ROLL NUMBER					

SET	A

INDIAN SCHOOL MUSCAT
FINAL EXAMINATION 2022
SCIENCE
SUBJECT CODE:086

CLASS: X
DATE: 27 /11/2022

TIME ALLOTED: 3 HRS.
MAXIMUM MARKS: 80

General Instructions:

- *This question paper consists of 39 questions in 5 sections.*
- *All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.*
- *Section A consists of 20 objective type questions carrying 1 mark each.*
- *Section B consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should in the range of 30 to 50 words.*
- *Section C consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should in the range of 50 to 80 words*
- *Section D consists of 3 Long Answer type questions carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.*
- *Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts*

SECTION - A

Select and write one most appropriate option out of the four options given for each of the questions 1 – 20

1. Which of the following is an amphoteric oxide? 1

   (a) Na_2O (b) MgO (c) Al_2O_3 (d) CaO

2. Sodium carbonate is a basic salt because it is a salt of : 1

   (a) strong acid and strong base (b)weak acid and weak base

   (c)strong acid and weak base (d) weak acid and strong base

3. Generally, non-metals are not lustrous. Which of the following non-metals is lustrous? 1

   (a) Sulphur (b) Phosphorous (c) Nitrogen (d) Iodine

4. Which of the following metal is poor conductor of heat? 1

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

5. The natural source of oxalic acid is _____. 1

   (a) Sour milk (b) Orange (c) Tomato (d) Tamarind

6. A copper plate was placed in a beaker containing zinc sulphate solution. Next day when the plate was examined, it was found that: 1

(a) Copper plate had become thinner. (b) Copper plate was unchanged.

(c) Copper plate had become thinner. (d) Colour of copper plate had changed.

7. In human digestive system, hydrochloric acid is secreted by: 1

(a) pancreas (b) liver (c) salivary glands (d) gastric glands

8. During respiration the exchange of gases takes place in: 1

(a) bronchi (b) alveoli (c) trachea (d) bronchioles

9. A microscopic gap between two neurons is known as: 1

(a) impulse (b) reflex arc (c) synapse (d) cell body

10. In plants, transport of water and minerals in plants occurs through: 1

(a) xylem (b) phloem (c) stomata (d) Sieve tubes

11. Amoeba reproduces by : 1

(a) Budding (b) fragmentation (c) binary fission (d) regeneration

12. The commercial unit of energy is----------. 1

(a) Watt (b) Watt-hour

(c) Kilowatt-hour (d) Kilo-joule

13. Choose the correct statement from the following: 1

(a) Fleming's right hand rule is applied to know the direction of force acting on the conductor.

(b) The right hand thumb rule is applied to know the direction of magnetic field due to a current carrying conductor.

(c) Fleming's left hand rule is applied to know the direction of induced current.

(d) Magnetic field lines always intersect with each other.

14. In order to obtain a magnification of -0.6 (minus 0.6) with a concave mirror, the object must be placed----------. 1

(a) At the focus (b) Between pole and focus

(c) Between focus and centre of curvature (d) Beyond the centre of curvature

15. A battery of 12V is connected in series with resistors of 2 ohms, 3 ohms and 5 ohms. How much current would flow through the 3ohm resistor? 1

(a) 1.2 A (b) 1.5A (c) 1.4A (d) 1.3A

16. Which of the following colour is least scattered by fog, dust or smoke: 1

(a) Violet (b) Blue (c) Red (d) Yellow

Q. no 17 to 20 are Assertion - Reasoning based questions.

These consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

(a) Both A and R are true and R is the correct explanation of A.

(b) Both A and R are true and R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is False but R is true.

17. **Assertion:** Ionic compounds have high melting and boiling points. 1

Reason: Large amount of energy is required to break the strong inter-ionic attraction in an ionic compound.

18. **Assertion:** The testes are located outside the abdominal cavity in scrotum. 1

Reason: The sperm formation requires a lower temperature than the normal body temperature.

19. **Assertion**: The accumulation of lactic acid in the muscles cause muscle cramps. 1

Reason: During vigorous physical exercise leg muscles respire anaerobically.

20. **Assertion**: On freely suspending, a current carrying solenoid comes to rest in the N-S direction just like a bar magnet. 1

Reason: One end of a current carrying solenoid behaves as a north pole and the other end as a south pole.

SECTION – B

Q. no. 21 to 26 are very short answer questions.

21. "Barium chloride reacts with aluminium sulphate to give aluminium chloride and a precipitate of barium sulphate" 2

(i) Translate the above statement into a balanced chemical equation.

(ii) State the type in which this reaction can be classified.

OR

Define thermal decomposition. Give one example.

22. What is heredity? Name the plant on which Mendel performed his experiments. 2

23. What is the role of decomposers in the ecosystem? 2

24. List the functions of the following parts of female reproductive system. 2

(a) Fallopian tube (b) uterus

25. Draw a neat labeled ray diagram showing the refraction of light through a rectangular glass slab. 2

26. Draw a neat diagram of a neuron and label the following parts. 2
dendrites, axon, nerve ending.

SECTION – C

Q.no. 27 to 33 are short answer questions.

27. (a) Define the term water of crystallization? 3
(b) Why should Plater of Paris be stored in a moisture-proof container?
(c) Name the sodium compound use for removing permanent hardness of water.

28. (i)Identify the substance oxidised, reduced, oxidising agent and reducing agent in the following reaction: 3

$$2H_2S + SO_2 \rightarrow 3S + 2H_2O$$

(ii) What happens chemically when quick lime is added to water filled in a bucket?

29. In humans, what is the probability of the birth of a boy? Explain by drawing sex determination in flowchart. Justify your answer. 3

OR

A pea plant having pure round seeds (RR) was crossed with pure wrinkled seeds (rr). F1 generation was allowed to self-pollinate and F2 generation was also obtained.
(a) What type of seeds would you expect in F1 generation plants?
(b) Give the phenotypic and genotypic ratio of the F2 progeny?

30. (a) State right hand thumb rule. 3
(b) Draw a neat diagram showing how magnetic field is produced around a current carrying straight conductor.

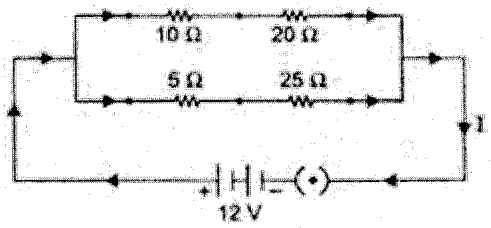
31. An object is kept at a distance of 30cm in front of a concave mirror of focal length 20cm.Calculate the position of the image formed and also draw the respective ray diagram. 3

32. (a) What are factors on which resistivity of a conductor depend. 3
(b) Calculate the cost of electrical energy consumed in the month of November if a radio set of 160W runs for 5h daily and a refrigerator of 2500W is used for 12h daily. Given that the unit price of electrical energy is Rs. 2.00.

OR

(a) Define electric power.

(b) Calculate the equivalent resistance and total current given by battery in the circuit.



33. (a) What is a food web? 3

(b) Consider the following food chain.

Grass → grasshopper → frog → snake

If 10000 J of energy is available at the producer level, then calculate the energy transferred to the **snake** as food.

(c) Give two examples of artificial ecosystem.

SECTION – D

Q.no. 34 to 36 are Long answer questions.

34. (a) With the help of balanced chemical equations explain the extraction method of copper metal from its sulphide ore. 5

(b) Name two metal which react with dilute nitric acid to evolve H_2 gas.

(c) Why are metals like Na and K kept under kerosene?

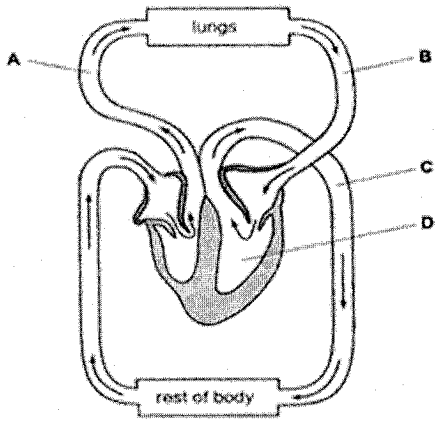
OR

(a) Explain why calcium metal after reacting with water starts floating on its surface?

(b) With the help of electron - dot structure, show the formation of $MgCl_2$ by transfer of electrons.

(c) Define roasting and calcination.

35. Observe the diagram given below and answer the following questions. 5



(a) Label the parts marked A, B, C and D

(b) Mention the function of part C and A.

(c) What prevents the backflow of blood between the atria and ventricles?

OR

(a) Draw a neat labelled diagram of the human excretory system and label the following parts. Kidney, ureter, urinary bladder, urethra.

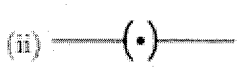
(b) Name the filtration unit of kidney.

(c) What is the function of urinary bladder?

36. (a) Name and state the law that gives relationship between the current through a conductor and the potential difference across its two terminals. Also, express this law mathematically. 5

(b) Draw the V-I graph for this law. Justify your answer.

(c) Write the name and use of the circuit components whose symbols are given below.

(i)  (ii) 

OR

(a) Write Joule's law of heating.

(b) An electric iron has a rating of 750 W; 200 V. Calculate:

(i) the current required.

(ii) the resistance of its heating element,

(iii) energy consumed by the iron in 2 hours.

SECTION – E

Q.no. 37 to 39 are case - based/data -based questions with 2 to 3 short sub - parts. Internal choice is provided in one of these sub-parts.

37. pH scale is used for measuring hydrogen ion concentration. The p in pH stands for 'potenz' in German meaning power. pH should be thought of simply as a number which indicate the acidic or basic nature of a solution. Plants require a specific pH range for their healthy growth. Generally, paper impregnated with the universal indicator is used for measuring pH.

(i) The pH value of four solutions **A, B, C** and **D** are **3, 12, 8, 1** respectively. Arrange them in the increasing order of acidic strength.

(ii) Name the acid produced in stomach which helps in digestion of food without harming stomach.

(iii) How is concentration of hydroxyl ions (OH^-) ions affected when excess of base is dissolved in solution of sodium hydroxide?

OR

Name one salt whose solution has pH value less than 7 and one salt with pH value more than 7.

38. After the pollen lands on a suitable stigma, it has to reach the female germ-cells which are in the ovary. For this, a tube grows out of the pollen grain and travels through the style to reach the ovary. After fertilization, the zygote divides several times to form an embryo within the ovule.

(i) Name any two agents of pollination.

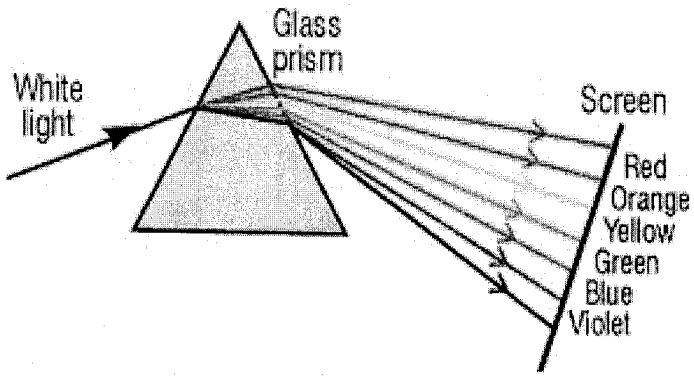
(ii) What happens to the ovary and ovule after fertilization?

(iii) Differentiate between unisexual and bisexual flower. Give one example for each.

OR

Differentiate between self-pollination and cross pollination.

39. A prism is a transparent refracting medium bounded by two plane surfaces inclined to each other at a certain angle. When white light is incident on one refracting surface of the prism, the light splits up into constituent colours. When the dispersed white light is made to fall on a screen, we get a band of seven colours called the spectrum of white light.



(i) Which property of light is used by prism to form a spectrum?

(ii) Name the colour that bends the most when white light is allowed to pass through a glass prism.

(iii) Mention any two factors on which angle of deviation depends.

OR

Danger signals are usually red in colour. Give reason.

*****END OF THE QUESTION PAPER*****

ROLL NUMBER					

SET	B

INDIAN SCHOOL MUSCAT
FINAL EXAMINATION 2022
SCIENCE
SUBJECT CODE: 086

CLASS: X
DATE: 27 /11/2022

TIME ALLOTED: 3 HRS.
MAXIMUM MARKS: 80

General Instructions:

- *This question paper consists of 39 questions in 5 sections.*
- *All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.*
- *Section A consists of 20 objective type questions carrying 1 mark each.*
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- *Section D consists of 3 Long Answer type questions carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.*
- *Section E consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts*

SECTION - A

Select and write one most appropriate option out of the four options given for each of the questions 1 – 20

1. The ability of a metals to be drawn into thin sheets is called as: 1

   (a) Malleability (b) Conductivity (c) Sonorousity (d) Ductility

2. Which property of plaster of Paris powder makes it a suitable building material? 1

   (a) It is lightweight (b) It is white in colour

   (c) It is found readily in nature (d) It gets hard when mixed with water

3. Iron nails were dipped in a solution kept in a test tube. After half an hour, it was observed that the color of the solution had changed. The solution in the test tube is: 1

   (a) Zinc sulphate solution (b) Aluminium sulphate solution

   (c) Magnesium sulphate solution (d) Copper sulphate solution

4. Which of the following non-metal is good conductor of electricity? 1

   (a) Graphite (b) Phosphorus (c) Hydrogen (d) Bromine

5. When magnesium and hydrochloric acid react, they produce: 1

(a) Oxygen and magnesium chloride (b) Chlorine and magnesium oxide.

(c) Hydrogen and magnesium chloride. (d) Hydrogen and magnesium oxide.

6. Which of the following metals does not react with cold as well as hot water? 1

(a) K (b) Fe (c) Mg (d) Ca

7. In human digestive system , bile is secreted by: 1

(a) pancreas (b) liver (c) kidneys (d) stomach

8. During respiration the exchange of gases takes place in: 1

(a) bronchi (b) alveoli (c) trachea (d) bronchioles

9. A microscopic gap between two neurons is known as: 1

(a) impulse (b) reflex arc (c) synapse (d) cell body

10. During photosynthesis gaseous exchange takes place in the leaves through the: 1

(a) xylem (b) phloem (c) stomata (d) sieve tubes

11. Planaria reproduces by: 1

(a) Budding (b) fragmentation (c) binary fission (d) regeneration

12. In the case of a rectangular glass slab, the perpendicular distance between the extended incident ray and emergent ray is called ----------. 1

(a) Lateral inversion (b) Linear propagation

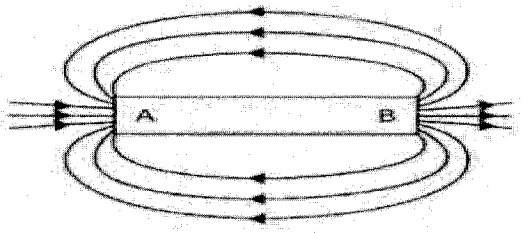
(c) Lateral displacement (d) Circular displacement

13. How is an ammeter connected in a circuit to measure the current flowing through it? 1

(a) Series (b) Parallel

(c) Both series and parallel (d) Neither series nor parallel

14. Identify the poles of the bar magnet from the given figure. 1



(a) A is the north pole and B is the south pole. (b) B is the north pole and A is the south pole.

(c) Both A and B are like poles. (d) Poles cannot be identified.

15. Twinkling of stars is due to ----------. 1

(a) Dispersion (b) Tyndall effect

(c) Scattering (d) Atmospheric refraction

16. ----------is caused due to the diminishing flexibility of eye lens and weakening of ciliary muscles. 1

(a) Myopia (b) Presbyopia (c) Hypermetropia (d) Cataract

Q. no 17 to 20 are Assertion - Reasoning based questions.

These consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

(a) Both A and R are true and R is the correct explanation of A.

(b) Both A and R are true and R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is False but R is true.

17. **Assertion:** Highly reactive metals like Na, K are obtained by electrolytic reduction. 1
Reason: In the electrolytic reduction, metals are deposited at the cathode.

18. **Assertion:** The testes are located outside the abdominal cavity in scrotum. 1
Reason: The sperm formation requires a lower temperature than the normal body temperature

19. **Assertion:** The accumulation of lactic acid in the muscles cause muscle cramps. 1
Reason: During vigorous physical exercise leg muscles respire anaerobically.

20. **Assertion:** Wire A is thin in comparison to wire B of same material and same length, then resistance of wire A is greater than resistance of wire B. 1
Reason: Resistivity of wire A is same as that of the resistivity of wire B.

SECTION – B

Q. no. 21 to 26 are very short answer questions.

21. Balance the chemical equation 2

(i) $Al_{(s)} + CuCl_{2\,(aq)} \rightarrow AlCl_{3(aq)} + Cu_{(s)}$

(ii) $Pb(NO_3)_{2\,(s)} \rightarrow PbO_{(s)} + NO_{2(g)} + O_{2(g)}$

OR

Define combination reaction. Give one example of a combination reaction which is exothermic.

22. What is heredity? Name the plant on which Mendel performed his experiments. 2

23. What is the important function of ozone layer in earth's atmosphere? Why is damage to the ozone layer a cause for concern? 2

24. List the functions of the following parts of female reproductive system. 2

(a) ovaries (b) placenta

25. What is hypermetropia? What are its causes?. 2

26. Draw a neat diagram of a neuron and label the following parts. 2

Dendrites, axon, nerve ending.

SECTION – C

Q.no. 27 to 33 are short answer questions.

27. What is the chemical formula and chemical name of bleaching powder? 3

Give the chemical reaction for the preparation of bleaching powder? State one of its uses.

28. (a)Identify the substance oxidised, reduced, oxidising agent and reducing agent in the following reaction: 3

$$ZnO_{(s)} + C_{(s)} \rightarrow Zn_{(s)} + CO_{(g)}$$

(b) What happens chemically when quick lime is added to water filled in a bucket?

29. In humans, what is the probability of the birth of a boy? Explain by drawing sex determination flowchart. Justify your answer. 3

OR

A pea plant having pure round seeds (RR) was crossed with pure wrinkled seeds (rr). F1 generation was allowed to self-pollinate and F2 generation was also obtained.

(a) What type of seeds would you expect in F1 generation plants?

(b) Give the phenotypic and genotypic ratio of the F2 progeny?

30. (a) Define absolute refractive index 3

(b) An object is kept at a distance of 12cm in front of a convex lens of focal length 8cm. Calculate the position and magnification of the image formed.

31. Explain with the help of a neat diagram how magnetic field is produced around a current carrying straight conductor. 3

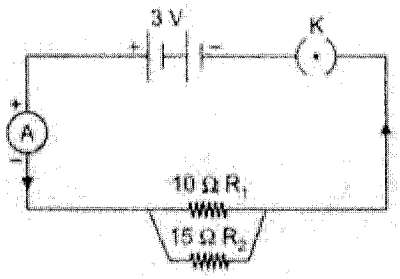
32. (a) List the factors on which the resistance of a conductor in the shape of a wire depends. 3

(b) In a household, 5 tube lights of 40 W each are used for 5 hours and an electric press of 500 W for 4 hours every day. Calculate the cost of electrical energy consumed by the tube lights and press in a month of 30 days. Given that the unit price of electrical energy is Rs. 2.00.

OR

(a) Define electric power.

(b) Calculate the equivalent resistance and total current given by battery in the circuit.



33. (a) What are biodegradable substances? 3

(b) Which of the following are biodegradable substances?

Wood, metal can, fruits and vegetable peels, polythene bag

(c) Consider the following food chain.

Grass → grasshopper → frog → snake

If 10000 J of energy is available at the producer level, then calculate the energy transferred to the **frog** as food.

SECTION – D

Q.no. 34 to 36 are Long answer questions.

34. (a) Compound X and Aluminum are used to join railway tracks. Identify the compound X. 5

Name the reaction. Write down the chemical reaction.

(b) Molten sodium chloride conducts electricity whereas solid NaCl will not. Give reason.

(c) Name a metal which has low melting point.

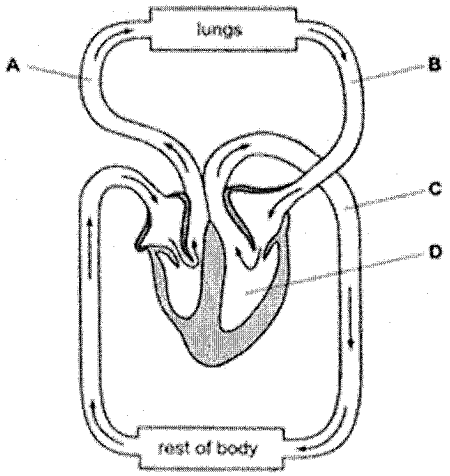
OR

(a) With the help of balanced chemical equations explain the extraction method of copper metal from its sulphide ore.

(b) Explain why calcium metal after reacting with water starts floating on its surface.

(c) With the help of electron-dot structure, show the formation of MgO by transfer of electrons.

35. Observe the diagram given below and answer the following questions. 5



(a) Label the parts marked A, B , C and D

(b) Mention the function of part C and A.

(c) What prevents the backflow of blood between the atria and ventricles?

OR

(a) Draw a neat labelled diagram of the **excretory system** and label the following parts.
Kidney, ureter, urinary bladder, urethra.

(b) Name the filtration unit of kidney.

(c) What is the function of urinary bladder?

36. (a) Write Joule's law of heating. 5

(b) An electric iron has a rating of 750 W; 200 V. Calculate:

(i) the current required.

(ii) the resistance of its heating element,

(iii) energy consumed by the iron in 2 hours.

OR

(a) Name and state the law that gives relationship between the current through a conductor and the potential difference across its two terminals. Also, express this law mathematically.

(b) Draw the V-I graph for this law. Justify your answer.

(c) Write the name and use of the circuit components whose symbols are given below.

(i)  (ii) 

SECTION – E

Q.no. 37 to 39 are case - based/data -based questions with 2 to 3 short sub - parts. Internal choice is provided in one of these sub-parts.

37. Sodium chloride is an important raw material for the production of NaOH. When electricity is passed through an aqueous solution of NaCl, it decomposes to form NaOH. The process is called chlor-alkali process. The uses of NaOH are used in making soap and detergents, paper making, artificial fibers.

(i) Name the substance that are formed at anode and cathode on chlor-alkali process?

(ii) What is the commercial name of sodium hydroxide?

(iii) Why chlor-alkali process called so? Write the chemical reaction involved in chlor-alkali process.

OR

Explain why NaOH solution cannot be stored in Al container? Write the equation for the reaction that may takes place for the same.

38. After the pollen lands on a suitable stigma, it has to reach the female germ-cells which are in the ovary. For this, a tube grows out of the pollen grain and travels through the style to reach the ovary. After fertilization, the zygote divides several times to form an embryo within the ovule.

(i) Name any two agents of pollination.

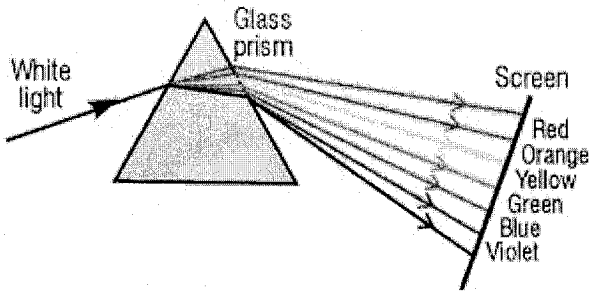
(ii) What happens to the ovary and ovule after fertilization?

(iii) Differentiate between unisexual and bisexual flower. Give one example for each.

OR

Differentiate between self-pollination and cross pollination.

39. A prism is a transparent refracting medium bounded by two plane surfaces inclined to each other at a certain angle. When white light is incident on one refracting surface of the prism, the light splits up into constituent colours. When the dispersed white light is made to fall on a screen, we get a band of seven colours called the spectrum of white light.



(i) Which property of light is used by prism to form a spectrum?

(ii) Name the colour that bends the most when white light is allowed to pass through a glass prism

(iii) Mention any two factors on which angle of deviation depends.

OR

Danger signals are usually red in colour. Give reason

*****END OF THE QUESTION PAPER*****

ROLL NUMBER				

SET	C

INDIAN SCHOOL MUSCAT
FINAL EXAMINATION 2022
SCIENCE
SUBJECT CODE:086

CLASS: X
DATE: 27/11/2022

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General Instructions:

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SECTION - A

Select and write one most appropriate option out of the four options given for each of the questions 1 – 20

1. Generally, non-metals are not lustrous. Which of the following non-metals is lustrous? 1

   (a) Sulphur (b) Phosphorous (c) Iodine (d) Nitrogen

2. Brine is an _____. 1

   (a) aqueous solution of sodium hydrogen carbonate. (b) aqueous solution of sodium carbonate.

   (c) aqueous solution of sodium hydroxide. (d) aqueous solution of sodium chloride.

3. The ability of a metals to be drawn into thin wire is called as: 1

   (a) Malleability (b) Conductivity (c) Sonorousity (d) Ductility

4. Which of the following metals do not react with cold as well as hot water? 1

   (a) Na (b) Ca (c) Mg (d) Fe

5. Natural source of Lactic acid is_____. 1

   (a) Tomato (b) Orange (c)Sour milk (d) Ant sting

6. Which among the following oxide is an amphoteric oxide? 1

(a) Na_2O (b) Al_2O_3 (c) MgO (d) CaO

7. In human digestive system, mucus is secreted by: 1

(a) small intestine (b) liver (c) salivary glands (d) gastric glands

8. During respiration the exchange of gases takes place in: 1

(a) bronchi (b) alveoli (c) trachea (d) bronchioles

9. A microscopic gap between two neurons is known as: 1

(a) impulse (b) reflex arc (c) synapse (d) cell body

10. In plants, transport of food occurs through: 1

(a) xylem (b) phloem (c) stomata (d) vessels

11. Spirogyra reproduces by : 1

(a) Budding (b) fragmentation (c) binary fission (d) regeneration

12. The scattering of light by colloidal particles is called----------. 1

(a) Absorption (b) Reflection (c) Tyndall effect (d) Raman effect

13. Name the instrument by which magnetic field can be determined. 1

(a) Ammeter (b) Voltmeter (c) Magnetic compass (d) Galvanometer

14. If the current flowing through a resistor is halved, the heat produced in it will become----------. 1

(a) Double (b) One-fourth (c) three times (d) half

15. A person with myopic eye uses a concave lens of focal length 50cm.What is the power of the lens? 1

(a) + 0.2D (b) – 0.2D (c) + 2D (d) – 2D

16. In order to obtain a magnification of -0.6 (minus 0.6) with a concave mirror, the object must be placed----------. 1

(a) At the focus (b) Between pole and focus

(c) Between focus and centre of curvature (d) Beyond the centre of curvature

Q. no 17 to 20 are Assertion - Reasoning based questions.

These consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

(a) Both A and R are true and R is the correct explanation of A.

(b) Both A and R are true and R is not the correct explanation of A.

(c) A is true but R is false.

(d) A is False but R is true.

17. **Assertion:** An aqueous solution of NaCl cannot be used for electrolytic extraction of sodium. 1

Reason: Sodium formed at cathode reacts violently with water.

18. **Assertion:** The testes are located outside the abdominal cavity in scrotum. 1

Reason: The sperm formation requires a lower temperature than the normal body temperature.

19. **Assertion:** The accumulation of lactic acid in the muscles cause muscle cramps. 1

Reason: During vigorous physical exercise leg muscles respire anaerobically.

20. **Assertion**: A 200W bulb glows with more brightness than a 100W bulb. 1

Reason: 100W bulb has more resistance than 200W bulb.

SECTION – B

Q. no. 21 to 26 are very short answer questions.

21. Define thermal decomposition. Give one example. 2

OR

Balance the chemical equation

(i) $Al_{(s)} + CuCl_{2\,(aq)} \rightarrow AlCl_{3(aq)} + Cu_{(s)}$

(ii) $Pb(NO_3)_{2\,(s)} \rightarrow PbO_{(s)} + NO_{2(g)} + O_{2(g)}$

22. What is heredity? Name the plant on which Mendel performed his experiments. 2

23. (a) State the 10% law of energy transfer in a food chain. 2

(b) Consider the following food chain.

Grass → grasshopper → frog → snake

If 10000 J of energy is available at the producer level, then calculate the energy transferred to the **grasshopper** as food.

24. List the functions of the following parts of male reproductive system. 2

(a) Testis (b) seminal vesicle and prostate gland.

25. Draw a neat labeled ray diagram showing the refraction of light through a rectangular glass slab 2

26. Draw a neat diagram of a neuron and label the following parts. 2

dendrites, axon, nerve ending.

SECTION – C

Q.no. 27 to 33 are short answer questions.

27. (a) Define the term water of crystallization? 3

(b) Name the sodium compound used in soda-acid fire extinguisher?

(c) Write the chemical formula and chemical name of bleaching powder.

28. (a) What happens chemically when quick lime is added to water filled in a bucket? 3

(b) Identify the substance oxidised, reduced, oxidising agent and reducing agent in the following reaction:

$PbO + C \rightarrow Pb + CO$

29. In humans, what is the probability of the birth of a boy? Justify your answer by drawing sex determination flowchart. 3

OR

A pea plant having pure round seeds (RR) was crossed with pure wrinkled seeds (rr). F1 generation was allowed to self-pollinate and F2 generation was also obtained.

(a) What type of seeds would you expect in F1 generation plants?

(b) Give the phenotypic and genotypic ratio of the F2 progeny?

30. (a) Draw a neat diagram showing magnetic field lines around a solenoid. 3

(b) Write down the conclusions or inferences that you could draw from the activity- magnetic field produced around a current carrying straight conductor.

31. (a) Define atmospheric refraction 3

(b) What is myopia? What are its causes?

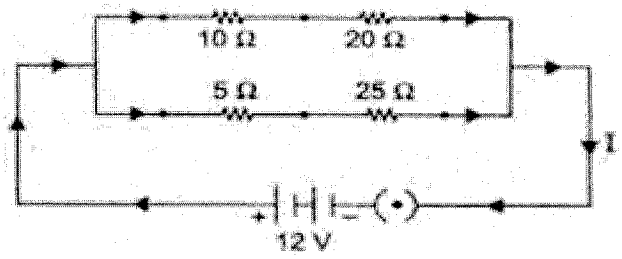
32. (a) What are factors on which resistivity of a conductor depend. 3

(b) Calculate the cost of electrical energy consumed in the month of November if a radio set of 160W runs for 5h daily and a refrigerator of 2500W is used for 12h daily. Given that the unit price of electrical energy is Rs. 2.00.

OR

(a) Define electric power.

(b) Calculate the equivalent resistance and total current given by battery in the circuit.



33. (a) Differentiate between biotic and abiotic components of an ecosystem. Give one example for each. 3

(b) Give two examples of non-biodegradable substances.

SECTION - D

Q.no. 34 to 36 are Long answer questions.

34. (a) Explain why magnesium starts floating when it reacts with hot water? 5

(b) With the help of electron - dot structure, show the formation of $CaCl_2$ by the transfer of electrons.

(c) Define roasting and calcination.

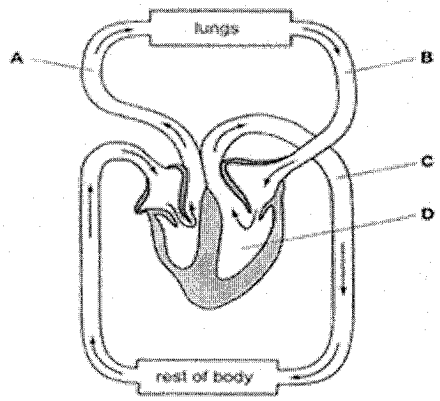
OR

(a) When metals are treated with mineral acid like HCl, hydrogen gas is liberated but when metals are treated with HNO_3, hydrogen gas is not liberated. Why?

(b)Name a metal which has low melting point.

(c) What is thermit reaction? Write one use of thermit reaction.

35. Observe the diagram given below and answer the following questions. 5



(a) Label the parts marked A, B , C and D

(b) Mention the function of part C and A.

(c) What prevents the backflow of blood between the atria and ventricles?

OR

(a) Draw a neat labelled diagram of the **excretory system** and label the following parts. Kidney, ureter, urinary bladder, urethra.

(b) Name the filtration unit of kidney.

(c) What is the function of urinary bladder?

36. (a) Name and state the law that gives relationship between the current through a conductor and the potential difference across its two terminals. Also, express this law mathematically. 5

(b) Draw the V-I graph for this law. Justify your answer.

(c) Write the name and use of the circuit components whose symbols are given below.

(i) 

(ii) 

OR

(a) Write Joule's law of heating.

(b) An electric iron has a rating of 750 W; 200 V. Calculate:

(i) the current required.

(ii) the resistance of its heating element,

(iii) energy consumed by the iron in 2 hours.

SECTION - E

Q.no. 37 to 39 are case - based/data -based questions with 2 to 3 short sub - parts. Internal choice is provided in one of these sub-parts.

37. Salts are mainly ionic compounds. They are formed by the reaction between acids and bases. Many salts are found to be present in rocks and minerals which may be regarded as natural sources. Sea water is the major source of many salts. Sodium chloride is salt that use in food. Bed of rock were formed when seas of bygone ages dried up. The acidic and basic nature of salts usually depends on the acid and base from which the salt is formed in a neutralization reaction. 4

(i) Give one example each of salt belonging to calcium and sulphate family.

(ii)Write the name and chemical formula of a salt which is blue in colour but becomes white upon heating.

(iii) What will happen when sodium hydrogen carbonate is heated? Write the chemical equation involved.

OR

Give two examples of white coloured hydrated salt along with their chemical formula.

38. After the pollen lands on a suitable stigma, it has to reach the female germ-cells which are in the ovary. For this, a tube grows out of the pollen grain and travels through the style to reach the ovary. After fertilization, the zygote divides several times to form an embryo within the ovule. 4

(i) Name any two agents of pollination.

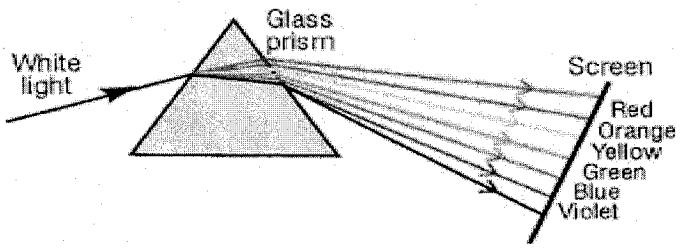
(ii) What happens to the ovary and ovule after fertilization?

(iii) Differentiate between unisexual and bisexual flower. Give one example for each.

OR

Differentiate between self-pollination and cross pollination.

39. A prism is a transparent refracting medium bounded by two plane surfaces inclined to each other at a certain angle. When white light is incident on one refracting surface of the prism, the light splits up into constituent colours. When the dispersed white light is made to fall on a screen, we get a band of seven colours called the spectrum of white light.



(i) Which property of light is used by prism to form a spectrum?

(ii) Name the colour that bends the most when white light is allowed to pass through a glass prism

(iii) Mention any two factors on which angle of deviation depends.

OR

Danger signals are usually red in colour. Give reason.

*****END OF THE QUESTION PAPER*****