Roll Number		

SET A

INDIAN SCHOOL MUSCAT
FIRST PRE-BOARD EXAMINATION
SCIENCE

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

18.01.2020 | 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 are to be answered in about 80 – 90 words each.
- This question paper consists of a total of 30 questions.

SECTION - A

1 Lithium, sodium and potassium form a Dobereiner's triad. The atomic masses of Li and K are 7 and 39 respectively. Predict the atomic masses of Na. 1

2 What is meant by sustainable management of natural resources? Why reuse is considered better than recycle? 1

3 **Answer question numbers 3(a) - 3(d) on the basis of your understanding of the following paragraph and the related studied concepts.**

A number of different energy sources are used every day. Where does this energy come from? Burning of fossil fuel is a main energy source. Sources other than this fossil fuel are known as alternative energy sources and there are several of them being used every day. Windmills work in the same manner as a waterwheel. For many years, windmills were usually used mainly for milling grain, pumping water, or both. Today, though, all of that has changed. Windmills are used as wind turbines that can generate electricity. As the wind propels the blades, energy is created and stored to be used to perform work. As long as there is movement, energy can be produced, and the wind is an excellent alternative energy source. In many parts of the Midwest where there is an abundance of wind, energy is produced for homes and businesses. The internal heat of the earth is another energy source. The interior of the earth is very hot as is evidenced by hot water or

steam coming out of the ground in certain places on the Earth. The earth's internal heat is called geothermal energy. Geothermal energy can be used to heat homes and produce electricity. There are homes in Boise, Idaho that have been heated solely by hot springs since the 1890's. Also at the Geysers in California, steam drives turbines that generate electricity. This steam comes from underground water that is heated by geothermal energy. Every day the sun provides energy. Solar energy is often thought to just be sunlight. Sunlight is full of energy. It is the sunlight that gives water the energy to evaporate and rise into the atmosphere. People are finding new ways to harness the power of sunlight. One major way is to trap or concentrate sunlight with the use of solar panels. This trapped sunlight can be used to heat homes and water. Also solar cells are devices that convert sunlight into electric energy.

3(a) What are sources of energy other than fossil fuel called? 1

3(b) What is the earth's internal heat called? 1

3(c) Which device converts sunlight into electric energy? 1

3(d) Which is the tool used to trap or concentrate sunlight to be used for energy? 1

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

Metals occur in nature in the free as well as in the combined state. The less reactive metals are generally found in the free state. Most of the metals, however, are found in the combined form as minerals. The minerals from which metals can be obtained on a commercial scale are called ores. In other words, the minerals from which metals can be extracted profitably are called ores. Thus, bauxite ($Al_2O_3.2H_2O$) and clay ($Al_2O_3.2SiO_2.2H_2O$) are minerals of aluminium. However, it is bauxite that is chiefly used to obtain aluminium commercially. So, bauxite, and not clay, is an ore of aluminium.

4(a) Which metal occurs in native state? 1
(a) Silver (b) Copper (c) Zinc (d) Iron

4(b) Write the name of the sulphide ore of mercury? 1
(a) Galena (b) Cinnabar (c) Bauxite (d) Haematite

4(c) 1
Which is the most abundant metal on the earth's crust
Iron (b) Copper (c) Silver (d) Aluminium

4(d) The process of removing impurities from ore is called 1
(a) metallurgy (b) gangue (c) calcination (d) enrichment of ore

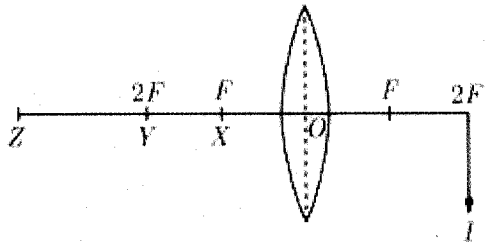
5 A wire of resistance 4Ω is stretched twice its original length. What is the new resistance of the wire. 1
(a) 1 Ω (b) 8 Ω (c) 12 Ω (d) 16 Ω

OR

In a milliammeter, there are 20 divisions between 400 mA mark and 500 mA mark. The least count of the milliammeter is

(a) 0.5 mA (b) 5 mA (c) 10 mA (d) 50 mA

6 A student wants to produce an image I by a convex lens in a position as shown in the adjoining figure. He should place the object. 1



(a) between O and X (b) between X and Y (c) at Y (d) between Y and Z

7 A spherical mirror and a thin spherical lens have each a focal length of -15cm. The mirror and lens are likely to be 1

(a) Both concave
(b) Both convex
(c) The mirror is concave and the lens is convex
(d) The mirror is convex and the lens is concave

8 In the experimental setup to show that carbon dioxide is given out during respiration the level of water in the delivery tube (the end that is immersed in water) show a 1

a) Gradual fall b) Rise and fall alternately c) Rapid fall d) Rise

OR

In binary fission the parent cell divides by the process

a) The nucleus and cytoplasm divides at the same time
b) The nucleus and cytoplasm do not divides
c) The nucleus divides first followed by the cytoplasm
d) The cytoplasm divides first followed by the nucleus

9 When we observe the slide of epidermal leaf peel we find that the inner wall of the guard cell in contact with the stomatal pore are 1

a) Very thick b) Very thin c) Moderately thick d) Moderately thin

10 The part of the seed which is also known as embryonic seed leaf 1

a) Embryo b) Cotyledon c) Plumule d) Radicle

11 Choose the incorrect statement about insulin 1

a) It is produced from pancreas
b) It regulate growth and development of the body
c) It regulate blood sugar level
d) Insufficient secretion of insulin will cause diabetes

12 An element "X" is soft and can be cut with a knife. This is very reactive in air and cannot be kept open in air.it reacts vigorously with water. Identify the element from the following: 1

(a) magnesium (b) sodium (c) phosphorous (d) calcium

OR

What are the constituents of alloy solder?
(a) Cu& Zn (b) Cu & Sn (c) Pb & Zn (d) Pb & Sn

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: Colour of copper sulphate does not change when an iron nail is kept in it. 1
Reason: Iron is more reactive than copper and it displaces it.

14 Assertion (A): Light travels faster in glass than in air. 1
Reason (R): Glass is denser than air.

SECTION – B

15 (a) What is rancidity? Mention any two ways by which rancidity can be prevented. 3
(b) Name the oxidising and reducing agent in the following reaction:
$2H_2S+SO_2 \rightarrow 2H_2O+3S$

16 A gas X reacts with lime water and forms a compound Y which is used as bleaching agent in the chemical industry .Identify X and Y . Give chemical equation of the reaction involved. 3

OR

What happens when a solution of baking soda is heated? Write the chemical equation for the same. Name the product which is responsible for making the bread or cake spongy and fluffy.

17 3

G→ P↓	1	2	3-12	13	14	15	16	17	18
1	A					B			C
2				D	E				F

Using the given part of periodic table, answer the following questions:
(a) Name the element which forms only covalent compounds?
(b) Name the element which is a metal with valency three.
(c) Out of D and E, which is bigger in size and why?

18 Differentiate between blood and lymph (any three relevant points each) 3

OR

Differentiate between arteries and veins (any three relevant points each)

19 Explain Mendel's experiment with pea plant on inheritance of characteristics considering only one visible contrasting character. (Mention F_1 and F_2 generation) 3

20 What is phototropism? How does it occur in plants? Describe an activity to demonstrate phototropism. 3

21 a) Define speciation. 3
b) List two main factors responsible for speciation giving brief description about each.

22 The linear magnification produced by a spherical mirror is +3. Analyse this value and state the (i) type of mirror and (ii) position of the object with respect to the pole of the mirror. Draw ray diagram to show the formation of image in this case. 3

23 Three resistors R_1, R_2 and R_3 are connected in parallel and the combination is connected to a battery, ammeter, voltmeter and key. Draw suitable circuit diagram and obtain an expression for the equivalent resistance of the combination of the resistors. 3

24 (a) With help of a labelled diagram, explain the magnetic field lines around a straight current Carrying conductor. 3
(b) State the rule which gives the direction of magnetic field lines around a straight current Carrying conductor.
(c) What happens to the magnetic field, if the strength of the current is decreased?

OR

(a) Draw the pattern of magnetic field lines through and around a current carrying loop of wire.
(b) Mark the directions of electric current and magnetic field lines in the loop.
(c) How would the strength of magnetic field due to current carrying loop affected if
(i) Radius of the loop is reduced to half its original value?
(ii) Strength of current through the loop is doubled?

SECTION – C

25 A carbon compound 'P' on heating with excess conc. H_2SO_4 forms another carbon compound 'Q' which on addition of hydrogen in the presence of nickel catalyst forms a saturated carbon compound 'R'. One molecule of 'R' on combustion forms two molecules of carbon dioxide and three molecules of water. Identify P, Q and R and write chemical equations for the reactions involved. Also write the role of conc. H_2SO_4 in the reaction. 5

OR

Define structural isomer and draw the isomeric structures of butane. Compare the structure of benzene and cyclohexane by drawing them.

26 (a) Carbon cannot be used as reducing agent to obtain Mg from MgO. Why? 5
(b) How is sodium obtained from molten NaCl? Give equation of the reactions.
(c) Explain what is thermit reaction with the help of balanced equation. How is it used to join railway tracks or cracked machine parts?

27 a) Draw a labelled diagram of the human male reproductive system and label the parts performing the following functions. 5

(i) Production of sperms
(ii) Gland which provide fluid
(iii) Provide low temperature for the formation of sperm
(iv)Common passage for sperm and urine

b) Name a sexually transmitted disease and a method to avoid it.

28 a) Explain the process of nutrition in Amoeba .(Any three major steps) 5

b) How required acidity or alkalinity is maintained in the stomach and small intestine in the human digestive system which enable proper digestion.

OR

a) Draw a schematic diagram / explain the steps involved in the breakdown of glucose by three following pathways during respiration

(i) In the presence of oxygen (ii) In the absence of oxygen (iii) In the lack of oxygen

b) List two conditions required for efficient gas exchange in all respiratory organs common to all multi cellular organisms.

29 Explain the principle and working of an electric generator by drawing a labelled diagram. What is the function of brushes? 5

30 (a) What is myopia? State the two causes of myopia. 5
(b) With the help of labelled ray diagram show correction of myopia.
(c) The far point of a myopic person is 80cm in front of the eye. What is the nature and power of the lens required to correct the defect?

OR

(a) State the cause of dispersion of white light by a glass prism.
(b) Draw a ray diagram to show the path of a narrow beam of white light, through a combination of two identical prisms arranged together in inverted position with respect to each other, when it is allowed to incident on one of the faces of the first prism of the combination.
(c) With the help of a labelled diagram, explain why the sun appears reddish at the Sunrise and the Sunset.

End of the Question Paper

Roll Number		

SET B

INDIAN SCHOOL MUSCAT
FIRST PRE-BOARD EXAMINATION
SCIENCE

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

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- This question paper consists of a total of 30 questions.

SECTION - A

1 What are amphoteric oxides? Give one example. 1

2 What is biodiversity? State the place that is referred as "biodiversity hot spots". 1

3 **Answer question numbers 3(a) - 3(d) on the basis of your understanding of the following paragraph and the related studied concepts.**

Operating on the same principle as wind turbines, the power in sea turbines comes from tidal currents, which turn blades similar to ships' propellers, but, unlike wind, the tides are predictable and the power input is constant. The technology raises the prospect of many countries becoming self-sufficient in renewable energy and drastically reducing its carbon dioxide emissions. If tide, wind and wave power are all developed, Britain would be able to close gas, coal and nuclear power plants and export renewable power to other parts of Europe. Unlike wind power, which Britain originally developed and then abandoned for 20 years allowing the Dutch to make it a major industry, undersea turbines could become a big export earner to island nations such as Japan and New Zealand.

3(a) On what principle do the sea turbines operate? 1

3(b) What is the advantage of sea turbines over wind turbines? 1

3(c) If tide, wind and wave power are used by Britain which other energy sources are likely to be closed by it? 1

3(d) For which countries sea turbines can become a good source of energy? 1

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

Metals occur in nature in the free as well as in the combined state. The less reactive metals are generally found in the free state. Most of the metals, however, are found in the combined form as minerals. The minerals from which metals can be obtained on a commercial scale are called ores. In other words, the minerals from which metals can be extracted profitably are called ores. Thus, bauxite ($Al_2O_3.2H_2O$) and clay ($Al_2O_3.2SiO_2.2H_2O$) are minerals of aluminium. However, it is bauxite that is chiefly used to obtain aluminium commercially. So, bauxite, and not clay, is an ore of aluminium.

4(a) Which metal occurs in native state? 1
(a) Silver (b) Copper (c) Zinc (d) Iron

4(b) Write the name of the sulphide ore of mercury? 1
(a) Galena (b) Cinnabar (c) Bauxite (d) Haematite

4(c) Which is the most abundant metal on the earth's crust? 1

(a) Iron (b) Copper (c) Silver (d) Aluminium

4(d) The process of removing impurities from ore is called 1
(a) metallurgy (b) gangue (c) calcination (d) enrichment of ore

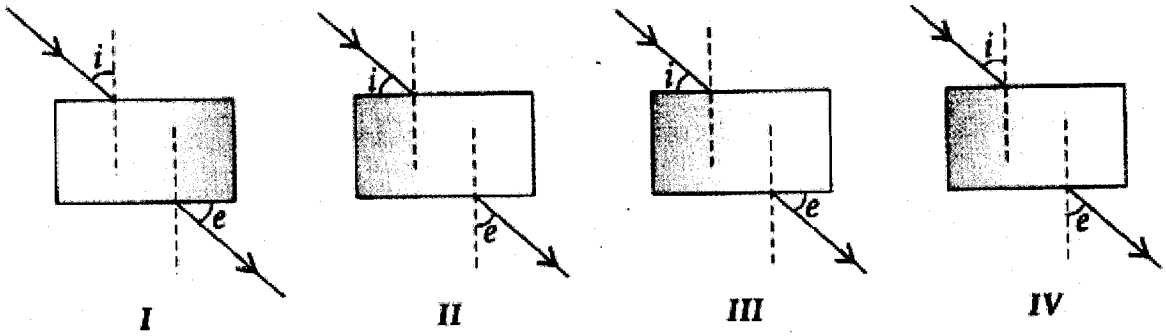
5 The length of a wire is doubled. By what factor does the resistance change? 1
(a) 4 time as large (b) twice as large (c) unchanged (d) half as large

OR

If a student while studying the dependence of current on the potential difference keeps the circuit closed for a long time to measure the current and potential difference, then
(a) ammeter's zero error will change
(b) ammeter will give more reading
(c) voltmeter will show constantly higher readings
(d) resistor will get heated up and its value will change

6 Which of the following phenomena of light are involved in the formation of a rainbow? 1
(a) Reflection, refraction and dispersion
(b) Refraction, dispersion and scattering.
(c) Refraction, dispersion and internal reflection
(d) Dispersion, scattering and total internal reflection.

7 A student does the experiment on tracing the path of a ray of light passing through a rectangular glass slab for different angles of incidence. He can get a correct measure of the angle of incidence and the angle of emergence by following the labelling indicated in figure: 1



(a) I (b) II (c) III (d) IV

8 In the experimental setup to show that carbon dioxide is given out during respiration the level of water in the delivery tube (the end that is immersed in water) show a 1

a) Gradual fall b) Rise and fall alternately c) Rapid fall d) Rise

OR

In binary fission the parent cell divides by the process

a) The nucleus and cytoplasm divides at the same time
b) The nucleus and cytoplasm do not divides
c) The nucleus divides first followed by the cytoplasm
d) The cytoplasm divides first followed by the nucleus

9 Choose the incorrect statement about insulin 1

a) It is produced from pancreas
b) It regulate growth and development of the body
c) It regulate blood sugar level
d) Insufficient secretion of insulin will cause diabetes

10 The part of the seed which is also known as embryonic seed leaf 1

a) Embryo b) Cotyledon c) Plumule d) Radicle

11 When we observe the slide of epidermal leaf peel we find that the inner wall of the guard cell in contact with the stomatal pore are 1

a) Very thick b) Very thin c) Moderately thick d) Moderately thin

12 A student takes 5 ml of distilled water in 3 test tubes marked as I, II and III. He dissolves calcium chloride in test tube I, magnesium chloride in test tube II and sodium chloride in test tube III. In which tube/tubes will water behave as hard water : 1

(a) I (b) II and III (c) III (d) I and II

OR

Chlorine reacts with saturated hydrocarbons at room temperature in the

(a) absence of sunlight (b) presence of sunlight
(c) presence of water (d) presence of hydrochloric acid

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: Calcium carbonate on heating breaks into calcium oxide & carbon dioxide. 1
Reason: Calcium carbonate is a base

14 Assertion (A): The mirrors used in search lights are concave spherical. 1
Reason (R): In concave spherical mirror the image formed is always virtual.

SECTION – B

15 Write the structural formula of ethanol molecule. How does ethanol behave with the following? 3
a) Sodium b) Excess of con. sulphuric acid at 443 K ?
Write chemical equation for each reaction.

16 A gas X reacts with lime water and forms a compound Y which is used as bleaching agent in the chemical industry .Identify X and Y . Give chemical equation of the reaction involved. 3

OR

What happens when a solution of baking soda is heated? Write the chemical equation for the same. Name the product which is responsible for making the bread or cake spongy and fluffy.

17 3

G→ P↓	1	2	3-12	13	14	15	16	17	18
1	A					B			C
2				D	E				F

Using the given part of periodic table, answer the following questions:
(a) Name the element which forms only covalent compounds?
(b) Name the element which is a metal with valency three.
(c) Out of D and E, which is bigger in size and why?

18 Give any one function performed by the following animal hormones 3
a) Oestrogen
b) Thyroxine
c) Adrenalin

OR

Give any one function performed by the following plant hormones
a) Gibberellins
b) Cytokinin
c) Abscisic acid

19 3
a) In Mendel's monohybrid cross between tall and short pea plant, all offspring's were tall. What does this tell us about the trait? What is the ratio of tall and short in the F2 generation?
b) In this cross one character from the parent goes to F2 generation but not appear in the F1 generation. What are they called? Give its percentage in the F2 generation.

20 What is phototropism? How does it occur in plants? Describe an activity to demonstrate phototropism. 3

21 a) Define speciation. 3
b) List two main factors responsible for speciation giving brief description about each.

22 A student wants to project the image of a candle flame on a screen 80cm in front of a mirror by keeping the candle flame at a distance of 20cm from its pole. 3
(a) Which type of mirror should the student use?
(b) Find the magnification of the image produced.
(c) Draw a ray diagram to show the image formation in this case.

23 Three resistors R_1, R_2 and R_3 are connected in series and the combination is connected to a battery, ammeter, voltmeter and key. Draw suitable circuit diagram and obtain an expression for the equivalent resistance of the combination of the resistors. 3

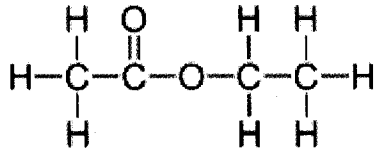
24 a) Two circular coils P and Q are kept close to each other, of which coil P carries a Current. If coil P is moved towards Q, will some current be induced in coil Q? 3
Give reason for your answer and name the phenomenon involved.
b) What happens if coil P is moved away from Q?
c) State any two methods of inducing current in a coil.

OR

(a) With help of a labelled diagram, explain the magnetic field lines around a Straight current Carrying conductor.
(b) State the rule which gives the direction of magnetic field lines around a straight current Carrying conductor.
(c) What happens to the magnetic field, if the strength of the current is decreased?

SECTION - C

25 The structural formula of an ester is : 5



a) Write the structural formulae of the corresponding alcohol and the acid.
b) (i) Mention the experimental conditions involved in obtaining ethene from ethanol.
(ii) Write the chemical equation for the above reaction.
c) Explain the cleansing action of soap.

OR

a) Define structural isomer and draw the isomeric structures of butane.
b) Compare the structure of benzene and cyclohexane by drawing them.

26 An element X (atomic number 17) reacts with an element Y (atomic number 20) to form a divalent halide. 5
a) Where in the periodic table are elements X and Y placed?
b) Classify X and Y as metal (s), non-metal(s) or metalloid(s).
c) What will be the nature of the oxide of element Y?

d) Identify the nature of bonding in the compound formed.
e) Draw the electron dot structure of the divalent halide.

27 a) Draw a sectional view of human female reproductive system and label the part where 5
(i) Eggs develop
(ii) Fertilized eggs get implanted
(iii) Site of fertilization
b) Mention in brief the changes uterus undergoes, if zygote is not formed

28 a) Explain the process of nutrition in Amoeba. (Any three major steps) 5
b) How is required acidity or alkalinity is maintained in the stomach and small intestine in the human digestive system which enables proper digestion.

OR

a) Draw a schematic diagram / explain the steps involved in the breakdown of glucose by three following pathways during respiration:
(i) In the presence of oxygen (ii) In the absence of oxygen (iii) In the lack of oxygen

b) List two conditions required for efficient gas exchange in all respiratory organs common to all multi cellular organisms.

29 Draw a labelled diagram of an electric motor. Explain its principle and working. What is the function of a split ring in an electric motor? 5

30 (a) What is hypermetropia? State the two causes of hypermetropia. 5
(b) With the help of labelled ray diagram show correction of hypermetropia.
(c) The near point of a hypermetropic eye is 1m. What is the nature and power of the lens required to correct this defect? Assume that near point of the normal eye is 25cm?

OR

(a) State the cause of dispersion of white light by a glass prism.
(b) Draw a ray diagram to show the path of a narrow beam of white light, through a combination of two identical prisms arranged together in inverted position with respect to each other, when it is allowed to incident on one of the faces of the First prism of the combination.
(c) With the help of a labelled diagram, explain why the sun appears reddish at the Sunrise and the Sunset.

End of the Question Paper

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SET C

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SCIENCE

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SECTION - A

1 Explain why calcium metal after reacting with water starts floating on its surface? 1

2 What is biodiversity? State the place that is referred as "biodiversity hot spots". 1

3 **Answer question numbers 3(a) - 3(d) on the basis of your understanding of the following paragraph and the related studied concepts.**

A number of different energy sources are used every day. Where does this energy come from? Burning of fossil fuel is a main energy source. Sources other than this fossil fuel are known as alternative energy sources and there are several of them being used every day. Windmills work in the same manner as a waterwheel. For many years, windmills were usually used mainly for milling grain, pumping water, or both. Today, though, all of that has changed. Windmills are used as wind turbines that can generate electricity. As the wind propels the blades, energy is created and stored to be used to perform work. As long as there is movement, energy can be produced, and the wind is an excellent alternative energy source. In many parts of the Midwest where there is an abundance of wind, energy is produced for homes and businesses. The internal heat of the earth is another energy source. The interior of the earth is very hot as is evidenced by hot water or steam coming out of the ground in certain places on the Earth. The earth's internal heat is called

geothermal energy. Geothermal energy can be used to heat homes and produce electricity. There are homes in Boise, Idaho that have been heated solely by hot springs since the 1890's. Also at the Geysers in California, steam drives turbines that generate electricity. This steam comes from underground water that is heated by geothermal energy. Every day the sun provides energy. Solar energy is often thought to just be sunlight. Sunlight is full of energy. It is the sunlight that gives water the energy to evaporate and rise into the atmosphere. People are finding new ways to harness the power of sunlight. One major way is to trap or concentrate sunlight with the use of solar panels. This trapped sunlight can be used to heat homes and water. Also solar cells are devices that convert sunlight into electric energy.

3(a) What are sources of energy other than fossil fuel called? 1

3(b) What is the earth's internal heat called? 1

3(c) Which device converts sunlight into electric energy? 1

3(d) Which is the tool used to trap or concentrate sunlight to be used for energy? 1

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

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4(a) Which metal occurs in native state? 1
(a) Silver (b) Copper (c) Zinc (d) Iron

4(b) Write the name of the sulphide ore of mercury? 1
(a) Galena (b) Cinnabar (c) Bauxite (d) Haematite

4(c) 1
Which is the most abundant metal on the earth's crust?

(a) Iron (b) Copper (c) Silver (d) Aluminium

4(d) The process of removing impurities from ore is called 1
(a) metallurgy (b) gangue (c) calcination (d) enrichment of ore

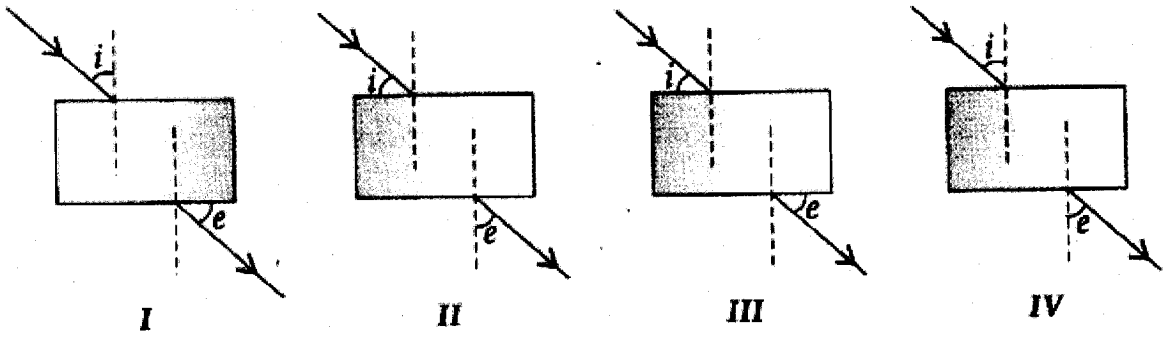
5 A wire of resistance 4Ω is stretched twice its original length. What is the new resistance of the wire. 1
(a) 1 Ω (b) 8 Ω (c) 12 Ω (d) 16 Ω

OR

In a milliammeter, there are 20 divisions between 400 mA mark and 500 mA mark. The least count of the milliammeter is

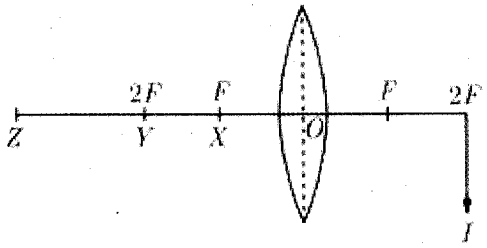
(a) 0.5 mA (b) 5 mA (c) 10 mA (d) 50 mA

6 A student does the experiment on tracing the path of a ray of light passing through a rectangular glass slab for different angles of incidence. He can get a correct measure of the angle of incidence and the angle of emergence by following the labelling indicated in figure: 1



(a) I (b) II (c) III (d) IV

7 A student wants to produce an image I by a convex lens in a position as shown in the adjoining figure. He should place the object. 1



(a) between O and X (b) between X and Y (c) at Y (d) between Y and Z

8 In the experimental setup to show that carbon dioxide is given out during respiration the level of water in the delivery tube (the end that is immersed in water) show a 1

a) Gradual fall b) Rise and fall alternately c) Rapid fall d) Rise

OR

In binary fission the parent cell divides by the processes given below. Name the correct process.

a) The nucleus and cytoplasm divides at the same time
b) The nucleus and cytoplasm do not divides
c) The nucleus divides first followed by the cytoplasm
d) The cytoplasm divides first followed by the nucleus

9 Choose the incorrect statement about insulin 1

a) It is produced from pancreas
b) It regulate growth and development of the body
c) It regulate blood sugar level
d) Insufficient secretion of insulin will cause diabetes

10 When we observe the slide of epidermal leaf peel we find that the inner wall of the guard cell in contact with the stomatal pore are 1

a) Very thick b) Very thin c) Moderately thick d) Moderately thin

11 The part of the seed which is also known as embryonic seed leaf 1

a) Embryo b) Cotyledon c) Plumule d) Radicle

12 A student was provided with a pH chart by the teacher and asked to observe the colour corresponding to pH 1 and 14 respectively. The correct answer would be : 1

(a) yellow, green (b) violet, orange (c) red, blue (d) blue, red

OR

A metal powder was added to dil. HCl and dil. NaOH solutions taken in separate test tubes. On making the contents react in both the test tubes, hydrogen gas was formed in both the cases. The metal used will be:

(a) Cu (b) Zn (c) Fe (d) Pb

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 :Nitrogen is flushed in potato chip packets to preserve acidity of potato chips. 1
Reason : Nitrogen prevents contact of chips to air and thus prevents oxidation.

14 Assertion (A): The sky looks dark and black instead of blue in outer space. 1
Reason (R): No atmosphere containing air in the outer space to scatter sunlight.

SECTION – B

15 a) Write the chemical formula for washing soda. 3
b) How may it be obtained from baking soda?
c) Name an industrial use of washing soda other than washing clothes.

16 a) What is rancidity? Mention any two ways by which rancidity can be prevented. 3
b) Name the oxidising and reducing agent in the following reaction:
$2H_2S+SO_2 \rightarrow 2H_2O+3S$

OR

A solution of $CuSO_4$ was kept in an iron pot. After few days, the iron pot was found to have number of holes in it. Explain the reaction with the help of a chemical equation.

17 An organic compound 'A' is an essential constituent of wine and beer. Oxidation of 'A' yields an organic acid 'B' which is present in vinegar. Name the compounds 'A' and 'B' and write their structural formula. What happens when 'A' and 'B' react in the presence of an acid catalyst? Write the chemical equation for the reaction. 3

18 Give any one function performed by the following animal hormones 3

a) Oestrogen
b) Thyroxine
c) Adrenalin

OR

Give any one function performed by the following plant hormones

a) Gibberellins
b) Cytokinin
c) Abscisic acid

19 a) Define speciation. 3
b) List two main factors responsible for speciation giving brief description about each.

20 What is phototropism? How does it occur in plants? Describe an activity to demonstrate phototropism. 3

21 Explain Mendel's experiment with pea plant on inheritance of characteristics considering only one visible contrasting character. (Mention F_1 and F_2 generation) 3

22 The linear magnification produced by a spherical mirror is +3. Analyse this value and state the (i) type of mirror and (ii) position of the object with respect to the pole of the mirror. Draw ray diagram to show the formation of image in this case. 3

23 Three resistors R_1, R_2 and R_3 are connected in parallel and the combination is connected to a battery, ammeter, voltmeter and key. Draw suitable circuit diagram and obtain an expression for the equivalent resistance of the combination of the resistors. 3

24 (a) With help of a labelled diagram, explain the magnetic field lines around a Straight current Carrying conductor. 3
(b) State the rule which gives the direction of magnetic field lines around a straight Current Carrying conductor.
(c) What happens to the magnetic field, if the strength of the current is decreased?

OR

(a) Draw the pattern of magnetic field lines through and around a current carrying loop of wire.
(b) Mark the directions of electric current and magnetic field lines in the loop.
(c) How would the strength of magnetic field due to current carrying loop affected if
(i) Radius of the loop is reduced to half its original value?
(ii) Strength of current through the loop is doubled?

SECTION - C

25 A carbon compound 'P' on heating with excess conc. H_2SO_4 forms another carbon compound 'Q' which on addition of hydrogen in the presence of nickel catalyst forms a saturated carbon compound 'R'. One molecule of 'R' on combustion forms two molecules of carbon dioxide and three molecules of water. Identify P, Q and R and write chemical equations for the reactions involved. Also write the role of conc. H_2SO_4 in the reaction. 5

OR

Define structural isomer and draw the isomeric structures of butane. Compare the structure of benzene and cyclohexane by drawing them.

d) Identify the nature of bonding in the compound formed.
e) Draw the electron dot structure of the divalent halide.

27 a) Draw a labelled diagram of the human male reproductive system and label the parts performing the following functions. 5
(i) Production of sperms
(ii) Gland which provide fluid
(iii)Provide low temperature for the formation of sperm
(iv)Common passage for sperm and urine
b) Name a sexually transmitted disease and a method to avoid it.

28 a) Explain the process of nutrition in Amoeba .(Any three major steps) 5
b) How is required acidity or alkalinity is maintained in the stomach and small intestine in the human digestive system which enable proper digestion.

OR

a) Draw a schematic diagram / explain the steps involved in the breakdown of glucose by three following pathways during respiration
(i) In the presence of oxygen. (ii) In the absence of oxygen . (iii) In the lack of oxygen

b) List two conditions required for efficient gas exchange in all respiratory organs common to all multi cellular organisms.

29 Explain the principle and working of an electric generator by drawing a labelled diagram. What is the function of brushes? 5

30 (a) State the cause of dispersion of white light by a glass prism. 5
(b) Draw a ray diagram to show the path of a narrow beam of white light, through a combination of two identical prisms arranged together in inverted position with respect to each other, when it is allowed to incident on one of the faces of the first prism of the combination.
(c) With the help of a labelled diagram, explain why the sun appears reddish at the Sunrise and the Sunset.

OR

(a) What is hypermetropia? State the two causes of hypermetropia.
(b) With the help of labelled ray diagram show correction of hypermetropia.
(c) The near point of a hypermetropic eye is 1m. What is the nature and power of the lens required to correct this defect? Assume that near point of the normal eye is 25cm?

End of the Question Paper

26 An element X (atomic number 17) reacts with an element Y (atomic number 20) to form a divalent halide. 5

a) Where in the periodic table are elements X and Y placed?
b) Classify X and Y as metal (s), non-metal(s) or metalloid(s).
c) What will be the nature of the oxide of element Y?
d) Identify the nature of bonding in the compound formed.
e) Draw the electron dot structure of the divalent halide.

27 a) Draw a labelled diagram of the human male reproductive system and label the parts performing the following functions. 5

(i) Production of sperms
(ii) Gland which provide fluid
(iii)Provide low temperature for the formation of sperm
(iv)Common passage for sperm and urine

b) Name a sexually transmitted disease and a method to avoid it.

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End of the Question Paper