2019
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 unit for the rate of reaction is **1**

(i) mol L^{-1} (ii) mol L^{-1} min^{-1}

(iii) mol L min^{-1} (iv) L^{-1} min^{-1}

(b) Which of the following metal on combination with Oxygen would yield basic metal oxide? **1**

(i) Phosphorus (ii) Sodium

(iii) Copper (iv) Calcium

(c) Which of the following compound contains a carboxyl group? **1**

(i) CH_3OH (ii) CH_3CHO

(iii) $CH_3COOC_2H_5$ (iv) CH_3COOH

(d) Coloured band of light obtained by dispersion of white light is called **1**

(i) shadow (ii) image

(iii) mirage (iv) spectrum

(e) The instrument used for measuring potential difference is **1**

(i) Voltmeter (ii) Galvanometer

(iii) Ammeter (iv) Potentiometer

(f) Which of the following variety of coal contains the highest percentage of carbon? **1**

(i) Lignite (ii) Peat

(iii) Anthracite (iv) Bituminous

(g) In which visible spectrum does maximum photosynthesis occur? **1**

(i) Green (ii) Yellow

(iii) Blue (iv) Violet

(h) Pollination by insects is called **1**

(i) Chiropterophily (ii) Ornithophily

(iii) Anemophily (iv) Entomophily

(i) The genotypic ratio in F_2 generation of monohybrid cross will be **1**

(i) 1:2:1 (ii) 3:1
(iii) 1:1 (iv) 1:2

(j) The industrial process designed to reduce unwanted materials to simple solid and gaseous residue is called **1**

(i) composting (ii) recycling
(iii) incineration (iv) landfilling

Answer the following questions in one word or one sentence:

2. What happens when a solution of sodium hydrogen carbonate is heated? **1**

3. Define the term 'critical angle'. **1**

4. What is 'translocation'? **1**

5. What is meant by the term 'parthenogenesis'? **1**

6. Give an example of homologous organs. **1**

Answer the following questions in about 20-30 words:

7. Write the chemical formula of cryolite. Why is it added to bauxite in the extraction of aluminium? **1+1=2**

8. Name the two monomers used in the synthesis of nylon. Write any two uses of nylon. **1+1=2**

9. What is a solenoid? How is it different from a permanent magnet? **1+1=2**

10. What is wind energy? List any two important uses of wind energy. **1+1=2**

11. Write any two benefits of water harvesting. **2×1=2**

Answer the following questions in about 40-60 words:

12. Differentiate between an acid and a base according to Bronsted-Lowry concept, giving one example each. **2+1=3**

13. Write the chemical name of plaster of Paris. Give one physical property and one use of plaster of Paris. **1+2=3**

14. Explain Froth floatation process with the help of a labelled diagram. **2+1=3**

15. Explain the cleansing action of soap. **3**

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

Or **3**

b. A convex lens forms a real and inverted image of a needle at a distance of 50cm from it. Where is the needle placed in front of the convex lens, if the image is equal to the size of the object? Also find the power of the lens.

17. **a**. List any three differences between nuclear fission reaction and nuclear fusion reaction.

Or **3×1=3**

b. List any three advantages and disadvantages of solar energy.

18. **a**. Draw a neat diagram of the digestive system of humans and label the pancreas and gall bladder.

Or **2+1=3**

b. Draw a neat diagram of the respiratory organ in humans and label the bronchus and alveolus.

19. **a**. Explain any three artificial methods of vegetative propagation.

Or **3×1=3**

b. Explain any three modes of asexual reproduction in animals.

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

21. Mention any three adverse effects of fishing with chemicals. **3×1=3**

Answer the following questions in about 70-100 words:

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

Or **3+2=5**

b. Explain the electrolytic reduction of Alumina by Hall's process with the help of a labelled diagram.

23. **a.** Draw a ray diagram and describe the image formation by a convex mirror when an object is placed at
(i) infinity
(ii) a finite distance.

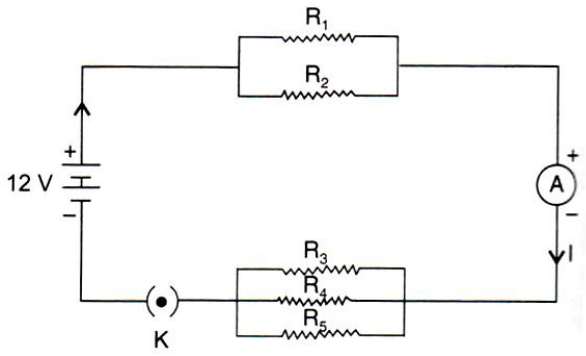
Or **2½+2½=5**

b. Draw a ray diagram and describe the image formation by a concave lens when an object is placed at
(i) infinity
(ii) a finite distance.

24. **a.** An electric iron consumes energy at a rate of 840 W when heating is at the maximum rate and 360 W when the heating is at the minimum. The voltage is 220 V. What are the current and the resistance in each case?

Or **2½+2½=5**

b. In the given figure, $R_1=10\Omega$, $R_2=40\Omega$, $R_3=30\Omega$, $R_4=20\Omega$, $R_5=60\Omega$ and a 12 V battery is connected to the arrangement. Calculate
(i) the total resistance in the current
(ii) the current flowing in the circuit.



25. **a.** What is lymphatic system? Explain any four functions of the lymph. **1+4=5**

Or

b. What is excretion? Explain
(i) excretion in Amoeba
(ii) excretion in Earthworm. **(**1+2+2=5)

26. Explain any five steps that can be taken to contribute towards biodiversity conservation. **5×1=5**

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