

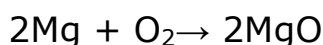
CBSE Class 10 Sample Paper 2020-2021

General Instructions

- (i) The question paper comprises four sections A, B, C, and D. There are 36 questions in the question paper. All questions are compulsory.
- (ii) Section–A - a question no. 1 to 20 - all questions and parts there are of one mark each. These questions contain multiple-choice questions (MCQs), very short answer questions, and assertion - reason type questions. Answers to these should be given in one word or one sentence.
- (iii) Section–B - a question no. 21 to 26 are short answer type questions, carrying 2 marks each. Answers to these questions should be in the range of 30 to 50 words.
- (iv) Section–C - a question no. 27 to 33 are short answer type questions, carrying 3 marks each. Answers to these questions should be in the range of 50 to 80 words.
- (v) Section–D - question no. - 34 to 36 are long answer type questions carrying 5 marks each. Answers to these questions should be in the range of 80 to 120 words.
- (vi) There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.
- (vii) Wherever necessary, neat, and properly labeled diagrams should be drawn.

Section A

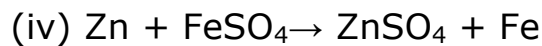
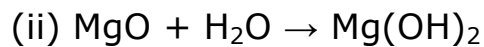
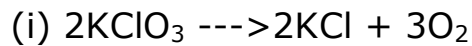
1. Identify the substance oxidized and reduced in the chemical reaction:



OR

In which period and group would you place the elements with the following electronic configurations: 2,8

- Describe the process of neutralization with the help of an example.
- Which of the following are combination reactions?



- (i) and (iii)
 - (iii) and (iv)
 - (ii) and (iv)
 - (ii) and (iii)
- The energy given to a fundamental charge accelerated through a potential difference of 1 V is equal to
 - 1.6×10^{-19} J
 - 6×10^{-19} J
 - 1 eV
 - Both A and C
 - Raghav was asked to arrange five identical 5 Ω resistors such that the equivalent resistance of the combination should be minimum. In what possible ways should he connect the resistors?
 - Why don't magnetic field lines intersect?

OR

Why is the current in a generator AC?

- A clock hung on a wall has marks instead of numerals on its dial. On the adjoining wall, there is a plane mirror and the image of the clock in the mirror indicates the time 3:25. What is the time on the clock?

8. A lemon is kept in a flag tumbler with water. How does it appear due to the refraction of light?
9. The human eye can focus on objects at different distances by adjusting the focal length of the eye-lens. Which part of our eye helps in doing this?

OR

An old person is unable to see clearly nearby objects as well as distant objects. To correct the vision, what kind of lens will he require?

10. Name the raw materials which are essential to carry out the process of photosynthesis in plants.
11. State **True** or **False** for the following statement - Yeast reproduces asexually by spore formation.

(OR)

State **True** or **False** for the following statement - Breakdown of proteins takes place first in the mouth.

12. Name the final major products that are formed when the bacteria *Lactobacillus* performs anaerobic respiration in the milk.

(OR)

A healthy person went to a clinic to check his Blood pressure. The doctor used a _____ to measure his blood pressure and the readings were found out to be ____ mmHg (Systole) and ____ mmHg (Diastole).

13. In an ecosystem, 10% of the energy available for transfer from one trophic level to the next is in the form of:
 - A. heat energy
 - B. light energy
 - C. chemical energy
 - D. mechanical energy
14. In the following Questions, the Assertion and Reason have been put forward. Read the statements carefully and choose the correct alternative from the following:
Assertion: Al_2O_3 is an amphoteric oxide.

Reason: Al_2O_3 reacts with acid as well as a base to form salt and water.

- A. Both the Assertion and the Reason are correct and the Reason is the correct explanation of the Assertion.
 - B. The Assertion and the Reason are correct but the Reason is not the correct explanation of the Assertion.
 - C. The Assertion is true but the Reason is false.
 - D. The statement of the Assertion is false but the Reason is true.
15. Assertion: DNA is the genetic material in most living organisms.
Reason: Viruses would not be able to infect humans if they had RNA as genetic material.
- A. Both A and R are true, and R is the correct explanation of the assertion.
 - B. Both A and R are true, but R is not the correct explanation of the assertion.
 - C. A is true, but R is false.
 - D. A is false, but R is true.
16. Assertion: Asexual Reproduction is more prevalent in lower organisms.
Reason: It leads to faster production of progenies with a lesser amount of energy spent.
- A. Both A and R are true, and R is the correct explanation of the assertion.
 - B. Both A and R are true, but R is not the correct explanation of the assertion.
 - C. A is true, but R is false.
 - D. A is false, but R is true.
17. Read the following and answer any **four** questions from 17 (i) to 17 (v)
Plants show an Autotrophic mode of nutrition, while most animals show a Heterotrophic mode of nutrition. We eat various types of food that have to pass through the same digestive tract. Naturally the food has to be processed to generate particles which are small and of the same texture. This is achieved by crushing the food with our teeth. We take the food through our mouth and then absorb the

nutrients in it after complete digestion inside our digestive tract. Left-over undigested food is egested out of the body through the Anus.

- (i) What mode of nutrition is observed in humans?
- A. Autotrophic
 - B. Saprophytic
 - C. Holozoic
 - D. Parasitic
- (ii) Proteins in our food is digested by which of the following set of enzymes:
- A. Ptyalin and Pepsin
 - B. Pepsin and Trypsin
 - C. Trypsin and Ptyalin
 - D. Pepsin and Lipase
- (iii) The food left undigested in our digestive tract is passed out through the Anus. This form of undigested food is known as
- A. Bolus
 - B. Chyme
 - C. Urine
 - D. Feces
- (iv) *Amoeba* and *Chlamydomonas* are unicellular organisms. What is the contrasting point in between the two?
- A. *Amoeba* is Autotrophic; while *Chlamydomonas* is Holozoic
 - B. *Amoeba* is eukaryotic while *Chlamydomonas* is Prokaryotic
 - C. *Amoeba* is Heterotrophic; while *Chlamydomonas* is Autotrophic
 - D. *Amoeba* is Holozoic; while *Chlamydomonas* is Heterotrophic
- (v) The longest part of the small intestine is the
- A. Duodenum
 - B. Jejunum
 - C. Ileum
 - D. Colon

18. Read the following and answer any **four** questions from 18 (i) to 18 (v)

Atoms of eight elements A, B, C, D, E, F, G, and H have the same number of electronic shells but the different number of electrons in their outermost shell. It was found that elements A and G combine to form an ionic compound. This compound is added in a small amount to almost all vegetable dishes during cooking. Oxides of elements A and B are basic in nature while those of E and F are acidic. The oxide of D is almost neutral. Based on the above information answer the following questions:

18. (i) To which group or period of the periodic table do the listed elements belong?
(ii) What would be the nature of the compound formed by a combination of elements B and oxide of element F?
(iii) Which two of these elements could definitely be metals?
(iv) Which one of the eight elements is most likely to be found in a gaseous state at room temperature?
(v) If the number of electrons in the outermost shell of elements C and G is 3 and 7 respectively, write the formula of the compound formed by the combination of C and G.
19. Ohm's Law defines the relationships between (E)voltage, (I) current, and (R) resistance. One ohm is the resistance value through which one volt will maintain a current of one ampere.
- I. Voltage is the difference in electrical potential between two points in a circuit. It's the push or pressure behind current flow through a circuit and is measured in (V) volts.
- II. Resistance determines how much current will flow through a component. Resistors are used to control voltage and current levels. A very high resistance allows a small amount of current to flow. Very low resistance allows a large amount of current to flow. Resistance is measured in ohms.
- III. Power is the number of current times the voltage level at a given point measured in wattage or watts
- (i) Which of the following statements does not represent ohm's law?
A. $\text{current} / \text{potential difference} = \text{constant}$
B. $\text{potential difference} / \text{current} = \text{constant}$

- C. potential difference = current \times resistance
- D. current = resistance \times potential difference

(ii) The unit of current is

- A. ampere
- B. watt
- C. volt
- D. coulomb

(iii) The potential difference required to pass a current 0.2 A in a wire of resistance 20 Ω is

- A. 100 V
- B. 4 V
- C. 0.01 V
- D. 40 V

(iv) Two resistances of 100 Ω and 0 Ω are connected in parallel. The overall resistance will be

- A. 100 Ω
- B. 50 Ω
- C. 25 Ω
- D. zero ohm

(v) Three resistors 2 Ω , 3 Ω and 4 Ω are connected so that the equivalent resistance is 9 Ω . The resistors are connected

- A. all in series
- B. all in parallel
- C. 2 Ω and 3 Ω in parallel and the combination in series with 4 Ω
- D. 2 Ω and 3 Ω in series and the combination in parallel to 4 Ω

20. The electric generator is a machine for producing an electric current. The electric generator or dynamo converts mechanical energy into electrical energy. The generator is an application of electromagnetic induction. It works on the principle that when a wire is moved in a magnetic field, then the current is induced in the coil. A rectangular coil is made to rotate rapidly in the magnetic field between the poles of a horseshoe-type magnet. When the coil rotates, it cuts the lines of magnetic force, due to which a current is produced in the

generator coil. This current can be used to run various electrical appliances.

- (i) An electric generator actually acts as
- A. source of electric charge
 - B. source of heat energy
 - C. an electromagnet
 - D. a converter of energy
- (ii) Electromagnetic induction is the
- A. charging of a body with a positive charge
 - B. production of current by relative motion between a magnet and a coil
 - C. rotation of the coil of an electric motor
 - D. generation of magnetic field due to a current-carrying solenoid
- (iii) The brushes used in electric generator is made of which material
- A. Carbon
 - B. Aluminium
 - C. Zinc
 - D. Soil iron
- (iv) A commutator changes the direction of current in the coil of
- A. a DC motor
 - B. a DC motor and an AC generator
 - C. a DC motor and a DC generator
 - D. an AC generator

Section-B

21. What is meant by a trophic level?

OR

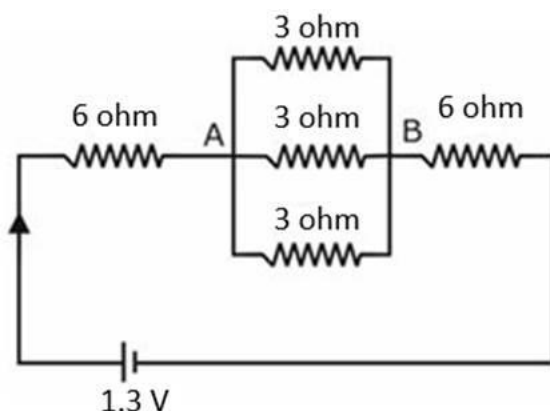
How will you define the gene of a particular protein?

22. What is meant by blood pressure?

23. How does the electropositive character of elements in a period vary from left to right?

OR

- (i) How many groups and periods are present in the modern periodic table?
- (ii) What is the main difference between Mendeleev's and modern periodic law?
24. What is the difference in the molecular formula of any two consecutive members of a homologous series of organic compounds?
25. Determine the power consumed in the circuit shown



26. A current-carrying straight wire is kept along the axis of a circular loop carrying a current. What is the force exerted by the magnetic field of straight wire on the circular loop?

Section-C

27. How do autotrophs obtain CO_2 and N_2 to make their food?

OR

- Differentiate between aerobic and anaerobic respiration.
28. How is the sex of the child determined in human beings?
29. Briefly describe the double circulation in human beings.
30. What is observed when: (1×3)
- (i) Potassium iodide is added to aqueous lead nitrate
- (ii) Identify the type of reaction
- (iii) Give a balanced chemical equation for this.
31. Explain why: (1×3)

- a. An antacid tablet is taken when you suffer from acidity.
 - b. Calamine solution is applied on the skin when an ant bites.
 - c. Factory waste is neutralised before disposing of it in the water bodies.
32. Write the electron-dot structure for Na and Cl atoms. How do these form a chemical bond? Name the type of bond so formed. Why does a compound so formed have a high melting point?
33. If an object of height 4 cm is placed at a distance of 12 cm from a concave mirror having a focal length of 24 cm, find the position, nature and the height of the image.

Section-D

34. (i) Ammonia is found in many household products, such as window cleaners. It turns red litmus blue. What is its nature? (3)
- (ii) What are Double displacement reactions? Give two examples. (2)

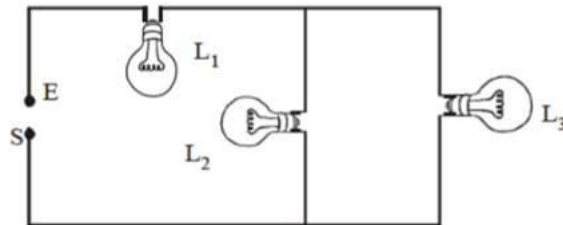
OR

- (i) Three liquids are given to you. One is hydrochloric acid; another is sodium hydroxide and the third is a sugar solution. How will you identify them? You have only turmeric which you could use as an indicator. (3)
- (ii) Blue litmus paper is dipped in a solution. It remains blue. What is the nature of the solution? Explain. (2)
35. How are modes for reproduction different unicellular and multicellular organisms? How does reproduction help in providing stability to the population of species?
36. (a) A slide projector is to project a (40 mm x 20 mm) slide on a 4 m x 4 m screen. Find the focal length of the convex lens used if the screen is 10 m away from the lens. (3)
- (b) Which of the following mirrors or lenses could produce a virtual image? Explain. (2)

- (i) Concave lens
- (ii) Convex lens
- (iii) Convex mirror

OR

- (a) In the figure, three similar lamps L_1 , L_2 , and L_3 connected across a power supply. If the Lamp L_3 fuses, how will the light emit by L_1 and L_2 change? (3)



- (b) A conducting loop carrying a current I is placed in a uniform magnetic field pointing out of the plane as shown in the Figure. Determine whether the loop will tend to expand or contract and give a reason for your answer. (2)

