

Roll Number

SET B



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 be 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 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. 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. Name the reducing agent in the following reaction: 1
 $3 \text{MnO}_2 + 4 \text{Al} \rightarrow 3 \text{Mn} + 2\text{Al}_2\text{O}_3$
- OR**
- Name the process in which gain of electrons takes place.
2. Name two substances which can be used as olfactory indicators. 1
3. Name a non-metal which is lustrous and sublimable. 1
4. Name the phenomena due to which we get light from the sun before sunrise 1
5. Define 1 dioptre of power of a lens. 1

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

OR

Find the focal length of a lens of power -2D.

7. What kind of magnetic field is produced by a current carrying solenoid? 1
8. State Fleming's Right hand rule. 1
- 9.. How is voltmeter connected in the circuit to measure the potential difference between two points? 1

OR

What happens to the resistance of a wire if it is made thinner?

10. Valves are present in the human heart. Why? 1
11. Name the following 1
- a) Cells that surround a stomata pore
 - b) Organism that cannot prepare their own food.

OR

How are viruses living when they do not show movements?

12. What is biological magnification? 1

OR

Why food chain consists of three or four steps only?

13. Explain the process of breakdown of glucose in a cell 1
- a) In the presence of oxygen,
 - b) 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: Greater number of individuals is present in lower trophic levels. 1
- Reason: The flow of energy is unidirectional.

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 dioxide 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 attack shared pair of electron towards itself.

1x4

ELEMENTS Group 1	IONISATION ENERGY	ELEMENTS Group 17	ELECTRO NEGATIVITY
Li	520 kJ mol ⁻¹	F ₂	4.0
Na	496 kJ mol ⁻¹	Cl ₂	3.2
K	419 kJ mol ⁻¹	Br ₂	2.9
Rb	403 kJ mol ⁻¹	I ₂	2.6
Cs	374 kJ mol ⁻¹		

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 Br₂?

19. **Read the following and answer any four questions from 19 (i) to 19 (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 to fall 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) violet and 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 equally away

20. **Read the following and answer any four questions from 20(i) to (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 6×10^{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 2C moving through it in 3 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 × 10⁻¹⁹C)
- (a) 1.125 × 10²⁰
 - (b) 1.125 × 10¹⁹
 - (c) 1.125 × 10¹⁷
 - (d) 3.125 × 10²⁰

(iv) A conducting wire carries 10²¹ 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

SECTION - B

21. Write any two differences between lymph and blood.

OR

Write any two differences between arteries and veins.

22. The rate of breathing in aquatic organisms is much faster than in terrestrial organisms. Give reasons

23. Which of the following listed metals can displace Zinc from its salt solution? Give reason of your answer along with chemical equation.
Copper, Lead, Magnesium and Silver.

OR

What are amphoteric oxides? Give one example with the help of a chemical equation.

24. What is homologous series of carbon compounds? Write the next homologue of C₂H₄.

25. What is meant by scattering of light? Use this phenomenon to explain why the clear sky appears blue?

26. An electric motor takes 5A from 220V line. Determine the power of the motor and the energy consumed in 2h.

SECTION - C

27. How did Mendel explain that "It is possible that a Trait is inherited but not expressed in an organism?" 3

OR

Only father is responsible for the sex of a new born child". Explain.

28. a. Differentiate between the food habits of organisms belonging to first and second trophic levels. 3
- b. Why are plastics non-biodegradable substance?
29. a. After a vigorous exercise, you may experience cramps in your leg muscles. Why does this happen? 3
- b. Veins and Arteries carry blood. Which of these carry blood
- i. Away from the heart
- ii. Back to the heart.
- c. Which of the organs performs the following functions in humans?
- i. Absorption of food.
- ii. Absorption of water.
30. (a) Write the electron dot structures for potassium and chlorine. 3
- (b) Show the formation of KCl by the transfer of electrons.
- (c) Name the ions present in this compound.
- (Atomic number of K= 19 and Cl=17)
31. (a) Define the term decomposition reaction. 3
- (b) Give an example each for thermal decomposition and electrolytic decomposition.
32. (a) What are covalent compounds? 3
- (b) Write any two differences between covalent and ionic compounds.
- (c) Draw the possible structures of isomers of butane.
33. (a) What is the cause of dispersion of white light through a glass prism? 3
- (b) Draw a labelled ray diagram to show the path of light when two identical glass prisms are arranged together in inverted position with respect to each other and a narrow beam of white light is allowed to fall obliquely on one of the faces of the prisms.

SECTION - D

34. (a) Two lamps, one rated at 40W – 220V and the other at 60W – 220V, are connected in parallel to the electric supply at 220V. 5
- (i) Draw a circuit diagram to show the connections.
- (ii) Calculate the current drawn from the electric supply source.
- (b) A battery of 9V is connected in series with resistors of 0.2Ω , 0.3Ω , 0.4Ω , 0.5Ω and 12Ω respectively. How much current would flow through the 12Ω resistor?

OR

(a) With the help of a diagram, explain the method of inducing electric current in a coil with a moving magnet. State the rule used to find the direction of electric current generated in the coil.
(b) Two circular coils P and Q are kept close to each other, of which coil P carries a current. What will you observe in Q?

(i) If current in the coil P is changed?

(ii) If both the coils are moved in the same direction with the same speed? Give reason.

35.

(a) State the colour of phenolphthalein in soap solution.

(b) Name the by-product of chlor-alkali process which is used for the manufacture of bleaching powder.

(c) Name the compound which is obtained from baking soda and is used to remove permanent hardness of water.

(d) Write the name of the acid and base from which the salt, Potassium sulphate is obtained.

OR

(a) A sulphate salt of Group 2 element of the periodic table is a white, soft substance, which can be moulded into different shapes by making its dough. When this compound is left in open for some time, it becomes a solid mass and cannot be used for moulding purposes.

Identify the sulphate salt. Why does it show such behaviour? Give the reaction involved.

(b) What is water of crystallisation? Give one example.

36.

a) Name the hormones, which is responsible for dramatic changes in appearance in girls as well as in boys when they approach 10-12 years of age.

b) Why is fertilization not possible without pollination? Mention any two advantages of vegetative propagation in plants.

c) List two functions of ovary of human female reproductive system.

End of the Question Paper