| Success Key Test Series | SUCCESS KEY TEST SERIES <br> X (English) <br> (Worksheet-1 Sc-1 (Ch- 1,2)) <br> Science And Technology - I- | DATE: |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | TIME: 1 hrs |  |  |  |
|  |  | MARKS: 20 |  |  |  |
|  |  |  |  |  |  |

Q. 1 A) Solve the following questions.

1) Triads: $\qquad$ :: Octaves: Group of 8 elements
2) For freely falling object we can write the Newton's second equation of motion as $\qquad$
B) Choose the correct alternative and rewrite the sentence
3) A radioactive element in the halogen group is $\qquad$ .
a. lodine
b. Astatine
c. Chlorine
d. Bromine
4) Which of the following statements about the modern periodic table in correct.
a. It has 18 horizontal rows known as periods
b. It has 7 vertical columns known as periods
c. It has 18 vertical columns known as groups
d. It has 7 horizontal rows known as groups
5) What is the weight of an object with 10 kg mass?
a. 10 N
b. 9.8 N
c. 98 N
d. 0.98 N
Q. 2 Solve the following questions. (Any two)
6) Elements belonging to the same group have the same valency.
7) Newton concluded that the centripetal force which is the force acting on the planet and is responsible for its circular motion, must be inversely proportional to the square of the distance between the planet and the Sun. Newton identified this force with the force of gravity and hence postulated the inverse square law of gravitation. The gravitational force is much weaker than other forces in nature but it controls the Universe and decides its future. This is possible because of the huge masses of planets, stars and other constituents of the Universe.
i. What is the direction in which centripetal force acts in?
ii. What will happen to the centripetal force if the distance between the planet and the sun is halved?
8) Observe the figure and answer the following questions.
i. Identify the block shown by box A and write an electronic configuration of any one element of this block.
ii. Identify the block of element denoted by letter B and write its period number.


## Q. $3 \quad$ Solve the following questions. (Any two)

1) The value of $g$ also changes if we go inside the earth. The value of $R$ i.e distance decreases and one would think that the value of $g$ should increase as per the formula. However, the part of the earth which contributes towards the gravitational force felt by the object also decreases. As a combined result of change in $r$ and $M$, the value of $g$ decreases as we go deep inside the earth.
i. What is expected change in value of ' $g$ ' as the distance decrease ?
ii. What will be the value of ' $g$ ' at the centre of the earth ?
2) Mendeleev contribution laid the foundation of Modern Periodic Table.
3) 

## Q. 4 Solve the following questions. (Any one)

1) What is centripetal force ? Complete the following expression for a planet revolving around sun in circular motion irrespective of its time of revolution?

For a planet revolving around sun; Let $m$ be the mass of planet which takes time T for one revolution moving with velocity $v$ and $r$ be the radius of the circular path.

Centripetal force will be $\mathrm{F}=\square$
Speed = $\square$
Thus, in one revolution,
Distance covered = $\square$ (Perimeter of the orbit)
Time required $=\mathrm{T}$ $\square$
$\therefore \quad \square=\frac{2 \pi r}{T}$
Substituting $v$ in equation
$F=\frac{m\left(\frac{2 \pi r}{T}\right)^{2}}{r}$
$\therefore \quad \mathrm{F}=\square$
Multiplying and dividing by $\mathrm{r}^{2}$
$\mathrm{F}=\frac{4 \mathrm{~m} \pi^{2} \mathrm{r}}{\mathrm{T}^{2}} \times \frac{\mathrm{r}^{2}}{\mathrm{r}^{2}}$
$\therefore \quad \mathrm{F}=\square$
From Kepler's third law; $\square$ $=\mathrm{k}$ (constant)

From (2) \& (3); $\mathrm{F}=\frac{4 \mathrm{~m} \pi^{2}}{\mathrm{kr}^{2}}$
Thus, this is expression of centripetal force independent of time taken but depends on radius of the path.
2)

| Li | Be |
| :--- | :--- |$\quad$| B | C | N | O | F | Ne |
| :--- | :--- | :--- | :--- | :--- | :--- |

i. List the group to which following elements belong.
ii. Name the period to which they belong.
iii. Depending upon these electronic configuration justify there period.
iv. Name a Metal, Non Metal, Halogen and a Noble Gas.
v. When we move across the period from left to right, how the metallic character change.

