours in ascending order of wavelength are: Violet, Indigo, Blue, after that Green, Yellow, Orange, and lastly, Red. The wavelength of violet colour is the least (First stand in wavelength) and that of red (last stand in wave length) is the greatest.

59. ANSWER: [C]

Explanation: Remember, rainbow formed after the rain. And it seems like a bow present in sky with various colours. But note down that rainbow always formed in opposite direction to that of the Sun. It performs as a natural spectrum which disperse the white sunlight into colourful bows. It is caused by dispersion of sunlight as tiny water droplets, present in the atmosphere. The tiny droplets of water refract and disperse the incident white sunlight, then reflect it internally. Due to this different colour reach towards our eye or observer's eye.

60. ANSWER: [B]

Explanation: When white light enters a Prism, different colours undergo refraction and as they enter a denser medium, they bend towards the normal at different angles.