Roll Number		

SET A

INDIAN SCHOOL MUSCAT
FINAL EXAMINATION
SCIENCE

CLASS: X | Subject Code: 086 | Time Allotted: 3 Hrs.

23.01.2021 | Max. Marks: 80

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 - question no. 1 to 20 - all questions and parts thereof 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 - question no. 21 to 26 are short answer type questions, carrying 2 marks each. Answers to these questions should in the range of 30 to 50 words.*

(iv) *Section–C - question no. 27 to 33 are short answer type questions, carrying 3 marks each. Answers to these questions should 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. Answer 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 that is oxidised and reduced in the reaction: 1
$CuO\ (s) + Zn\ (s) \rightarrow Cu\ (s) + ZnO\ (s)$

OR

Write the balanced chemical equation for the reactions that takes place during respiration.

2. A green layer is gradually formed on a copper plate left exposed to air for a week in a bathroom. What could this green substance be? 1

3. How will you test for the gas which is liberated when hydrochloric acid reacts with an active metal? 1

4. Why does the sky appear dark to astronauts? 1

5. What is the nature of the image formed by a concave mirror if the magnification produced by the mirror is +3? 1

6. Between which two points of a concave mirror should an object be placed to obtain a magnification of -3? 1

OR

Find the power of a concave lens of focal length 2m.

7. When is the force experienced by a current carrying conductor placed in a magnetic field largest? 1

8. Why don't two magnetic lines of force intersect each other? 1

9. What is the commercial unit of electric energy? Represent it in terms of joules. 1

OR

Write the function of voltmeter in an electric circuit?

10. The wall of trachea is supported by cartilage rings. Give reason. 1

11. Mention any two methods used by plants to get rid of excretory products. 1

OR

Why is blood circulation in human heart called double circulation?

12. Give reason why a food chain cannot have more than four trophic levels. 1

OR

Define trophic level in a food chain.

13. Explain the process of breakdown of glucose in a cell 1
    (i) In the presence of oxygen,
    (ii) In the absence of oxygen.

For question numbers 14, 15 and 16, two statements are given- one labeled Assertion (A) and the other labeled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below:

a) Both A and R are true, and R is 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.

14. Assertion: According to Mendeleev, periodic properties of elements are periodic function of their atomic number. 1
    Reason: Atomic number is equal to number of protons.

15. Assertion: A network of food chain existing together in an ecosystem is known as food web. 1
    Reason: An animal like kite cannot be a part of food web.

16. Assertion: Mendel choose pea plants for his experiment 1
    Reason: Pea plants were the only plants he could gather for his experiment.

Answer Q. No 17 - 20 contain five sub-parts each. You are expected to answer any four subparts in these questions.

17. Respiratory disease causes an immense worldwide health burden. It is estimated that 235 million people suffer from asthma, more than 200 million people have chronic obstructive pulmonary disease (COPD), 65 million endure moderate-to-severe COPD , more than 100 million adult population experience sleep disordered breathing, 8.7 million people develop tuberculosis (TB) annually , millions live with pulmonary hypertension and more than 50 million people struggle with occupational lung diseases. At least 2 billion people are exposed to the toxic effects of biomass fuel consumption, 1 billion are exposed to outdoor air pollution and 1 billion are exposed to tobacco smoke. Each year, 4 million people die prematurely from chronic respiratory disease. Infants and young children are particularly susceptible. Nine million children under 5 years of age die annually and lung diseases are the most common causes of these deaths. Pneumonia is the world's leading killer of young children. Asthma is the most common chronic disease, affecting about 14% of children globally and is still rising. COPD is the fourth leading cause of death worldwide and the numbers are growing. The most common lethal cancer in the world is lung cancer, which kills more than 1.4 million people each year, and the numbers are growing. Respiratory tract infections caused by influenza kill 250 000–500 000 people and cost 71–167 billion US dollars annually. Respiratory infections are ranked as the greatest single contributor to the overall burden of disease in the world. 1x4

i) Which one of the following is not a respiratory disease?

a) Asthma b) Pneumonia c) Typhoid d) Emphysema

ii) Smoking will affect

a) Transport of oxygen by red blood cells

b) Transport of carbon di oxide by blood plasma

c) Availability of oxygen to tissues

d) Both a and c

iii) The common respiratory illness children suffer from is

a) Emphysema b) Lung cancer

c) Pneumonia d) Cholera

iv) The respiratory disorder in which inflammation of air sacs in lungs takes place is called:

a) Pneumonia b) Asthma c) Bronchitis d) None of these

v) _____ is the main reason for increasing respiratory illness.

a) Sedentary life style b) use of automobiles

c) lack of exercise d) all the above

18. Observe the data given in the table and answer questions based on table and related concepts. Ionisation energy is energy required to remove an electron from an isolated gaseous atoms. It helps to decide tendency to lose electrons. Electronegativity depends upon tendency to attract shared pair of electron towards itself. 1x4

ELEMENTS Group 1	IONISATION ENERGY	ELEMENTS Group 17	ELECTRO NEGATIVITY
Li	520KJ/ mol	F_2	4.0
Na	496KJ/mol	Cl_2	3.2
K	419KJ/mol	Br_2	2.9
Rb	403KJ/mol	I_2	2.6
Cs	374KJ/mol		

i) Arrange group 1 elements in the increasing order of reactivity.

ii) Name the liquid element in group 17

iii) Which is the most electronegative element in group 17?

iv) What happens to the tendency to lose electrons down the group?

v) What type of compound will be formed between Na and Br_2?

19. Read the following and answer any four questions from 19 (i) to 19 (v) 1x4

A continuous conducting path between the terminals of a source of electric energy and other electrical components along which the electric current flows is called an electric circuit. Types of electric circuits.1.Closed electric circuit 2. Open circuit.

Electric current is expressed by the amount of charge flowing through a particular area in unit time. In an electric circuit the direction of electric current is taken as opposite to the direction of the flow of electrons.

The SI unit of electric charge is coulomb. Which is equivalent to the charge contained in nearly 6 X 10^{18} electrons. Ammeter is a device used to measure electric current in an electric circuit.

(i) A charge of 100 C flows through a bulb in 5 minutes. How much current is flowing through the bulb?

(a) 500 A (b) 100 A (c) 20 A (d) 0.3 A

(ii) A circuit has a charge of 21C moving through it in 30 s. Which electrical component in the circuit, if present, will show the current?

(a) Voltmeter will show a current of 6 A (b) Ammeter will show a current of 0.7 A

(c) Rheostat will show a current of 0.7 A (d) Resistor will show a current of 0.35 A

(iii) How many electrons can pass through an electric lamp in one minute if the current is 300mA? $(1.6 \times 10^{-19} C)$

(a) 1.125×10^{20} (b) 1.125×10^{19}

(c) 1.125×10^{17} (d) 3.125×10^{20}

(iv) A conducting wire carries 10^{21} electrons in 4 minutes. What is the current flowing through the wire?

(a) 40 A (b) 7 A (c) 4 A (d) 0.7 A

(v) A current of 0.5A is drawn by a filament of an electric bulb for 10 minutes. Find the amount of electric charge that flows through the circuit.

(a) 150C (b) 300C (c) 600C (d) 500C

20. Read the following and answer any four questions from 20(i) to (v) 1x4

Light scattered by fine particles whose size is comparable to the wavelength of light. This can be demonstrated by a simple experiment. A few drops of sulphuric acid are added to a glass tank containing sodium thiosulphate solution. An intense beam of white light is passed through the tank and the emergent beam allowed falling on a screen. Due to the action of the acid, Sulphur is precipitated in the form of tiny particles. The emergent beam is found to be orange – red in colour, indicating that the blue and violet colour are removed from white light by scattering.

(i) The danger signals installed at the top of tall buildings are red in colour. These can be easily seen from a distance because among all other colours, the red light seen from a distance because among all other colours, the red light

(a) is scattered the most by smoke or fog (b) is scattered the least by smoke or fog
(c) is absorbed the most by smoke or fog (d) moves fastest in air

(ii) The clear sky appears blue because

(a) blue light gets absorbed in the atmosphere
(b) ultraviolet radiations are absorbed in the atmosphere
(c) blue lights gets scattered more than the lights of other colours by the atmosphere
(d) lights of all other colours is scattered more than the violet and blue colour lights by the atmosphere.

(iii) 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

(iv) Scattering caused by microscopic solid particles suspended in a liquid or gas is called

(a) Dispersion (b) Atmospheric refraction
(c) Raman effect (d) Tyndall effect

(v) Cloud appears white as

(a) light is scattered the least (b) red colour is scattered the most
(c) Blue colour is scattered the most (d) all the colours of the white light are scattered away

SECTION - B

21. a) Give the function of network of capillaries on alveoli. 2
b) Mention the two significance of transpiration.

OR

a) What are the two important functions of kidney?
b) Why capillaries are thin walled?

22. State the events occurring during the process of photosynthesis. 2

23. (a) Explain the formation of ionic compound CaO with electron dot structure. 2
(b) Name the ions present in this compound.

OR

The way, metals like sodium, magnesium and iron react with air and water is an indication of their relative positions in the Reactivity Series. Is this statement true? Justify your answer with examples.

24. Select the alkene , alkyne from the following: 2
C_6H_{14}, C_3H_4 , C_2H_4 , C_2H_6, C_4H_8 , C_5H_8

25. Define the term dispersion of white light. What is the cause of dispersion of white light? 2
Name the colour of light which bends (i) the most, (ii) the least, while passing through a glass prism.

26. How can three resistors of resistances 2 Ω, 3 Ω and 6Ω be connected to give a total resistance of 2
(a) 4 Ω, (b) 1 Ω?

SECTION – C

27. The gene type of green stemmed tomato plants is denoted as GG and that of purple stemmed tomato plants as gg. When these two are crossed: 3
a) What color of stem would you expect in F1 progeny?
b) Give the percentage of purple stemmed plants if F1 are self-pollinated?
c) In what ratio would you find the gene types GG and Gg in F2 progeny?

OR

Only variation that confer and advantage to an individual organism will survive in a population. Do you agree with this statement? Justify your answer with an example.

28. a) Write the harmful effects of ozone depletion 3
b) What will happen if decomposers are not there in the environment?

29. Explain where and how urine is produced? 3

30. (a) Write the essential condition for the following reaction to take place: 3
$2AgBr \rightarrow 2\ Ag + Br_2$
Write one application of this reaction.
(b) What happens when water is added to quicklime? Write chemical equations.

31. A student was given Mn, Zn, Fe and Cu metals. Identify which of them :- 3
a) Will not display H_2 from dil. HCL
b) Will react only with steam to give H_2 (g)
c) Will give H_2 with 5% HNO_3
Write the chemical reaction involved.

32. a) State the reasons why carbon can neither form C^{4+} cation nor C^{4-} anions, but forms covalent compounds. 3
b) Give the structural difference between saturated hydrocarbons and unsaturated

hydrocarbons with two examples each

c) Identify the functional group present in;

(i) HCHO CH_3COOH

33. (a) Draw a ray diagram to show the refraction of light through a glass prism. 3

(b) Mark on it (i) the incident ray. (ii) The emergent ray and (iii) the angle of deviation.

SECTION - D

34. (a) Three resistors of 5 Ω, 10 Ω and 15 Ω are connected in series and the combination is connected to battery of 30 V. Ammeter and Voltmeter are connected in the circuit. Draw a circuit diagram to connect all the devices in proper correct order. What is the current flowing and potential difference across 10 Ω resistance? 5

(b) A set of 'n' identical resistors each resistance R are connected in series and the effective resistance is found to be 'X'. When these are connected in parallel, the effective resistance is found to be 'Y'. Find the ratio of X and Y.

OR

(a) Draw the pattern of magnetic field lines through and around a current carrying loop of wire. Mark the direction of (i) electric current in the loop (ii) magnetic field lines.

(b) How would the strength of magnetic field due to current, carrying loop be affected if

(i) radius of the loop is reduced to half its original value?

(ii) strength of current through the loop is doubled?

35. (a) Write the formula and chemical name of bleaching powder. 5

(b) Write the equation to represent the preparation of the above salt.

(c) What is baking soda chemically called? Give reaction involved in its preparation. Write one of its uses.

OR

Dry pellets of a base X when kept in open absorbs moisture and turns sticky. The compound is also formed by Chlor-alkali process. Write chemical name and formula of X. Describe the Chlor-alkali process with balanced chemical equation. Name the type of reaction that occurs when X is treated with dil: HCl. Write the chemical equations.

36. a) Name the female reproductive part of a flower. Which part of a flower develops into a seed and a fruit? Where are the male germ cell and female gamete present in the flower? 5

b) Write the functions of secretions of prostate gland and seminal vesicle in humans. Name one sexually transmitted disease each caused due to bacterial infection and viral infection.

End of the Question Paper