

**2016
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) Which of the following is a weak electrolyte? 1
 - (i) NaCl
 - (ii) CuSO₄
 - (iii) CH₃COONH₄
 - (iv) H₂SO₄
- (b) Bleaching powder is added in water used for drinking purpose. The role of bleaching powder in this case is 1
 - (i) of a disinfectant
 - (ii) of a bleaching agent
 - (iii) to remove impurity
 - (iv) to decrease the pH
- (c) Ammonia is manufactured by 1
 - (i) Contact process
 - (ii) Haber's process
 - (iii) Bayer's process
 - (iv) Hall's process
- (d) Calorific value of Butane (LPG) is 1
 - (i) 33 kJ/g
 - (ii) 40 kJ/g
 - (iii) 48 kJ/g
 - (iv) 55 kJ/g
- (e) The three R's to be practiced for the judicious use of energy are 1
 - (i) Recycle, Regenerate, Reuse
 - (ii) Reduce, Regenerate, Reuse
 - (iii) Recycle, Reuse, Redistribute
 - (iv) Reduce, Reuse, Recycle
- (f) *Bryophyllum* reproduces vegetatively by 1
 - (i) root
 - (ii) stem
 - (iii) leaf
 - (iv) seed
- (g) Which hormone controls the blood sugar level in human beings? 1
 - (i) Insulin
 - (ii) Adrenalin
 - (iii) Thyroxin
 - (iv) Estrogen

- (h) *Archaeopteryx* is a fossil that shows connecting link between **1**
 (i) reptiles and amphibians (ii) birds and mammals
 (iii) reptiles and birds (iv) mammals and reptiles
- (i) Excessive hunting and poaching leads to **1**
 (i) alteration of the structure of the forest leading to nutrient depletion
 (ii) threatened and endangered species
 (iii) soil erosion
 (iv) floods and landslides
- (j) Water which readily forms lather with soap is **1**
 (i) ocean water (ii) soft water
 (iii) sea water (iv) hard water

Answer the following questions in one word or one sentence:

2. What is efflorescence? **1**
3. Name the non-metal which remains in liquid state at room temperature. **1**
4. Give any one use of methanol. **1**
5. Name any two spontaneously inflammable substances. **1**
6. What is the average gestation period in human beings? **1**

Answer the following questions in about 20-30 words:

7. A white crystalline solid is used for the neutralization of stomach acidity. Name the compound and write its chemical formula. **1+1=2**
8. Draw the molecular structure of sulphur. **2**
9. Complete the following reactions: **1+1=2**
 (i) $\text{CH}_4 + \text{O}_2 \xrightarrow{\text{MoO Catalyst}}$
 (ii) $\text{C}_6\text{H}_{12}\text{O}_6 \xrightarrow{\text{zymase}}$
10. Write any two conditions required for total internal reflection. **1+1=2**
11. Name two substances present in the human body which prevent blood clotting during circulation. **2×1= 2**

Answer the following questions in about 40-60 words:

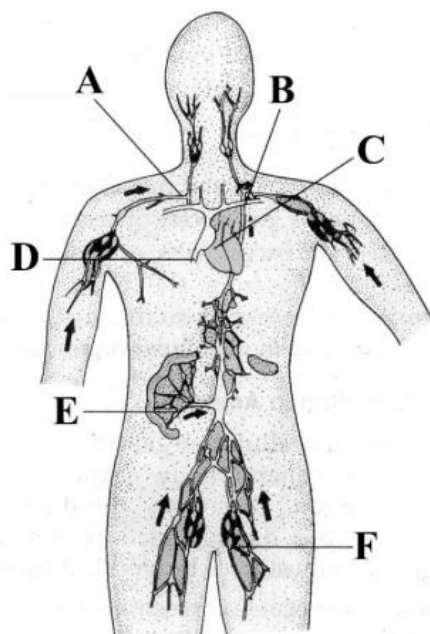
12. Define acids and bases according to Bronsted-Lowry theory. Give one example of each. **2+1=3**
13. What is an alloy? Give two uses of gold alloys. **1+ 2=3**
14. Explain the cleansing action of soap. **3**
15. An object is placed at a distance of 90 cm away from a concave mirror of focal length 30 cm. Find the position, nature and size of the image. **1+ 1+ 1=3**
16. a. A room heater rated 600 W operates 8 hours per day. Calculate the cost of energy used to operate it for 30 days at ` 5 per unit. **3**

Or

 b. An electric current of 5 A flows through a 12 V car head light lamp for 10 minutes. Calculate the energy consumed during this time and the resistance of the filament of the lamp.
17. a. List any six characteristics of a good fuel. **6×½= 3**

Or

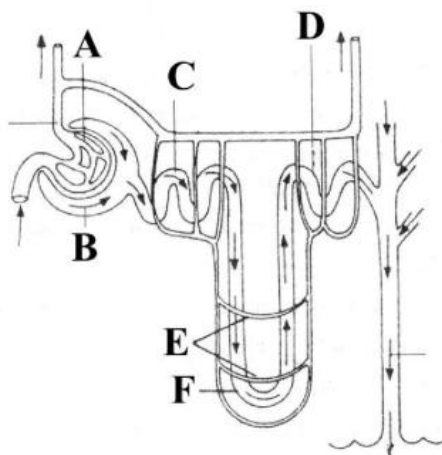
 b. List any six suggestions for efficient use of fuel.
18. a. Label the indicated parts in the given figure.



Or

6 × ½ = 3

- b. Label the indicated parts in the given figure.



19. a. What is grafting in plants? State its importance. Name any two fruit trees that have been successfully grafted.

Or

1+1+1=3

- b. What is fission in animals? Name the two types of fission. Give one example each.

20. Explain sex determination mechanism in human beings.

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

Or

3+2=5

- b. Explain the preparation of Hydrogen in the laboratory by the reaction of metals with acids with the help of a labelled diagram.

23. a. Write five applications of concave mirrors.

Or

5 × 1 = 5

- b. Write five applications of convex lenses.

24. **a.** What are the factors affecting electrical resistance? Derive a mathematical expression for finding the equivalent resistance of electric circuit having resistances R_1 , R_2 and R_3 connected in series and potential difference V , across the ends. **3+2=5**

Or

- b.** What is electroplating? State the two factors that must be taken into consideration to obtain fine electroplating. Give two uses of electroplating. (1+2+2=5)

25. **a.** Draw a labelled diagram of the digestive system of the human body and explain the various steps of food digestion that undergo in the human body.

Or

2+3=5

- b.** With the help of a flow chart, show the various steps occurring during photosynthesis and explain the mechanism of photosynthesis.

26. Natural resources are getting depleted very fast by increasing human activities, these affect the environment adversely. Thus, conservation and protection of the environment is the need of the hour. Write any five measures that can be taken up for protecting the environment. **5×1=5**
