Roll Number		

SET A

INDIAN SCHOOL MUSCAT
FINAL EXAMINATION
SCIENCE

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

18.11.2019 | Max. Marks: 80

General Instructions:

- The question paper comprises three sections – A, B and C. Attempt all the sections.
- All questions are compulsory.
- Internal choice is given in each section.
- All questions in Section A are one-mark questions comprising MCQ, VSA type and assertion-reason type questions. They need to be answered in one word or in one sentence.
- All questions in Section B are three-mark, short-answer type questions. These need to be answered in about 50 - 60 words each.
- All questions in Section C are five-mark, long-answer type questions. These need to be answered in about 80 – 90 words each.
- This question paper consists of a total of 30 questions.

SECTION - A

1 Define Ionic bond. 1

2 What happens to the atomic size as we move down the group in the modern periodic table? 1

3 We, in our daily lives, use energy from various sources for doing work. We use diesel to run our trains. We use electricity to light our street-lamps. Or we use energy in our muscles to cycle to school.

The muscular energy for carrying out physical work, electrical energy for running various appliances, chemical energy for cooking food or running a vehicle all come from some source. We need to know how do we select the source needed for obtaining the energy in its usable form.

For example, while selecting a fuel, we have to consider how much heat does it release on burning. Many sources of energies cause environmental pollution. Given the range of fuels we have today, there are certain factors which would limit our choices when it comes to a particular task like cooking our food. We might select a fuel depending on the work to be done. For example, we might choose one fuel for cooking and another for heating the room in winter. We could then say that a good source of energy would be one which would do a large amount of

work per unit volume or mass, be easily accessible, be easy to store and transport, and perhaps most importantly, be economical.

3 a) Name the kind of energy possessed by wind. 1

3 b) Define fuel. 1

3 c) State any one reason to justify that LPG is considered as an ideal fuel. 1

3 d) State any one advantages of charcoal over wood. 1

4 **Answer questions numbers 4(a) – 4(d) on the basis of your understanding of the following paragraph and the related studied concepts.**

Thyroxine is produced by the thyroid gland, which stimulates the basal metabolic rate. It controls the speed at which oxygen and food products react to release energy for the body to use. Thyroxine plays an important role in growth and development. Thyroxine levels are controlled by negative feedback.

The hypothalamus and pituitary gland have important roles in detecting and controlling thyroxine levels.

a) Low thyroxine levels in the bloodstream stimulate the hypothalamus to **release** TRH (Thyrotropin releasing hormone) and this causes the pituitary to release TSH (Thyroid stimulating hormone) so the thyroid releases more thyroxine. So blood levels return to normal.

b) Normal thyroxine levels in the bloodstream **inhibit TRH** release from the hypothalamus and this inhibits the release of **TSH** from the pituitary, so less thyroxine is released from the thyroid gland and normal blood levels are maintained.

This is an example of negative feedback.

Adrenaline is produced by the adrenal glands in times of fear or stress. It targets vital organs, increases the heart rate and boosts the delivery of oxygen and glucose to the brain and muscles, preparing the body for 'flight or fight'

4 (a) Refer the paragraph above explaining thyroid functioning and feedback mechanisms 1

Identify the appropriate example for feedback mechanism associated with regulation of hormone production and endocrine gland from the following

(i) Regulation of sugar associated with the production of insulin by Pancreas

(ii) Puberty changes in male associated with the production testosterone by testis

(iii) Puberty changes in female associated with the production oestrogen by ovary

(iv) Growth in human associated with the production of growth hormone by pituitary

4 (b) Identify the location of adrenal glands in the human body. 1

(i) Above surface of testis (ii) Above surface of ovary

(iii) Above surface of pituitary (iv) Above surface of kidney

4 (c) Name the deficiency disease associated with thyroxine. 1

(i) Diabetes (ii) Dwarfism (iii) Goiter (iv) Blood pressure

4 (d) From the reference given above Identify the wrong statement from the following. 1

(i) Pituitary hormone regulate the production of TRH

(ii) TSH is produced by the Pituitary

(iii) Iodine is essential for the normal functioning of thyroid gland

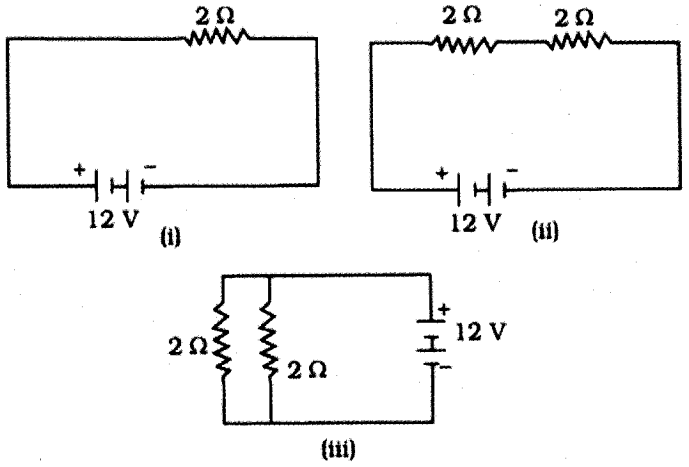
(iv) Pituitary and hypothalamus are located in the brain

5 An electric iron draws a current 4 A when connected to a 200 V mains. Its resistance must be 1

(i) 1000 ohm (ii) 50 ohm (iii) 44 ohm (iv) 25 ohm

OR

In the following circuits, heat produced in the resistor or combination of resistors connected to a 12 V battery will be



(i) Same in all cases (ii) Minimum in case (i)

(iii) Maximum in case (ii) (iv) Maximum in case (iii)

6 A piece of glass when immersed in a transparent solution of refractive index 1.48 becomes almost invisible. The refractive index of the glass used is 1

(a) 0 (b) 1 (c) 1.48 (d) Infinite

(b)

7 If the magnification of a lens has a negative value, the image is 1

a) Real and inverted b) Virtual and enlarged

c) Erect and diminished d) None of these

8 The number of chromosomes in parents and offspring of a particular species remain constant due to 1

a) Doubling of chromosomes after zygote formation
b) Halfing of chromosomes during gamete formation
c) Doubling of chromosomes after gamete formation
d) Halfing of chromosomes after gamete formation

OR

The trait which is present in the parent, absent in the hybrid but reappears in F_2 generation is

a) Mutation b) Incomplete dominance c) Dominant d) Recessive

9 Which of the following are present in a dilute aqueous solution of hydrochloric acid? 1

a) $H_3O^+ + Cl^-$ b) $H_3O^+ + OH^-$ c) $Cl^- + OH^-$ d) Unionized HCl

10 What happens when calcium is treated with water? 1

a) It does not react with water.
b) It reacts violently with water.
c) It reacts less violently with water.
d) Bubbles of hydrogen gas formed stick to the surface of calcium.

a) (i) and (iv) b) (ii) and (iii) c) (i) and (ii) d) (iii) and (iv)

11 Where would you locate the element with electronic configuration 2, 8 in the modern periodic table? 1

a) Group 8 b) Group 2 c) Group 18 d) Group 10

12 The element with atomic number 14 is hard and forms acidic oxide and a covalent halide. To which of the following categories does the element belong? 1

a) Metal b) Metalloid c) Non- metal d) Left- hand side element

OR

An electrolytic cell consists of:

a) Positively charged cathode b) Negatively charged anode
c) Positively charged anode d) Negatively charged cathode

a) (i) and (ii) b) (iii) and (iv) c) (i) and (iii) d) (ii) and (iv)

For question numbers 13 and 14, two statements are given- one labeled *Assertion* (A) and the other labeled *Reason* (R). Select the correct answer to these questions from the codes (i), (ii).(iii) and (iv) 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

13 **Assertion:** (A) The elements occupy different position in group and period in a periodic table. 1
Reason : (R) The reason is that elements in the same group have same chemical and physical properties.

14 Assertion (A): When resistors are connected end to end consecutively, they are said to be in series. 1

Reason (R): When resistors are connected in series the effective resistance decreases.

SECTION - B

15 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'. Write balanced chemical equations for Chlor alkali process. Name the type of reaction occurs when 'X' is treated with hydrochloric acid and write the chemical equation also. 3

16 A metal (E) is stored under kerosene. When a small piece of it is left open in the air, it catches fire. When the product formed is dissolved in water, it turns red litmus to blue. 3

a) Name the metal (E).
b) Write the chemical equation for the reaction when metal catches fire.
c) Explain the process by which the metal is obtained from its molten chloride.

OR

Give reasons for the following:

a) Platinum, gold and silver are used to make jewellery.
b) Aluminium is highly reactive metal, yet it is used to make utensils for cooking.
c) Carbonate and sulphide ores are usually converted into oxides during the process of extraction.

17 a) Draw the structural formulae of ethene and Propanal. 3

b) On dropping a small piece of sodium in a test tube containing carbon compounds 'X' with molecular formula C_2H_6O, a brisk effervescence is observed and a gas 'Y' is produced. On bringing a burning splinter at the mouth of test tube, the gas evolved burns with pop sound. Identify 'X' and 'Y'. Also write the chemical equation for the reaction.

18 Write a brief note on lymphatic system in human being. State two major functions of lymph. 3

OR

There is no mixing of oxygenated and deoxygenated blood in the blood circulatory system of human being. The circulatory system in human being is called double circulation. If so,

What is double circulation? How does it differ from single circulation in fishes?

19 a) "If we excessively use pesticides to protect the crop from diseases, then it may cause long term damage to mankind." Justify this statement. 3

b) Explain why the flow of energy in the ecosystem is unidirectional?

20 A blue colour flower plant denoted by 'BB' is crossed with a white colour flower plant denoted by 'ww' 3

a) State the colour of the flower we would expect in their F_1 progeny
b) Write the percentage of plants bearing white flower in F_2 generation when the flower of F_1 plants were self- pollinated.
c) State the expected ratio of the genotype BB : Bw : ww in the F_2 progeny (use Punnet squire)

21 3

a) What is a neuromuscular junction?

b) Give a general scheme of how nerve impulse travel in the body.

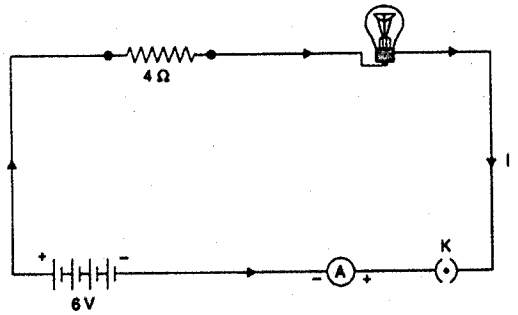
22 a) Draw the ray diagram when a convex lens forms a real image, which is of same size as that of the object. 3

b) Identify the spherical lens which forms virtual, erect and diminished image of the object on the same side of the lens.

c) Mention the object position in the above case.

23 a) State Ohm's law. 3

b) An electric lamp whose resistance is 20 ohm and a conductor resistance 4 ohm are connected to a 6 V battery as shown in the figure. Calculate the total resistance of the circuit and the current through the circuit.



24 a) What is the cause of dispersion of white light through a glass prism? 3

b) With the help of a diagram explain how recombination of white light takes place after passing through two glass prisms.

OR

a) Explain the formation of rainbow with the help of a diagram.

b) Draw a ray diagram to show the refraction of light through a glass prism.

SECTION- C

25 a) Why do we classify elements? 5

b) What were the two criteria used by Mandeleev in creating his periodic table?

c) Why did Mandeleev leave some gaps in his periodic table?

d) In Mandeleev's periodic table, why was there no mention of noble gases like helium, neon and argon?

e) Would you place two isotopes of chlorine Cl- 35 and Cl- 37 in different slots because of their different atomic masses or in the same slot because of their same chemical properties? Justify your answer.

OR

Study the following table in which positions of six elements A, B ,C ,D, E and F are shown as they are in the Modern Periodic Table:

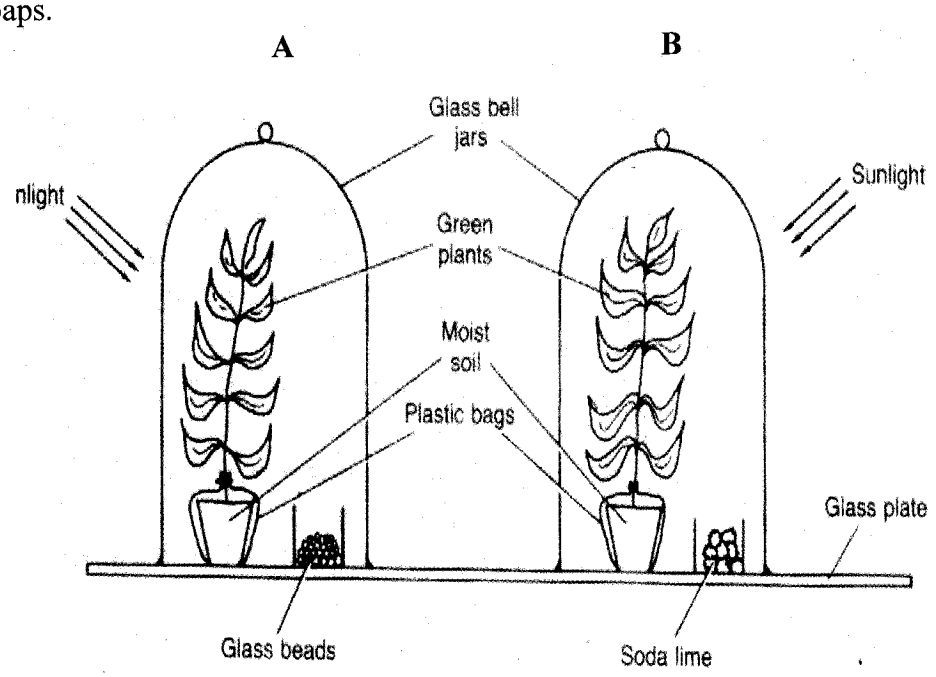
Group / Period	1	2	3-12	13	14	15	16	17	18
2		A					B		C
3	D				E				F

On the basis of the above table, answer the following questions:

a) Name the element which will form only covalent compounds.
b) Which element is a metal with valency one?
c) Which element is a non- metal with valency two?
d) Out of D and E, which has a bigger atomic radius and why?
e) Write the formula of the compound formed when B combines with D.

26 Soaps and detergents are both types of salts. State any two differences between them. Write the mechanism of the cleansing action of soaps. Why do soaps not form lather (foam) with hard water? Mention any one problem giving reason that arises due to the use of detergents instead of soaps. 5

27 5



Two sets of apparatus (A&B) were used to investigate the process of photosynthesis. Before the apparatus was setup both the plants were kept in the dark for 48hrs.

a) Why were the plants kept in the dark for 48 hrs before starting the investigation?

b) Which environmental factor necessary for photosynthesis was missing from one of the bell jars?

c) Write any two important steps in the event of photosynthesis.

d) What is the importance of the missing environmental factor?

28 5

a) Distinguish between pollination and fertilization.
b) Mention the site and product of fertilization in a flower.
c) Draw a neat labeled diagram of a pistil showing pollen tube growth and its entry into the ovule.

OR

a) How does the embryo get nourishment inside the mother's body?
b) What are the various ways to avoid pregnancy? Briefly explain any three methods.

29 A person can comfortably read the number of a bus parked 7 m away from him but has difficulty 5

to read a book.

a) Name the defect of vision the person is suffering from and list its two possible causes.
b) Mention the type of lens used by him for the correction of the defect.
c) Draw the ray diagram for the correction of this defect.

30 a) State the working principle of a generator 5
b) Explain the construction and working of an ac generator with the help of a labeled diagram.

OR

a) With the help of a diagram, describe an experiment to show that a change in current flowing through a coil induces an electric current in the neighbouring coil.
b) Define the phenomenon which induces the current in the coil.
c) State the rule that gives the direction of the current hence produced in the coil.

End of the Question Paper