

## PART - I

**I Note : i) Answer all the questions. ii) Choose the most appropriate answer from the given four alternatives and write the option code and the corresponding answer.**

12 x 1 = 12

- To project the rockets which of the following principle (s) is / (are) required?  
a) Newton's third law of motion      b) Newton's law of gravitation  
c) Law of conservation of linear momentum      d) both a and c
- 1 mole of any substance contains .....  
a)  $6.023 \times 10^{23}$       b)  $6.023 \times 10^{-23}$       c)  $3.0115 \times 10^{23}$       d)  $12.046 \times 10^{23}$
- ..... is defined as the amount of heat energy required to rise the temperature of 1 gram of water through  $1^\circ\text{C}$ .  
a) Kilo calorie      b) Calorie      c) Joule      d) Kelvin
- The sound waves are reflected from an obstracle into the same medium from which they were incident. Which of the following changes?  
a) speed      b) frequency      c) wavelength      d) none of these
- Which of the following represents a precipitation reaction?  
(a)  $A(s) + B(s) \rightarrow C(s) + D(s)$       (b)  $A(s) + B(aq) \rightarrow C(aq) + D(l)$   
(c)  $A(aq) + B(aq) \rightarrow C(s) + D(aq)$       (d)  $A(aq) + B(s) \rightarrow C(aq) + D(l)$
- Which of the following pairs can be the successive members of a homologous series?  
(a)  $C_3H_8$  and  $C_4H_{10}$       (b)  $C_2H_2$  and  $C_2H_4$   
(c)  $CH_4$  and  $C_3H_6$       (d)  $C_2H_5OH$  and  $C_4H_9OH$
- The endarch condition is the characteristic feature of:  
(a) root      (b) stem      (c) leaves      (d) flower
- Which one of the following regarding blood composition is correct?  
(a) Plasma = Blood + Lymphocyte      (b) Serum = Blood + Fibrinogen  
(c) Lymph = Plasma + RBC + WBC      (d) Blood = Plasma + RBC + WBC + Platelets
- In reflex action, the reflex arc is formed by \_\_\_\_\_  
(a) brain, spinal cord, muscle      (b) receptor, muscle, spinal cord  
(c) muscle, receptor, brain      (d) receptor, spinal cord, muscle
- The hormone which has positive effect on apical dominance is:  
(a) Cytokinin      (b) Auxin      (c) Gibberellin      (d) Ethylene
- World 'No tobacco day' is observed on  
a) May 31      b) June 6      c) April 22      d) October 22
- A renewable source of energy is  
a) Petroleum      b) trees      c) nuclear fuel      d) coal

## PART - II

**Note : Answer any seven questions. Question No. 22 is compulsory.**

- Why does the sky appear in blue colour? 7 x 2 = 14
- State Ohm's law?

## 15. Match the following.

- |                                       |             |
|---------------------------------------|-------------|
| a) BARC                               | - Kalpakkam |
| b) India's first atomic power station | - Apsara    |
| c) IGCAR                              | - Mumbai    |
| d) First nuclear reactor in India     | - Tarapur   |

16. State two conditions necessary for rusting of iron.

17. Write the dental formula of rabbit?

18. Draw the structure of Human sperm and labelled parts.

19. Define Triple fusion.

20. What do you understand by the term phenotype and genotype?

21. Define genetic engineering.

22. An electric iron consumes energy at the rate of 420 W when heating is at the maximum rate and 180 W when heating is at the minimum rate. The applied voltage is 220 V. What is the current in each case?

**Part - III****Note : Answer any seven questions. Question No. 32 is compulsory. 7x4=28**

23. List any four properties of light.

24. Differentiate the feature of Nuclear fission and nuclear fusion.

25. a) Define : Atomicity. b) Give any two examples for heterodiotomic molecules.

26. a) Identify the bond between H and F in HF molecule.

b) What property forms the basis of identification?

c) How does the property vary in periods and in groups?

27. What is called a homologous series? Give any three of its characteristics?

28. Explain the male reproductive system of rabbit with labelled diagram.

29. Enumerate the function of blood?

30. a) What is bolting? How can it be induced artificially?

b) What are chemical messengers?

31. How do you differentiate homologous organ from analogous organs?

32. Calculate the current and the resistance of a 100w, 200v electric bulb in an electric circuit.

**PART - IV****Note : Answer all the questions. Draw diagram wherever necessary. 3x7=21**

33. (a) (i) What are the types of inertia? Give an example for each type.

(ii) Distinguish between the resistivity and conductivity of a conductor. (OR)

(b) (i) What do you understand by the term 'ultrasonic vibration'?

(ii) State three uses of ultrasonic vibrations.

(iii) Name three animals which can hear ultrasonic vibrations.

34. (a) (i) What are the differences between atoms and molecules?

(ii) Write any three applications of Avogadro's law. (OR)

(b) (i) How does pH play an important role in everyday life? (ii) Define Hydrated salt.

35. (a) With a neat labelled diagram explain the structure of a neuron.

(ii) What are the structures involved in the protection of the brain? (OR)

(b) (i) Write the physiological effects of gibberellins.

(ii) What is respiratory quotient?