KIRAN TUTORIALS **Seat No.** | | | | | | | |

Std 10 (English) **Science And Technology - I**

Time 2HRS **Chapter 1ST AND 2ND** **Marks 40**

Q.1 Multiple Choice Questions **5**

1 The position of which elements is still not clear (uncertain) in periodic table not even in modern periodic table

a. Sodium b. Magnesium c. Hydrogen d. Argon

2 Mendeleev's periodic table was organized on the basis of following properties.

a. Only physical properties

b. Only chemical properties

c. Both physical and chemical properties

d. None of the above

3 Which of the following is a Dobereiner's triad.

a. Ne, Ca, Na b. H_2, N_2, O_2 c. Li, Na, K d. Na, Bx, Ax

4 Value of G is .....

a. $6.67 \times 10^{-11}\ Nm^2kg^{-2}$

b. $6.67 \times 10^{-23}\ Nm^2\ kg^{-2}$

c. $9.8 \times 10^{-11}\ Nm^2kg^2$

d. $9.8\ m/s^2$

5 He arranged the elements in increasing order of their atomic masses in a group of three .....

a. Mosely b. Mendeleev c. Dobereiner d. Thompson

Q.2 Find the odd one out **2**

1 Nitrogen, Neon, Argon, Helium

2 Newlands, Moseley, Dobereiner, Mendeleev

Q.3 Find co-related terms **3**

1 Force : dynes :: velocity : ……

2 Eka-Boron : ..... : : Eka-Aluminium : Gallium (Ga)

3 Dobereiner's : Law of triad : : John Newland : .....

Q.4 Give scientific reasons(Any Five) **10**

1 The third period contains only eight elements even though the electron capacity of the third shell is 18.

2 True free fall is possible only in vacuum.

3 Inert or noble gases have zero valency.

4 Elements belonging to the same group have the same valency.

5 The centre of mass of any object having uniform density is at its centroid.

6 Atomic size goes on decreasing while going from left to right within a period.

Q.5 Solve Numerical problems(Any Five) **15**

1 An object thrown vertically upwards reaches height of 500m. What was its initial velocity? How long will it take to come back to the earth? Assume g = 10m/s

2 The mass of the earth is 6×10^{24} kg. The distance between the earth and Sun is 1.5×10^{11}m. If gravitational force between them is 3.5×10^{22}N, what is the mass of the sun? ($G = 6.7 \times 10^{-11}$ NM^2 kg^{-2})

3 What would be the value of 'g' on the surface of the earth if its mass was twice and its radius half of what it is now ?

4 A ball falls off a table and reaches ground in 1 s. assuming g = 10m/s^2, calculate its speed on reaching the ground and the height of the table.

5 A stone thrown vertically upwards with initial velocity 'u' reaches a height 'h' before coming down. Show that time taken to go up is same as time taken to come down.

6 The masses of earth and moon are 6×10^{24} kg and 7.4×10^{22} kg respectively. The distance between them is 3.84×10^5 km. Calculate gravitational force of attraction between the two? ($G = 6.7 \times 10^{-11}$ NM^2 kg^{-2}).

Q.6 Answer the following in detail (Any One) **5**

1

Elements	P	Q	R
Mass Number	23	20	35
Number Of Neutrons	12	10	18

Study The Table And Answer The Following.

i. Write the atomic number and electronic configuration of elements. P, Q and R
ii. To which groups do P, Q, and R belong
iii. To which period do P, Q And R belong
iv. Which among P, Q and R is (i) An Alkali Metal (ii) Noble Gas (iii) Halogen

2 Waves are created on the surface of water when we drop a stone into it. Similarly you must have seen the waves generated on a string when both its ends are held in hand and it is shaken. Light is also a type of wave called the electromagnetic wave. Gamma rays, X-rays, ultraviolet rays, infrared rays, microwave and radio waves are all different types of electromagnetic waves. Astronomical objects emit these waves and we receive them using our instruments. All our knowledge about the universe has been obtained through these waves. Gravitational waves are a very different type of waves. They have been called the waves on the fabric of space-time. Einsteine predicted their existence in 1916. These waves are very weak and it is very difficult to detect them. Scientists have constructed extremely sensitive instruments to detect the gravitational waves emitted by astronomical sources. Among these, LIGO (Laser Interferometric Gravitational Wave Observatory) is the prominent one. Exactly after hundred years of their prediction, scientists detected these waves coming from an astronomical source. Indian scientists have contributed significantly in this discovery. This discovery has opened a new path to obtain information about the Universe.

i. Which type of wave a light ray is ? (1 marks)
ii. What type of rays are Gravitational waves called ? (1 marks)
iii. Why are the gravitational waves difficult to detect ?(1 marks)
iv. Give any four examples of electromagnetic waves. (2 marks)