2017
SCIENCE

Total marks : 80   Time : 3 hours

General instructions:
i)   *Approximately 15 minutes is allotted to read the question paper and revise the answers.*
ii)   *The question paper consists of 26 questions. All questions are compulsory.*
iii)   *Internal choice has been provided in some questions.*
iv)   *Marks allocated to every question are indicated against it.*
N.B: Check that all pages of the question paper is complete as indicated on the top left side.

1.   **Choose the correct answer from the given alternatives:**

    (a)   The solutions that have pH between 0 and 2 are   **1**
        (i)   strongly basic   (ii)   weakly basic
        (iii)   strongly acidic   (iv)   weakly acidic

    (b)   The most abundant non-metal in the earth's crust is   **1**
        (i)   chlorine   (ii)   hydrogen
        (iii)   silicon   (iv)   oxygen

    (c)   Vinegar is a dilute solution of   **1**
        (i)   propionic acid   (ii)   acetic acid
        (iii)   formic acid   (iv)   butyric acid

    (d)   The human eye lens is   **1**
        (i)   convex   (ii)   concave
        (iii)   cylindrical   (iv)   bi-focal

    (e)   In series combination of electrical appliances, the total electrical power **1**
        (i)   increases   (ii)   decreases
        (iii)   may increase or decrease   (iv)   remains the same

    (f)   The form of energy which is not directly or indirectly derived from solar energy is   **1**
        (i)   geothermal energy   (ii)   wind energy
        (iii)   tidal energy   (iv)   hydro energy

    (g)   Which of the following is responsible for the transport of water and minerals in plants?   **1**
        (i)   Sieve tubes   (ii)   Companion cells
        (iii)   Phloem   (iv)   Xylem

(h)   Pollination by insect is called   **1**
  (i)   anemophily   (ii)   chiropterophily
  (iii) entomophily   (iv)   ornithophily

(i)   If a plant is heterozygous for tallness, the F_2 generation has both tall and dwarf plants. This proves the principle of   **1**
  (i)   paired factors   (ii)   dominance
  (iii) segregation   (iv)   independent assortment

(j)   The method of disposing solid wastes with the help of cultured earthworms is known as   **1**
  (i)   composting   (ii)   vermiculture
  (iii) recycling   (iv)   incineration

Answer the following questions in one word or one sentence:

2.   Write the chemical formula of Plaster of Paris.   **1**

3.   Which mirror is used as driver's mirror?   **1**

4.   Name the respiratory organ of earthworm.   **1**

5.   Which hormone controls the calcium level in human blood?   **1**

6.   Name the branch of science that deals with the study of heredity and variation.
                                                                                  1

Answer the following questions in about 20-30 words:

7.   What is dental amalgam? Mention one use of it.   **1+1=2**

8.   Why synthetic detergents are called soapless soaps? Give one reason why the use of synthetic detergents should be avoided.   **1+1=2**

9.   Define Fleming's Left Hand Rule.   **2**

10. Mention two disadvantages of using fossil fuels.   **2×1=2**

11. List four benefits of water harvesting.   **4×½=2**

Answer the following questions in about 40-60 words:

12. Explain any three factors affecting the rate of a chemical reaction.   **3×1=3**

13.   A white powdery substance has a strong smell of chlorine. It is used to disinfect drinking water. Identify the compound. Write its chemical formula. Give the chemical reaction when it reacts with water.   **1+1+1=3**

14.   Define metallurgy. Explain the method of magnetic separation during concentration of ores.   **1+2=3**

15.   What is formalin? Give two uses of formaldehyde.   **1+2=3**

16. **a.** A concave lens has a focal length of 15cm. At what distance should the object be placed from the lens so that it will form an image at 10cm from the lens? Also find the magnification of the image.

                                        Or   **3**

   b. An object 5cm in length is held 25cm away from a convex lens of focal length 10cm. Find the position, nature and size of the image formed.

17. **a.** List any three advantages and disadvantages of solar energy.

                                        Or   **1½+1½=3**

   b. List any three hazards of using nuclear energy. Mention three safety measures that should be observed to protect the surrounding environment and people.

18. **a.** Explain the three steps in blood clotting/coagulation in human body.   **3×1=3**

                                        Or

   b. Explain the two main steps involved in the physiology of respiration in human beings.   (1½+1½=3)

19. **a.** Draw the structure of a complete flower and label the mentioned parts:
       (i) stigma (ii) anther (iii) ovary (iv) receptacle

                                        Or   **1+4×½=3**

   b. Draw the structure of a synapse between two successive neurons and label the mentioned parts:
       (i) dendrite (ii) axon (iii) terminal knobs (iv) synapse

20.   Describe any three types of chromosomes according to the position of centromere.   **3×1=3**

21.   What is logging? Write two adverse effects of logging.   **1+2=3**

Answer the following questions in about 70-100 words:

22. **a**. Explain Haber's process for the manufacture of ammonia with the help of a labelled diagram.

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Or   **3+2=5**

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  b. Explain the Frasch process for the extraction of sulphur with the help of a labelled diagram.

23. **a**. Explain the construction and working of an astronomical telescope with the help of a ray diagram.

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Or   **3+2=5**

</div>

  b. Derive the lens formula with the help of a ray diagram.

24. **a**. With the help of a labelled diagram, explain the working of a D.C motor.

<div align="right">

2+3=5

</div>

<div align="center">

Or

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  b. With the help of a labelled diagram, explain the construction and working of a dry cell. Give the chemical equations involved.   **(2+1½+1½=5)**

25. **a**. Explain the process of digestion and egestion in grasshopper. Draw a labelled diagram of the digestive system of grasshopper.   **3+2=5**

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Or

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  b. Name the main parts of the human excretory system. Briefly explain the structure of a human kidney with the help of a diagram.   **(4×½+1+2=5)**

26.   What is global warming? Explain four major consequences associated with green house effect and global warming.   **1+4×1=5**

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