| Roll Number | | |
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SET A

# INDIAN SCHOOL MUSCAT
## SECOND PRELIMINARY EXAMINATION
## SCIENCE

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

07.02.2019 | Max. Marks: 80

***General Instructions:***

***(i) The question paper comprises of five sections – A, B, C, D and E. You are to attempt all the sections.***

***(ii) All questions are compulsory.***

***(iii) Internal choice is given in sections B, C, D and E.***

***(iv) Question numbers 1 and 2 in Section-A are one mark questions. They are to be answered in one word or in one sentence.***

***(v) Question numbers 3 to 5 in Section- B are two marks questions. These are to be answered in about 30 words each.***

***(vi) Question numbers 6 to 15 in Section-C are three marks questions. These are to be answered in about 50 words each.***

***(vii) Question numbers 16 to 21 in Section-D are 5 marks questions. These are to be answered in about 70 words each.***

***(viii) Question numbers 22 to 27 in Section- E are based on practical skills. Each question is a two marks question. These are to be answered in brief.***

### SECTION A

1. Distinguish between a gamete and zygote? 1

2. What is Coliform? What does its presence in water indicate? 1

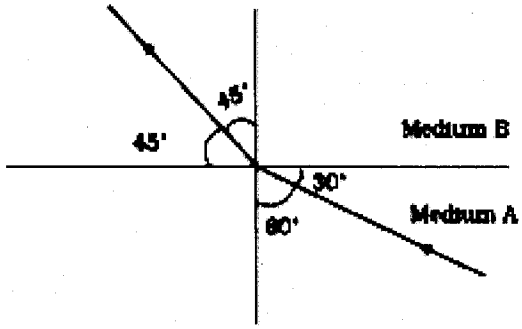
### SECTION B

3. What are non-renewable resources of energy? Give 2 examples. 2

4. If the image formed by a spherical mirror for all positions of the object placed in front of it is always erect and diminished, what type of mirror is it? Draw a labelled ray diagram to support your answer. 2

**OR**

Figure below shows a ray of light as it travels from medium A to medium B. Find the refractive index of the medium B relative to medium A is




5. A study found that children with light-coloured eyes are likely to have parents with light-coloured eyes. On this basis, can we say anything about whether the light eye colour trait is dominant or recessive? Why or why not? 2

## SECTION C

6. Two lamps, one rated 100 W at 220 V and the other 200 W at 220V are connected in series to an electric main supply of 220V. Find the current in the circuit. 3

7. What is tidal energy? Explain how tidal energy is harnessed and write one limitation of the use of tidal energy. 3

8. Write any two properties of magnetic field lines. Sketch the magnetic field pattern near a current carrying long solenoid. 3

**OR**

What is meant by the term 'frequency of an alternating current'? What is the frequency of alternating current in India? Why is an alternating current considered to be advantageous over direct current for long range transmission of electric energy?

9. An elderly person cannot see objects closer than 1m from the eye clearly. Name the defect of vison he is suffering from. How can it be corrected? Draw a ray diagram for the (i) defect of vision and also (ii) its correction 3

10. a) Identify the substance oxidized, substance reduced, oxidizing agent and reducing agent : 3
$MnO_2 + 4\ HCl \rightarrow MnCl_2 + 2\ H_2O + Cl_2$
b) Complete the following reaction :
$Cu(s) + 2\ AgNO_3\ (aq) \rightarrow$

11. a) Define Corrosion. 3
b) What is corrosion of Iron called?
c) How can we recognize the corrosion of silver?

**OR**

Dry pellets of a base X when kept in open absorbs moisture and turns sticky. The compound is also formed by the chlor-alkali process. Write the chemical name and formula of X .Name the type of reaction occurs when X is treated with dilute Hydrochloric acid. Write the chemical reaction.

12. In the following table, positions of six elements A, B , C , D ,E and F are given as they are in the Modern Periodic Table: 3

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

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

a) Name the element which forms only covalent compounds.
b) Name the element which is a metal with valency 3.
c) Out of B and C whose atomic radius is bigger and why?

13. Give the significance in the study of food chain. 3

14. a) What are the functions of testosterone and estrogen? 3
b) .Define Puberty?

**OR**

a) Write two points of difference between sexual and asexual types of reproduction. Draw a neat diagram of seed germination and label the following parts
(i) Radicle (ii) Plumule

15. Explain the terms analogous and homologous organs with examples. 3

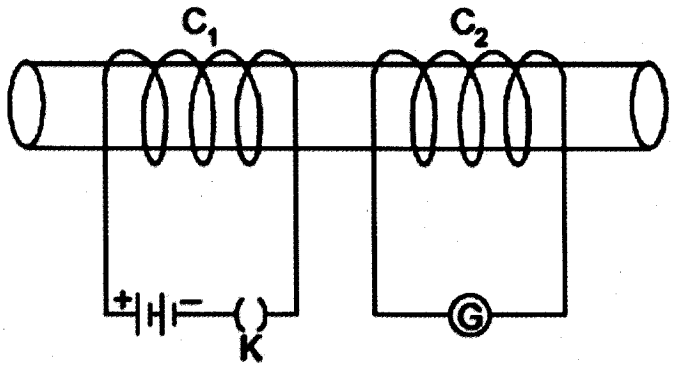
## SECTION D

16. (a) A student is unable to see clearly the words written on the blackboard placed at a distance approximately 3 m from him. Name the defect of vision the boy is suffering from. State the possible causes of this defect. How can this defect be corrected? With the help of a suitable diagram explain the method of correcting it. 5
(b)What are the values of (i) near point and (ii) far point of vison of a normal adult person.

**OR**

(a) Write the function of each of the following parts of human eye: (i) Cornea (ii) Iris (iii) Crystalline lens (iv) Ciliary muscles.
(b) Why does the sun appear reddish early in the morning? Will this phenomenon be observed by an astronaut on the Moon? Give reason to justify your answer.

17. Two coils $C_1$ and $C_2$ are wrapped around a non-conducting cylinder. Coil $C_1$ is connected to a battery and key and $C_2$ with galvanometer G. On pressing the key (K), current starts flowing in the coil $C_1$. State your observation in the galvanometer: 5




(i) When key K is pressed on

(ii) When current in the coil $C_1$ is switched off.
(iii) When the current is passed continuously through coil $C_1$
(iv) Name and state the phenomenon responsible for the above observation.
(v) State the rule that is used to determine the direction of current produced in the phenomena.

18. Write one chemical equation to represent each of the following types of reactions of organic substances : 5
a ) Substitution
b ) Saponification
c) Esterification
d) Addition reaction
e) Oxidation reaction

**OR**

a ) Write the next homologue of $CH_3OH$ and HCOOH.
b ) Identify the functional group in :
i) Pentanone ii) butanoic acid
c) Write a chemical test to distinguish between ethanol and ethanoic acid.
d) Write any two advantages of using detergents over soaps.

19. a) Write any two differences between Roasting and Calcination. 5
b) Define the terms:
i) mineral ii) ore iii) gangue
c) Show on diagram the transfer of electrons between the atoms in the formation of MgO.

20. a) Give an example of a plant hormone that promotes its growth. Where it is synthesized? 5
b) Name a gland associated with brain. Which problem is caused due to the deficiency of the hormone released by this gland?
c) Draw a neat diagram of a reflex arc and label any three parts.

21. a) What are enzymes? Name any one enzyme of our digestive system and write its function 5
b) State the role of the following in human digestive system :
(i) Digestive enzymes (ii) Hydrochloric acid (iii) Villi

**OR**

**a)** Draw a neat diagram of excretory system of human beings and label on it:
(i) Left kidney (ii) Urinary bladder ( iii) Ureters (iv) Urethra.
b) List any two characteristics of lungs which make it an efficient respiratory surface.

## SECTION E

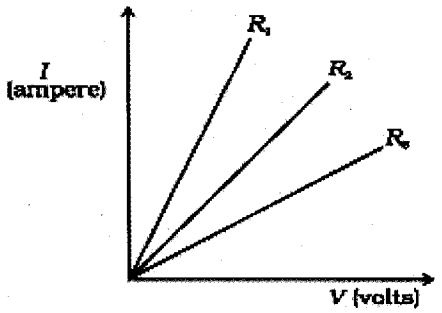
22. Consider the path of a ray of light passing through a rectangular glass slab from air for different angles of incidence. (i) Which one is greater: angle of incidence or angle of refraction? (ii) What happens to the emergent angle on increasing the incident angle at air-glass interface? (iii) State the conditions when no refraction occurs. 2

**OR**

Sunita takes a mirror which is depressed at the centre and mounts it on a mirror stand. An erect and enlarged image of her face is formed. She places the mirror on a stand along a meter scale at 15 cm mark. In front of this mirror, she mounts a white screen and moves it back and forth along

the meter scale till a sharp, well defined inverted image of a distant tree is formed on the screen at 35 cm mark.
(i) Name the mirror and find its focal length.
(ii) Why does Sunita get sharp image of the distant building at 35 cm mark?

23. 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. Which wire has a greater resistance and why? 2




24. Which of the following pair will show displacement reaction and why? 2
    a) $FeSO_4$ and Cu metal
    b) $FeSO_4$ and Al metal

**OR**

Rahul adds aq.solution of barium chloride to an aq. solution of sodium sulphate. What would he observe? Write the type of chemical reaction.

25. When we add water to quicklime we observe some changes. On the basis of those changes what can be concluded about the reaction between quick lime and water. 2

26. List the steps of preparation of temporary mount of a leaf peel to observe stomata. 2

27. A student is to conduct an experiment to show $CO_2$ is released during respiration. List two precautions that he/she must take for obtaining correct observation. 2

**OR**

Mention about the four events that occur during binary fission in amoeba.

**End of the Question Paper**

| Roll Number | | |
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SET B

# INDIAN SCHOOL MUSCAT
## SECOND PRELIMINARY EXAMINATION
## SCIENCE

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

07.02.2019 | Max. Marks: 80

***General Instructions:***
***(i) The question paper comprises of five sections – A, B, C, D and E. You are to attempt all the sections.***
***(ii) All questions are compulsory.***
***(iii) Internal choice is given in sections B, C, D and E.***
***(iv) Question numbers 1 and 2 in Section-A are one mark questions. They are to be answered in one word or in one sentence.***
***(v) Question numbers 3 to 5 in Section- B are two marks questions. These are to be answered in about 30 words each.***
***(vi) Question numbers 6 to 15 in Section-C are three marks questions. These are to be answered in about 50 words each.***
***(vii) Question numbers 16 to 21 in Section-D are 5 marks questions. These are to be answered in about 70 words each.***
***(viii) Question numbers 22 to 27 in Section- E are based on practical skills. Each question is a two marks question. These are to be answered in brief.***

### SECTION A

1. Define the terms unisexual and bisexual. 1

2. a) How does concentration of a pesticide change once it enters a food chain. 1
   b) In an ecosystem, rats feed on grains. Name the trophic level to which the rats belong.

### SECTION B

3. What are adverse effects of combustion of fuels on the environment? 2

4. A convex mirror used on a bus has a focal length of 200 cm. If a scooter is located at 400 cm from this mirror, find the position and magnification of the image formed in the mirror. 2

**OR**

Define (i) Centre of curvature of a spherical mirror, (ii) pole of a spherical mirror. Using mirror formula find the distance at which an object should be placed for getting a real inverted image at 45 cm using a concave mirror of focal length 20 cm.

5. Will geographical isolation be a major factor in the speciation of a self pollinating plant species? Why or why not? 2

## SECTION C

6. What is tidal energy? Explain how the tidal energy is harnessed and write one limitation of the use of tidal energy. 3

7. What is "dispersion of white light"? Draw a labelled diagram to illustrate the recombination of the spectrum of white light. 3

8. Give reason: 3

   (i) The colour of the clear sky is blue during day time.

   (ii) Lights of red colour are used for danger signals.

   (iii) The sun can be seen above the horizon about two minutes before actual sunrise.

**OR**

With the help of a suitable diagram explain how the phenomenon of scattering of light can be observed in laboratory?

9. What is biomass? Explain the working of a biogas plant using a labeled schematic diagram. 3

10. a) Why is respiration considered as an exothermic reaction? 3
    b) Define the terms oxidation and reduction.
    c) Identify the substance that is oxidized and reduced in the following reaction.
    $CuO\ (s) + Zn\ (s) \rightarrow Cu\ (s) + ZnO\ (s)$

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

**OR**

What is baking soda chemically called? Give reaction involved in its preparation. Write one of its uses.

12. 3

| 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) Which element is a metal with valency 1?
b) Which element is a non-metal with valency 2?
c) Write the formula of the compound formed when B combines with D.

13. Explain the terms analogous and homologous organs with examples 3

14. a) What is the effect of DNA copying which is not perfectly accurate on the reproduction process? 3

b) List the parts of human male reproductive system which contribute fluid to the semen. State two advantages semen offers to the sperms.

**OR**

a) Draw a diagram showing germination of pollen on stigma of a flower.
b) Label pollen grain, male germ- cells, pollen tube and female germ-cell in the above diagram.

15. Why must we conserve our forests? List any two causes for deforestation to take place. 3

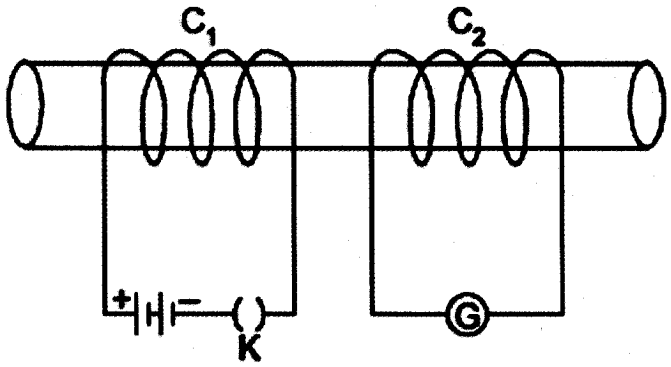
## SECTION D

16. Derive the expression for the heat produced due to a current ***I*** flowing for a time interval ***t*** through a resistor ***R*** having a potential difference ***V*** across its ends. 5
With which name is the relation known?
How much heat will an instrument of 12 W produce in one minute if it is connected to a battery of 12 V?

**OR**

State Ohm's law. Write the necessary conditions for its validity. How is this law verified experimentally? What will be the nature of graph between potential difference and current for a conductor? Name the physical quantity that can be obtained from this graph.

17. Two coils $C_1$ and $C_2$ are wrapped around a non-conducting cylinder. Coil $C_1$ is connected to a battery and key and $C_2$ with galvanometer G. On pressing the key (K), current starts flowing in the coil $C_1$. State your observation in the galvanometer: 5




(i) When key K is pressed on.
(ii) When current in the coil $C_1$ is switched off.
(iii) When the current is passed continuously through coil $C_1$
(iv) Name and state the phenomenon responsible for the above observation.
(v) The rule that is used to determine the direction of current produced in the phenomena.

18. An organic compound A is an essential constituent of wine. Oxidation of A yields an organic compound B which is present in vinegar. Name the compounds A and B and write their structural formula. What happens when A and B reacts in the presence of an acid catalyst? Write the chemical equation for the two reactions. 5

**OR**

i) Define the terms: Catenation and Isomerism.
ii) Name any two chemical substances added to denature alcohol.
iii) Compare the properties of Diamond and Graphite. (any two)

19. A metal M which is one of the best conductors of heat and electricity used in making electric wires is found in nature as sulphide ore $M_2S$ ? 5

i) Name the metal M.
ii) Which process will be suitable for the refining of this metal?
iii) Write the balanced chemical reactions involved in the process of extraction.
iv) Write the constituents of the alloy Brass.

20. a) Why is it advised to use iodised salt in our diet? 5
b) Write one example each of the following tropic movements :
(i) Positive phototropism (ii) Negative phototropism
(iii) Positive geotropism (iv) Negative geotropism
c) Name the part of the brain which controls posture and balance of the body.
d) State the function of:
(i) gustatory receptors, and
(ii) olfactory receptors

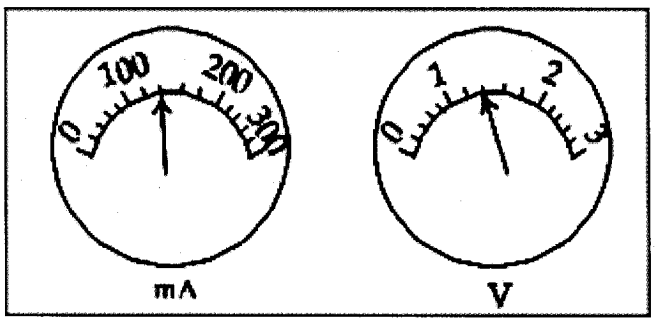
21. a) Why is the small intestine in herbivores larger than in carnivores? 5
b) Name any three important enzymes of pancreas and the food component on which they act. What is the role of pepsin in stomach?
c) Give any two functions of lymph.

**OR**

**a)** Draw a well diagram of stomata and label any two parts. State any two functions of the same.
b) After long running you may experience cramps in your leg muscles. What is the reason behind it?
c) How does diaphragm help in inhalation?

## SECTION E

22. The current flowing through a resistor connected in an electrical circuit and the potential difference developed across its ends are shown in the given ammeter and voltmeter. Find the least count of the voltmeter and ammeter. What is the voltage and the current across the given resistor? 2




**OR**

In circuit A three bulbs are connected in series. In circuit B three bulbs are connected in parallel. In circuit C only one bulb is connected. Consider the potential differences in all circuits same and all bulbs are identical. In which circuit the bulb(s) glow (i) dimmest (ii) with maximum intensity? Give reason.

23. A student focuses the image of a well illuminated distant object on a screen using a convex lens. After that he gradually moves the object towards the lens and each time focuses its image on the screen by adjusting the lens. 2

(i) In which direction, towards the screen or away from the screen, does he move the lens?

(ii) What happens to the image on the screen when the lens is moved too close to the lens?

24. What happens when Ferrous sulphate crystals are heated? 2

**OR**

On adding Zinc granules to freshly prepared Ferrous sulphate solution, what is observed?

25. The pH of four solutions A, B, C and Dare 6, 8,10,5 respectively. Arrange the following in the increasing order of $H^+$ concentration. Give reason. 2

26. Write two precautions to be taken while identifying different parts of an embryo of a dicot seed. 2

27. Mention the observations of the process of binary fission in Amoeba 2

**OR**

A student observed a permanent slide showing asexual reproduction in yeast. Draw diagrams of the observation he must have made from the slide. Also name the process.

**End of the Question Paper**

| Roll Number | | |
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SET C

# INDIAN SCHOOL MUSCAT
## SECOND PRELIMINARY EXAMINATION
## SCIENCE

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

07.02.2019 | Max. Marks: 80

***General Instructions:***

***(i) The question paper comprises of five sections – A, B, C, D and E. You are to attempt all the sections.***

***(ii) All questions are compulsory.***

***(iii) Internal choice is given in sections B, C, D and E.***

***(iv) Question numbers 1 and 2 in Section-A are one mark questions. They are to be answered in one word or in one sentence.***

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***(vi) Question numbers 6 to 15 in Section-C are three marks questions. These are to be answered in about 50 words each.***

***(vii) Question numbers 16 to 21 in Section-D are 5 marks questions. These are to be answered in about 70 words each.***

***(viii) Question numbers 22 to 27 in Section- E are based on practical skills. Each question is a two marks question. These are to be answered in brief.***

### SECTION A

1. Define the terms unisexual and bisexual flowers. 1

2. What is Coliform? What does its presence in water indicate? 1

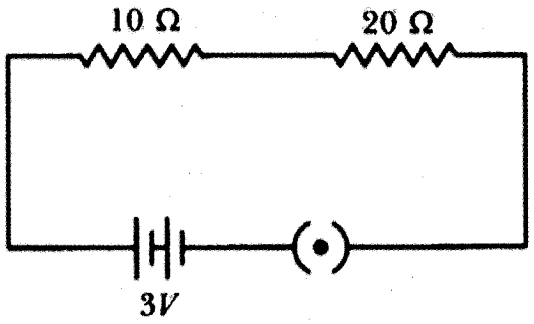
### SECTION B

3. "Burning fossil fuels is a cause of global warming. "Justify this statement. 2

4. An electric heater is used on a 220 V supply and it consumes a current of 3.4 A. Calculate: (a) its resistance and (b) its power when it is in use. 2

**OR**

Study the following electric circuit and find (i) the current flowing in the circuit and (ii) the potential difference across 10 Ω resistor.




5. Will geographical isolation be a major factor in the speciation of a self pollinating plant species? Why or why not? 2

## SECTION C

6. Why does the Sun appear reddish early in the morning? Will this phenomenon be observed by an astronaut on the Moon? Give reason to justify your answer. 3

7. Differentiate between short-circuit and overloading. Name a device in the household that acts as a safety measure for it. 3

8. The image of an object placed at 60 cm in front of a lens is obtained on a screen at a distance of 120 cm from the lens. Find the focal length of the lens. What would be the height of the image if the object is 5 cm high? 3

**OR**

A convex mirror used on a bus has a focal length of 200 cm. If a scooter is located at 400 cm from this mirror, find the position and magnification of the image formed in the mirror.

9. a) Mention the factors on which the magnitude of force experienced by a current-carrying conductor placed in a magnetic field depend. 3

b) Under what condition is the force experienced by a current-carrying conductor placed in a magnetic field (i) maximum (ii) minimum?

c) A proton beam is moving along the direction of a magnetic field. What force is acting on proton beam? Give reason for your answer.

10. a) Why is respiration considered as an exothermic reaction? 3
b) Define the terms oxidation and reduction.
c) Identify the substance that is oxidized and reduced in the following reaction.
$CuO\ (s) + Zn\ (s) \rightarrow Cu\ (s) + ZnO\ (s)$

11. Identify the compound of calcium which is yellowish white powder and is used for disinfecting drinking water. Write its chemical name and formula. How is it manufactured? 3

**OR**

a) What is tooth enamel chemically?
b) State the condition when it starts corroding?
c) Why do doctors suggest use of tooth paste to prevent tooth decay?

12. 3

| 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) Which element is a metal with valency 2?
b) Which element is a non-metal with valency 4?
c) Write the formula of the compound formed when B combines with A.

13. Give the significance in the study of food chain. 3

14. a) What is the effect of DNA copying which is not perfectly accurate on the reproduction process? 3
b) List the parts of human male reproductive system which contribute fluid to the semen. State two advantages semen offers to the sperms.

**OR**

a) Draw a diagram showing germination of pollen on stigma of a flower.
b) Label pollen grain, male germ- cells, pollen tube and female germ-cell in the above diagram.

15. Explain the terms analogous and homologous organs with examples. 3

## SECTION D

16. a) What is dispersion of white light? What is the cause of dispersion? Draw a diagram to show the dispersion of white light by a glass prism. 5
b) A glass prism is able to produce a spectrum when white light passes through it but a glass slab does not produce any spectrum. Explain why is it so?

**OR**

a) Draw a ray diagram to show the formation of image of an object placed between infinity and the optical Centre of a concave lens.
b) A concave lens of focal length 15 cm forms an image 10 cm from the lens. Calculate
(i) the distance of the object from the lens.
(ii) the magnification for the image formed.
(iii) the nature of the image formed.

17. a) Explain briefly three different ways in which the energy from the sea can be harnessed. 5
b) Out of two solar cookers, one was covered with a plane glass slab and the other was left open. Which of the two solar cookers will be more efficient and why?

18. An organic compound X on heating with con.Sulphuric acid forms a compound Y which on addition with one molecule of hydrogen in the presence of nickel forms a compound Z. Identify X, Y and Z. Write the chemical equations for the reaction involved. 5

**OR**

i) Define the terms: Catenation and Isomerism.
ii) Name any two chemical substances added to denature alcohol.

iii) Compare the properties of Diamond and Graphite. (any two)

19. a) When a metal X is treated with cold water, it gives a base Y with molecular mass of 40 and liberates a gas Z which catches fire easily. Identify X, Y and Z. 5
b) With the help of a neat labeled diagram, explain how copper is refined.

20. a) Why is it advised to use iodised salt in our diet? 5
b) Write one example each of the following tropic movements :
(i) Positive phototropism (ii) Negative phototropism
(iii) Positive geotropism (iv) Negative geotropism
c) Name the part of the brain which controls posture and balance of the body.
d) State the function of:
(i) gustatory receptors, and
(ii) olfactory receptors.

21. a) What are enzymes? Name any one enzyme of our digestive system and write its function 5
b) State the role of the following in human digestive system :
(i) Digestive enzymes (ii) Hydrochloric acid (iii) Villi

**OR**

a) Draw a neat diagram of excretory system of human beings and label on it:
(i) Left kidney (ii) Urinary bladder ( iii) Ureters (iv) Urethra.
b) List any two characteristics of lungs which make it an efficient respiratory surface.

## SECTION E

22. Four students A, B, C and D trace the path of a ray of light passing through a glass slab for an angle of incidence 40° and measure the angle of emergence. Values measured by each of them were 18°, 22°, 25° and 40°, respectively. Which student has performed the experiment correctly? Give reason. 2

**OR**

A student obtained a blur image of an object on a screen by using a concave mirror. In order to obtain a sharp image on the screen, he will have to shift the mirror in which direction?

23. In an electric circuit, a resistor of 5 Ω resistance is connected to a battery of 5 V through an ammeter and a plug key. Now in this circuit an another resistor of 10 Ω is connected in series with the 5 ohm resistor. Will there be any change in the ammeter reading? How much? 2

24. What will you observe when a drop of ethanoic acid is placed on a strip of blue litmus paper and what does it show? 2

**OR**

What happens when a pinch of sodium bicarbonate is added to acetic acid?

25. During an experiment, Amit observed that blue colour of aq.copper sulphate changed to pale green by immersing a metallic rod for some time. 2
i) Which metallic rod he might have immersed in the solution.
ii) Mention the type of reaction.

26. Write two precautions to be taken while identifying different parts of an embryo of a dicot seed. 2

27. A student is to conduct an experiment to show $CO_2$ is released during respiration. List two precautions that he/she must take for obtaining correct observation. 2

**OR**

Mention about the four events that occur during binary fission in amoeba.

**End of the Question Paper**