Roll Number		

SET B

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 are to be answered in one word or in one sentence.
- All questions in Section B are three-mark, short-answer type questions. These are 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 allotropy. 1

2 How does valency vary in a (i) period on going from left to right, (ii) group? 1

3 The Sun has been radiating an enormous amount of energy at the present rate for nearly 5 billion years and will continue radiating at that rate for about 5 billion years more. Only a small part of solar energy reaches the outer layer of the earth's atmosphere. Nearly half of it is absorbed while passing through the atmosphere and the rest reaches the earth's surface. . Solar cookers and solar water heaters use this property in their working. Some solar cookers achieve a higher temperature by using mirrors to focus the rays of the Sun. Solar cookers are covered with a glass plate. Recall what we have learnt about the green-house effect

3 a) What are renewable sources of energy?

3 b) Name two elements that are used in fabricating solar cells.

3 c) Why a solar cooker painted black form inside?

3 d) Write any one limitations of using solar panels to harness energy.

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.

(i) 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.

(ii) 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

a) Regulation of sugar associated with the production of insulin by Pancreas

b) Puberty changes in male associated with the production of testosterone by testis

c) Puberty changes in female associated with the production of oestrogen by ovary

d) 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

a) Above surface of testis b) Above surface of ovary

c) Above surface of pituitary d) Above surface of kidney

4 c) Name the deficiency disease associated with thyroxine 1

a) Diabetes b) Dwarfism c) Goiter d) Blood pressure

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

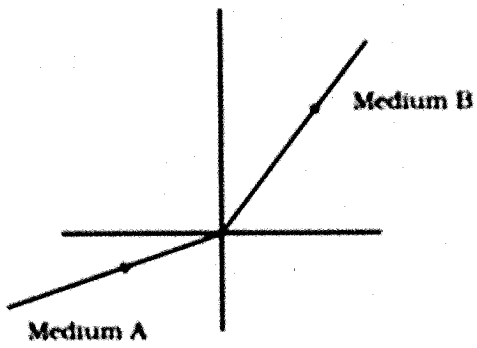
a) Pituitary hormone regulate the production of TRH

b) TSH is produced by the Pituitary

c) Iodine is essential for the normal functioning of thyroid gland

d) Pituitary and hypothalamus are located in the brain

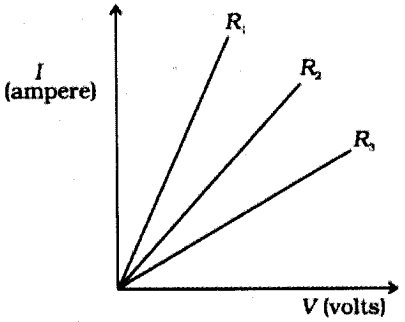
5 A light ray enters from medium A to medium B as shown in figure. 1



The refractive index of medium B relative to medium A will be

a) Greater than unity b) Less than unity c) Equal to unity d) zero

6 A student carries out an experiment and plots the V-I graph of three samples of nichrome wire with resistances R_1, R_2 and R_3 respectively as shown in figure. 1



Which of the following is true?

a) $R_1 = R_2 = R_3$ b) $R_1 > R_2 > R_3$ c) $R_3 > R_2 > R_1$ d) $R_2 > R_3 > R_1$

OR

In an electrical circuit two resistors of 2 ohm and 4 ohm respectively are connected in series to a 6 V battery. The heat dissipated by the 4 ohm resistor in 5 s will be

a) 5 J b) 10 J c) 20 J d) 30 J

7 In order to obtain a magnification of **—3** with a convex lens, the object should be placed 1

a) between optical centre and F b) between F and 2F c) at 2F d) beyond 2F

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 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

10 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

11 What happens when calcium is treated with water? 1

(i) It does not react with water.
(ii) It reacts violently with water.
(iii) It reacts less violently with water.
(iv) 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)

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:
(i) Positively charged cathode (ii) Negatively charged anode
(iii) Positively charged anode (iv) 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

i) Both A and R are true and R is correct explanation of the assertion.
ii) Both A and R are true but R is not the correct explanation of the assertion.
iii) A is true but R is false.
iv) A is false but R is true

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

14 Assertion (A): Alloys are commonly used in electrical heating devices, like electrical iron, toaster etc. 1

Reason (R) : Alloys have higher resistivity than its constituent metals.

SECTION - B

15 Complete the following chemical equations and write the chemical name of the products formed. 3

a) $CH_2 = CH_2 + H_2$ Nickel catalyst $\rightarrow$
b) $CH_3.CH_2.OH + CH_3.COOH$ Acid $\rightarrow$
c) $CH_3.COOH + NaOH \rightarrow$

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 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

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) Which organisms belongs to third and fourth trophic levels in the food chain comprising the following: Rats, Plants, Hawk and snakes 3

b) Which category of organisms forms the starting point of a food chain? Mention the percentage of light energy that plants can utilize.

c) Define trophic levels.

20 The genotype of green stemmed tomato plant is denoted as 'GG' and that of purple stemmed tomato plant as 'gg'. When these two are crossed 3

a) What colour of stem would you expect in their F_1 progeny?
b) Give the percentage of purple stemmed plants if F_1 plants are self- pollinated.
c) Give the genotypic and phenotypic ratio in the F_2 progeny.

21 a) Draw a neat labeled diagram for a typical neuron. 3

b) Hind brain consists of three parts. What are they? Mention the specific function of any two of its parts.

22 Give reason: 3

a) Light of red colour is used for danger signals.
b) Stars appear to twinkle. While planets don't twinkle.

OR

a) A star appears slightly higher than its actual position in the sky. Give reason.
b) What is the colour of clear sky during day time? Give reason.

23 a) Write any two factors on which resistivity of a conductor depends. 3
b) How can three resistors of resistance 2 ohm, 3 ohm and 6 ohm be connected to give a total resistance of 4 ohm? Draw the circuit diagram and show the calculation of resistance.

24 a) Draw the ray diagram for a convex lens when it forms a virtual image of the object placed in front of it. 3
b) Find the focal length of a lens of power – 2 D. What type of lens is this?

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

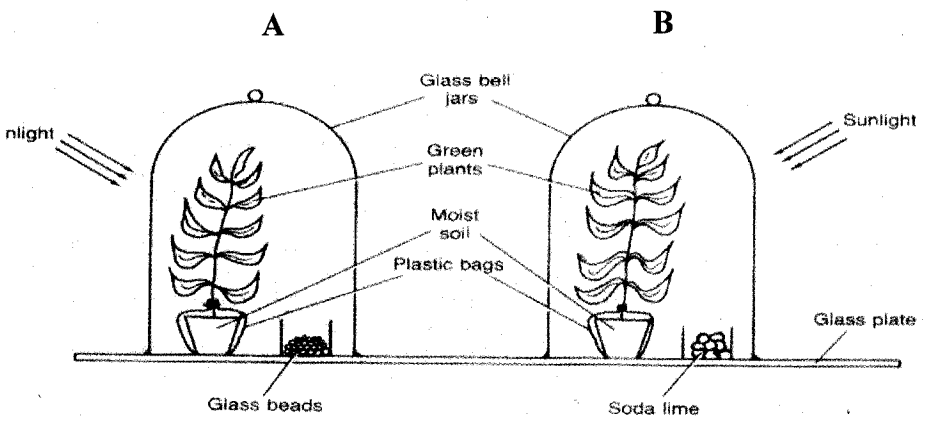
Study the following table in which positions of six elements A, B ,C ,D, E and F are shown as they are in the Modern Periodic Table:

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?
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



a) 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.
b) Why were the plants kept in the dark for 48 hrs before starting the investigation?
c) Which environmental factor necessary for photosynthesis was missing from one of the bell jars?
d) Write any two important steps in the event of photosynthesis.
e) What is the importance of the missing environmental factor?

28 a) Distinguish between asexual reproduction and sexual reproduction. 5
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 student sitting at the back bench has difficulty to see what is written on the board: 5

a) Name the defect of vision the student 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) Explain with the help of an activity, the force experienced by a current carrying conductor placed in a magnetic field. 5

b) State the rule using which the direction of force can be identified.

c) Write the condition for the force experienced by the current carrying conductor in the uniform magnetic field to be (i) maximum and (ii) minimum.

OR

a) State the working principle of a DC motor

b) Explain the working of a DC motor with the help of a labelled diagram.

End of the Question Paper