

TIME: 90 MINUTES

MARKS: 40

GENERAL INSTRUCTIONS:

1. Attempt all question in sequence.
2. Marks are written against each type of question
3. Section A : 10 Multiple choice questions carrying 1 mark each.
4. Section B : 05 Short type question carrying 2 mark each
5. Section C & D Short Answer Type questions carrying 3 mark each.
6. Section D : 02 Long Answer Type Case Study based questions carrying 4 mark each.

SECTION - A

I. MULTIPLE CHOICE QUESTIONS CARRYING 1 MARKS EACH.
(10x1=10 Marks)

1. Which of the following statements is not true about an atom? 1
 - (a) Atoms are not able to exist independently.
 - (b) Atoms are the basic units from which molecules and ions are formed.
 - (c) Atoms are always neutral in nature.
 - (d) Atoms aggregate in large numbers to form the matter that we can see, feel or touch.
2. A student learns that aluminium forms compound with chlorine and oxygen. She records the valencies of the three elements- 1

Element	Valency
Aluminium	3+
Chlorine	1
Oxygen	2-

Which option gives the correct formula of aluminium oxide and aluminium chloride?

- (a) aluminium oxide: Al_2O_3 ; aluminium chloride: $AlCl_3$

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(b) aluminium oxide: 3AlO_2 ; aluminium chloride: 3AlCl_2

(c) aluminium oxide: Al_2O_2 ; aluminium chloride: Al_2Cl_2

(d) aluminium oxide: $3(\text{AlO})_2$; aluminium chloride: $2(\text{Al}_2\text{Cl})$

3. To hear a distinct echo the time interval between the original sound and the reflected sound must be: 1
- (a) 0.2 s
 - (b) 1 s
 - (c) 2 s
 - (d) 0.1 s
4. Chlorine has two isotopes, Cl-35 and Cl-37. These isotopes occur in nature in the ratio 3: 1. What would be the atomic mass for chlorine? 1
- (a) 35.0 u
 - (b) 35.5 u
 - (c) 36.0 u
 - (d) 36.5 u
5. The cork floats while the nail sinks in the water, this is due to 1
- (a) density of cork is more than nail
 - (b) density of nail is more than cork.
 - (c) density of cork is less than the density of water.
 - (d) density of iron is less than the density of water.
6. The nucleus of an atom contains:
- (a) Only electrons
 - (b) Protons and electrons
 - (c) Protons and neutrons
 - (d) Only neutrons

7. A body is falling from a height h . While falling towards the earth, it will possess

- (a) only potential energy
- (b) only kinetic energy
- (c) half potential and half kinetic energy
- (d) kinetic energy increasing and potential energy decreasing

Directions: From question 8 to 10 In each of the following questions, a statement of Assertion is given, and a corresponding statement of Reason is given just below it. Of the statements, given below, mark the correct answer as:

1

- (a) Both assertion and reason are true, and reason is the correct explanation of assertion.
- (b) Both assertion and reason are true, but reason is not the correct explanation of assertion.
- (c) Assertion is true, but reason is false.
- (d) Assertion is false, but reason is true.

8. Assertion-An object when thrown upward reaches a certain height and falls downward.

Reason-Due to earth gravitational force any object which is present in the sky falls down the earth.

9. Assertion-Sodium chloride molecule is made up of two different ions.

Reason-Sodium chloride is known as baking soda.

10. Assertion-The definition of power is work divided by time

Reason-1 kilowatt means 1000 watts.

SECTION - B

II.SHORT TYPE ANSWERS QUESTIONS CARRING 2 MARKS EACH. (2x5)=10 Marks)

11 Give the formulae of the following compounds.

2

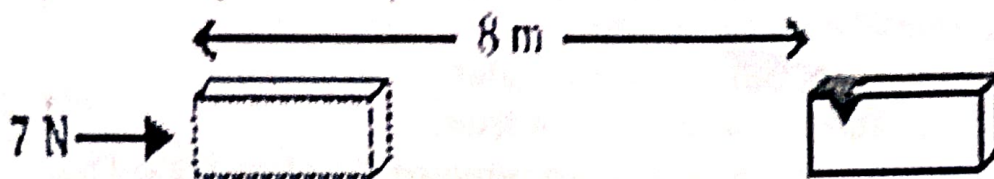
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|-----------------------|--------------------------|
| (i) Calcium oxide | (ii) Hydrogen sulphide |
| (iii) Sodium chloride | (iv) Potassium hydroxide |

- 12 (i) Write down the electron distribution of chlorine atom. How many electrons are there in the L shell? 2
- (ii) In the atom of an element X, 6 electrons are present in the outermost shell. What will be its valency? Will it gain or loose electrons while making bond with other atoms?
- 13 What are the differences between the mass of an object and its weight? 2
- 14 Why are sound waves called mechanical waves? 2

OR

Flash and thunder are produced simultaneously. But thunder is heard a few seconds after the flash is seen, why?

- 15 A force of 7 N acts on an object. The displacement is, say 8 m, in the direction of the force. Let us take it that the force acts on the object through the displacement. What is the work done in this case? 2



III. SHORT TYPE QUESTIONS CARRYING 3 MARKS EACH . (4x3=12)

- 16 Calculate the formula unit masses of ZnO , Na_2O , K_2CO_3 , given atomic masses of $\text{Zn} = 65 \text{ u}$, $\text{Na} = 23 \text{ u}$, $\text{K} = 39 \text{ u}$, $\text{C} = 12 \text{ u}$, and $\text{O} = 16 \text{ u}$. 3

OR

- (i) What are polyatomic ions? Give examples?
- (ii) Give the names of the elements present in the following compounds:
- (a) Hydrogen bromide
- (b) Potassium sulphate
- 17 Explain with examples (i) Mass number, (ii) Isotopes (iii) Isobars. 3

- 18 Gravitational force on the surface of the moon is only $\frac{1}{6}$ as strong as gravitational force on the Earth. What is the weight in newtons of a 10 kg object on the moon and on the Earth? 3

OR

Why is it difficult to hold a school bag having a strap made of a thin and strong string?

- 19 Write the postulates of Rutherford's nuclear model of the atom. 3

SECTION – D

IV. LONG ANSWER TYPE QUESTION CARRING 4 MARK.

20. CASE BASED QUESTION 4

Read the given passage carefully and give the answer of the following questions:

Work is said to be done when the force applied on an object produces a displacement of the object in the direction of force applied. For example, when we push or pull a heavy load or lift it above the floor then we are doing work, but a man carrying heavy load and standing still is not doing any work. Work, which is the product of force and displacement, has only magnitude and no direction. So, it is a scalar quantity.

- (i) A man raises a box of mass 50 kg to a height of 2 m in 10 s, while a boy raises the same box to the same height in 50 s.

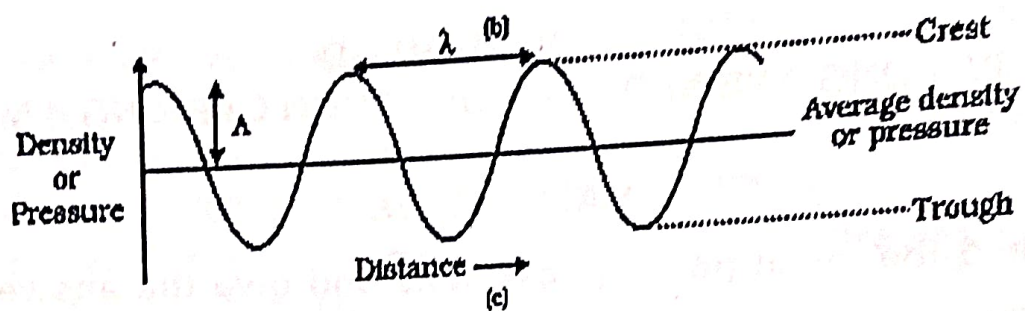
What is the power expended by each of them? (2)

- (ii) If force and displacement of the particle (in direction of force) are doubled, what should be the amount of work? (1)

- (iii) A coolie lifts a luggage of 10 kg from the ground and put it on his head 1.8 m above the ground. What would be the work done by him on the luggage? (1)

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Q21 The given image shows a sound wave represented in the form of a waveform. The wave consists of compressions and rarefactions produced due to vibrations of particles in the medium. The distance between two successive compressions or rarefactions represents the wavelength. The number of vibrations per second is called frequency.



Answer the following questions based on the above sound wave image:

(i) Which part of the sound wave represents low density of particles?

(a) Compression

(b) Crest

(c) Rarefaction

(d) Wavelength

(ii) The distance between two successive compressions is known as:

(a) Amplitude

(b) Frequency

(c) Wavelength

(d) Time period

(iii) Which quantity of the sound wave determines its pitch?

- (a) Amplitude
- (b) Frequency
- (c) Speed
- (d) Loudness

(iv) Sound waves travel in a medium in the form of:

- (a) Transverse waves
- (b) Electromagnetic waves
- (c) Longitudinal waves
- (d) Light waves
