2018 VI 20 **0230** **Seat No. :** | | | | | |

Time : 2½ Hours **SCIENCE (E)**

Subject Code

S	0	3	1

Total No. of Questions : 5 **(Printed Pages : 11)** **Maximum Marks : 65**

INSTRUCTIONS *: i) The question paper consists of **five** questions of **13** marks **each**.*

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

*iii) There is no overall choice, however internal choice has been provided in **two** questions of **three** marks and **one** question of **four** marks category. You have to attempt **only one** option in such questions.*

*iv) Begin **each** question on a **fresh page**.*

*v) Figures to the **right** indicate **full** marks.*

1. A) i) Select the correct alternative given below each statement and write the completed statement. **[1]**

a) The pair that will give displacement reaction is _____

- $CuSO_4$ solution and Iron metal
- $FeSO_4$ solution and copper metal
- $ZnSO_4$ solution and Iron metal
- $MgCl_2$ solution and aluminium metal

b) When calcium oxide reacts vigorously with water, it produces calcium hydroxide. This is a _____ reaction.

- Decomposition and exothermic
- Combination and exothermic
- Decomposition and endothermic
- Combination and endothermic

ii) Write the chemical name of the following : **[1]**

a) The hardest substance in the human body.

b) A compound that is used for softening hard water.

iii) A few drops of phenolphthalein indicator were added to an unknown solution 'X'. It acquired a pink colour. Now another unknown solution 'Y' was added to it dropwise and the solution became colourless **[1]**

a) What is the nature of 'X' and 'Y' ?

iv) The flowchart given below shows one of the pathways of glucose breakdown. **[1]**

Glucose $\xrightarrow{\text{in cytoplasm}}$ 'A' $\xrightarrow{\text{in muscle cell}}$ 'B' + Energy.

a) Identify 'A' and 'B'.

B) i) Sam was suffering from indigestion which caused him pain and irritation in the stomach. **[2]**

a) Why is the pain and irritation caused ?

b) How can he get rid of this pain and irritation ?

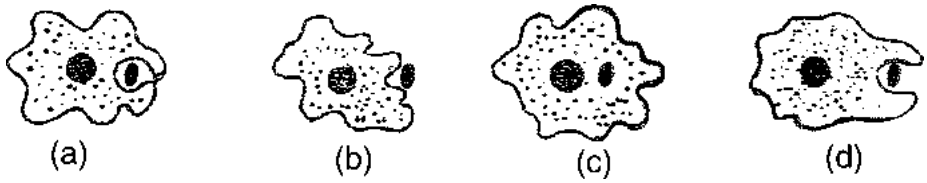
ii) On heating, green coloured ferrous sulphate crystals decomposes into ferric oxide, sulphur dioxide and sulphur trioxide and the colour of ferrous sulphate changes. **[2]**

a) Why does the green colour of ferrous sulphate change ?

b) Write a balanced chemical equation for the above reaction.

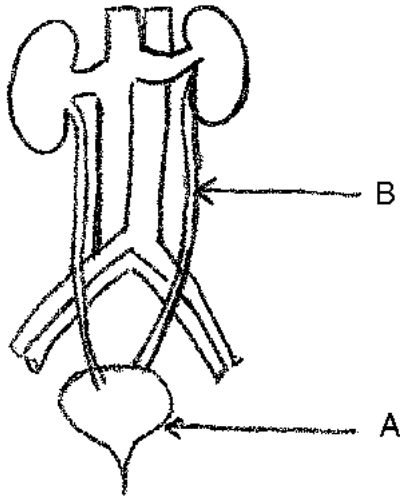
iii) Attempt the following : **[2]**

a) The given figures shows holozoic nutrition in Amoeba but in random order. Arrange the alphabets representing the figures incorrect sequence so as to give complete steps of nutrition (Do not draw the diagram).



b) Herbivores have a long small intestine. Why ?

C) Observe the given diagram of excretory system and answer the questions given below it. **[3]**



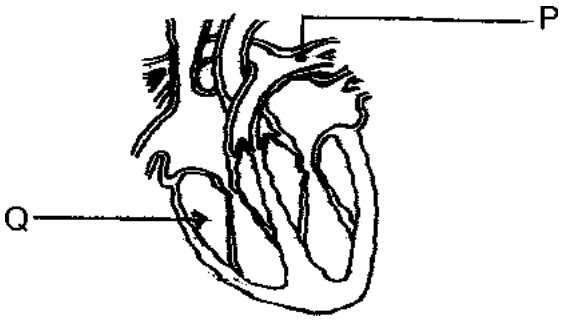
a) Name the parts labelled as 'A' and 'B'.

b) Write the function of nephron found in the kidney.

c) Sita is able to control the urge to urinate. Why ?

OR

c) Observe the given diagram of human heart and answer the questions given below it. **[3]**



a) Name the parts labelled as 'P' and 'Q'.

b) Give the function of the valves present in the heart.

c) Arteries are thick walled blood vessels. Why ?

2. A) i) Match the plant hormones in column A with their functions in column B and rewrite the correct pairs : **[1]**

Column A	**Column B**
a) Auxins	i) Promotes cell division
b) Cytokinins	ii) Inhibits growth
	iii) Increases length of the stem

ii) Name the following : **[1]**

a) The part of the brain responsible for maintaining balance and posture of the body.

b) The downward growth of roots in response to gravity.

iii) Sunita is suffering from a disease 'X'. She is advised to include iodised salt in her diet. **[1]**

a) Name the disease Sunita is suffering from.

b) Write one symptom of the disease.

iv) State two ways to prevent the rusting of iron. **[1]**

v) Attempt the following. **[2]**

a) Reflex arcs have evolved in animals. Why ?

b) State the importance of the ozone layer in the atmosphere.

B) i) An ecosystem has snakes, green plants, eagles and rats as a part of a food chain. **[2]**

a) Which organism would belong to the third trophic level of the food chain ?

b) If the energy available to the rat is 100 J. How much energy would be available to the next trophic level ?

c) Why are green plants called producers ?

ii) The management of resources should ensure equitable distribution of resources. **[2]**

a) What does the concept of sustainable development encourage ?

b) State any two changes you can make in your habits to reduce the consumption of electricity.

C) Extraction of metals from their ores involves various steps. **[3]**

a) Write one difference between roasting and calcination.

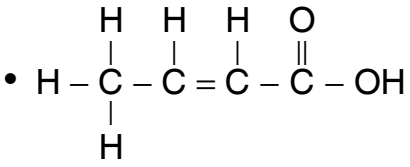
b) Name the reaction that is used to join railway tracks.

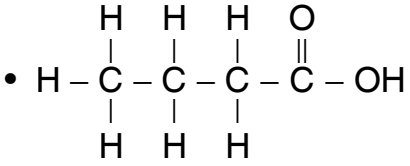
c) What would you take as the anode in the electrolytic refining of copper ?

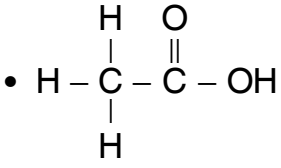
d) The metals high up in the reactivity series cannot be obtained by heating with carbon. Why ?

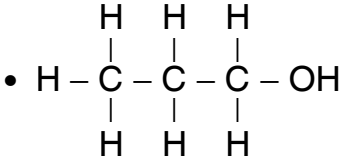
3. A) i) Select the correct alternative given below each statement and write the completed statement. **[1]**

a) The correct structure of ethanoic acid is _____

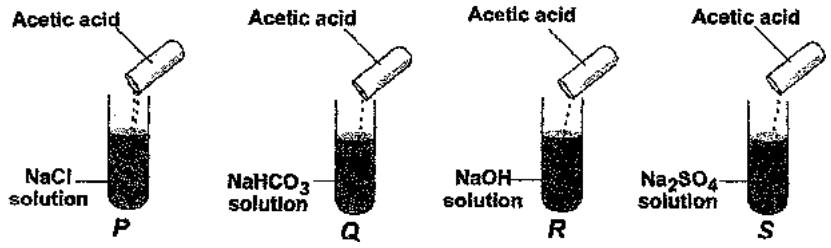








b) In which of the following tubes effervescence will occur ?



- P
- Q
- R
- S

ii) State the following : **[1]**

a) The pair that is <u>incorrectly</u> matched

Implantation – uterus

Fertilization – ovaries

Sperm formation – testis

b) The mode of asexual reproduction in which a new organism can develop from an outgrowth of the parent individual.

iii) Consider the elements A, B, C and D having atomic number 5, 12, 13 and 19 respectively. **[1]**

a) Which two elements will show similar chemical properties ?

b) Write the electronic configuration of element D.

iv) State two limitations of Mendeleev's periodic table. **[1]**

v) Draw the structure of benzene. **[1]**

B) i) The elements of the third period of the periodic table are given below : **[2]**

Group	I	II	III	IV	V	VI	VII
Period 3	Na	Mg	Al	Si	P	S	Cl

a) Which atom is biggest ?

b) Identify the most non-metallic element.

c) Why is the above element most non-metallic in nature ?

ii) Carbon compounds may be saturated as well as unsaturated. **[2]**

a) Differentiate between Alkane and Alkene with respect to the type of bond between carbon atoms.

b) State the role of nickel in the hydrogenation of vegetable oils.

C) i) Draw a neat diagram of rhizopus and label : **[4]**

a) Sporangium

b) Spores.

ii) Name :

a) A method of vegetative propagation in plants.

b) The common passage for both sperms and urine.

iii) The female-male sex ratio is declining at an alarming rate. Why ?

OR

C) i) Draw a neat diagram to show the germination of pollen grain on stigma and label. **[4]**

a) Stigma

b) Female germ cell.

ii) Name :

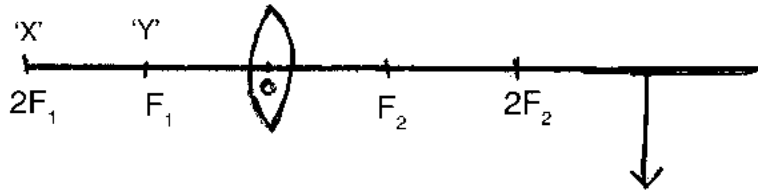
a) A unisexual flower

b) A contraceptive device placed in the uterus to prevent pregnancy.

iii) The testes in males are located in scrotum outside the abdominal cavity. Why ?

4. A) i) Select the correct alternative given below each statement and write the completed statement. **[1]**

a) To produce an image by a convex lens at a position shown in the figure, the object needs to be placed _____



- Between 'Y' and 'O'
- At 'Y'
- Between 'X' and 'Y'
- At 'X'

b) Power of a convex lens of focal length 0.5 m is _____

- +2 D
- –2 D
- +0.2 D
- – 0.2 D

ii) Give a term for the following : **[1]**

a) The remains or impressions of primitive organisms found buried in the earth.

b) The transmission of characters from parents to offsprings from generation to generation.

iii) Distinguish between homologous organs and analogous organs (one point). **[1]**

B) i) A blue coloured flower plant having genetic makeup BB is crossbred with that of white flower having genetic makeup bb. **[2]**

a) State the colour of the flower you would expect in the F_1 generation plants.

b) If the F_1 generation plants are self-pollinated, what will be the ratio of blue to white colour flower plants in the F_2 generation.

c) Write one point of difference between acquired traits and inherited traits.

ii) The sun has always been an enormous source of energy **[2]**

a) Name an element used for making solar cells.

b) State two principal advantages associated with solar cells.

c) Which part of a solar cooker is responsible for the green house effect.

iii) Answer the following : **[2]**

a) State any two characteristics of a good source of energy.

b) Write any two properties of an image formed by a plane mirror.

C) There are various sizes as well as types of images produced by different mirrors : **[4]**

i) Draw a neat diagram to show the formation of an image by a convex lens when the object is placed beyond $2F_1$.

ii) a) An object is placed 15 cm infront of a concave mirror of focal length 12 cm. At what distance from the mirror should a screen be placed so that a sharp focused image can be obtained.

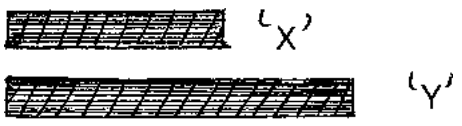
b) Also find the magnification produced by the mirror.

5. A) i) Observe the correlation in the first pair and complete the second pair. **[1]**

a) Controls size of the pupil : Iris :: Modifies curvature of the eye lens : _____

b) Blue colour of sky : Scattering of light :: Twinkling of stars : _____

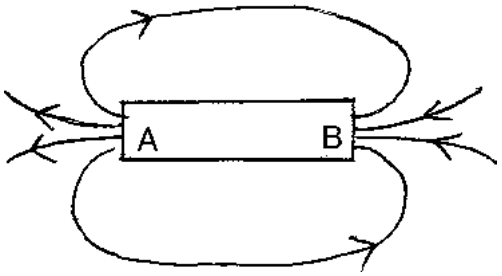
ii) Two wires 'X' and 'Y' of same thickness and same materials are shown below : **[1]**



a) Which of the above two wires has a greater resistance. Why ?

iii) Name each of the following : **[1]**

a) The letter which indicates the north pole of the magnet given in the figure below.



b) A coil of many circular turns of insulated copper wire wrapped closely in the shape of a cylinder.

iv) State the function of a commutator in an electric motor. **[1]**

B) An electric current flowing through a conductor produces a magnetic field : **[2]**

i) Which rule is used to find the direction of the following ?

a) Magnetic field produced around a straight current carrying conductor.

b) Current induced in a coil due to its rotation in a magnetic field.

ii) Write one difference between an alternating current and a direct current.

C) i) Draw neat diagrams : **[3]**

a) To show the image formation in a myopic eye.

b) Correction for myopia.

ii) Why are some people often prescribed bifocal lenses ?

OR

C) i) Draw neat diagrams. **[3]**

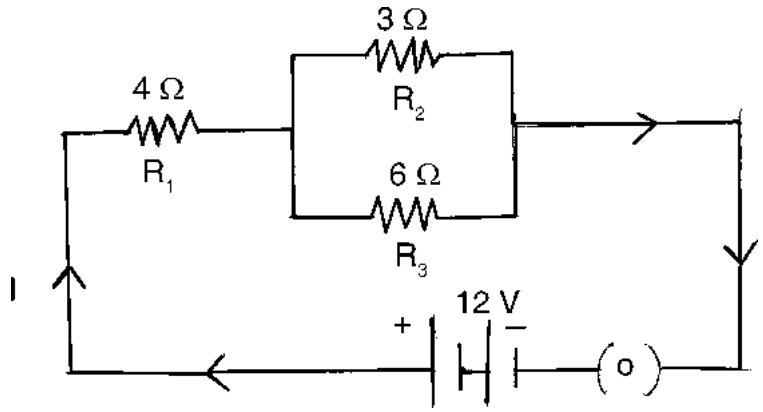
a) To show the image formation in a hypermetropic eye.

b) Correction for hypermetropia.

ii) State two causes of presbyopia.

D) Attempt the following : **[4]**

i) Observe the following circuit diagram and answer the questions given below.



Find :

a) Total resistance of the circuit

b) Total current flowing in the circuit

c) The potential difference across R_1.

ii) Bulbs are usually filled with chemically inactive gases such as nitrogen and argon. Why ?