

20. Match column I with column II and select the correct option from the given codes.

Column I	Column II
P. Density of solid > Density of liquid	(i) Floats partially immersed into the liquid
Q. Density of solid < Density of liquid	(ii) Floats wholly immersed into the liquid
R. Density of solid = Density of liquid	(iii) Mass ÷ volume
S. Density of liquid	(iv) Sinks into the liquid
A. P-(iv), Q-(i), R-(ii), S-(iii)	
B. P-(ii), Q-(iii), R-(iv), S-(i)	
C. P-(iii), Q-(iv), R-(i), S-(ii)	
D. P-(i), Q-(iii), R-(ii), S-(iv)	

21. The acceleration due to gravity g and density of the earth ρ are related by which of the following relations? (Here G is the gravitational constant and R is the radius of the earth).

A. $\rho = \frac{4\pi GR}{3g}$	B. $\rho = \frac{3g}{4\pi GR}$
C. $\rho = \frac{3G}{4\pi gR}$	D. $\rho = \frac{4\pi gR}{3G}$

22. Read the given statements and select the correct option.
Statement 1 : Conservation of momentum in a collision between particles can be understood from both Newton's second and third law.

Statement 2 : Impulsive force is small and acts for a short time.

- A. Both statements 1 and 2 are true and statement 2 is the correct explanation of statement 1.
B. Both statements 1 and 2 are true but statement 2 is not the correct explanation of statement 1.
C. Statement 1 is true but statement 2 is false.
D. Statement 1 is false but statement 2 is true.

23. Following elements are present in the second period of the periodic table from left to right.

Li, Be, B, C, N, O, F, Ne

A few statements are given about these elements :

- I. O and F exist as monoatomic gases.
II. Li is the lightest element in the period.
III. B is a metal while C is a non-metal.
IV. Li and F react to form a compound LiF.

The correct statements are

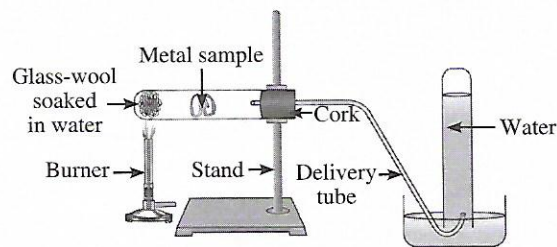
- A. I and III only B. I and IV only
C. II and III only D. II and IV only.

24. Select the correct statements.

- I. Energy associated with the energy shells decreases as we go farther away from the nucleus.
II. There is a positively charged centre in an atom called the nucleus where most of the mass of an atom resides.
III. The protons and neutrons present in the nucleus of an atom are collectively called as nucleons.
IV. The size of the nucleus is very large as compared to the size of the atom.

- A. I and IV only B. II and III only
C. I, II and III only D. I, II, III and IV

25. Ms Zaira, a class 10 teacher arranged the given set-up to demonstrate the reactions of different metals with water.



Experiment was conducted with five different metal samples and observations were recorded as follows :

Sample 1 : No reaction was observed with cold water but reaction was observed with hot water.

Sample 2 : No reaction was observed with cold and hot water but was observed with steam.

Sample 3 : Reaction was violent and exothermic with cold water.

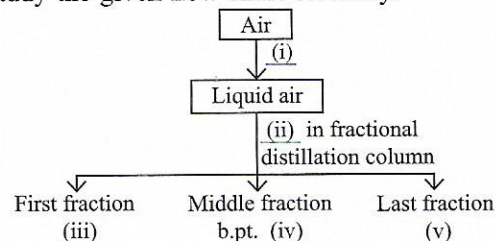
Sample 4 : No reaction was observed with cold and hot water, not even with steam.

Sample 5 : Reaction was less violent with cold water and metal starts floating on the surface of water.

Metal samples 1 to 5 could be respectively

- A. Mg, Fe, K, Cu and Na
B. Ca, Zn, Na, Ag and Mg
C. Mg, Al, Na, Pb and Ca
D. Al, Mg, Ca, Au and Fe.

26. Study the given flow chart carefully.



Fill in the blanks by selecting an appropriate option.

- | | (i) | (ii) | (iii) | (iv) | (v) |
|----|-------------------|-------------------|----------|------|----------|
| A. | Expand and heat | Cool down slowly | Argon | 90 K | Oxygen |
| B. | Compress and cool | Warm up slowly | Nitrogen | 87 K | Oxygen |
| C. | Compress and cool | Warm up slowly | Oxygen | 77 K | Nitrogen |
| D. | Expand and heat | Cool down rapidly | Nitrogen | 87 K | Argon |

27. pH of different solutions are given in the table :

S. No.	Solution	pH
I.	Coffee	4.5 – 5.5
II.	Caustic soda	13 – 14
III.	Ammonia	11.6
IV.	Lemon juice	2.2 – 2.4
V.	Human saliva	6.5 – 7.5