UNIT 2 – FORCES AND MOTION

Class : VI

Subject :Science

I. Choose the correct answer.

1. Unit of speed is

a. m b. s c. kg **d. m/s**

2. Which among the following is an oscillatory motion?

a. Rotation of the earth about its axis.

b. Revolution of the moon about the earth.

c. To and fro movement of a vibrating string.

d. All of these.

3. The correct relation among the following is

a. Speed = Distance × Time **b. Speed = Distance / Time**

c. Speed = Time / Distance d. Speed = 1 / (Distance × Time)

4. Gita travels with her father in a bike to her uncle's house which is 40 km away from her home. She takes 40 minutes to reach there.

Statement 1 : She travels at a speed of 1 km / minute.

Statement 2 : She travels at a speed of 1 km/hour.

a. Statement 1 alone is correct.

b. Statement 2 alone is correct.

c. Both statements are correct.

d. Neither statement 1 nor statement 2 is correct.

II. Fill in the blanks.

1. A bike moving on a straight road is an example for **Linear** motion.

2. Gravitational force is a **non contact force** force.

3. Motion of a potter's wheel is an example for **Rotatory** motion.

4. When an object covers equal distances in equal interval of time, it is said to be in **uniform** motion.

III. State True or False. If false, correct the statement.

1. To and fro motion is called oscillatory motion. **True**

2. Vibratory motion and rotatory motion are periodic motions. **False**

3.. Vehicles moving with varying speeds are said to be in uniform motion. **False**

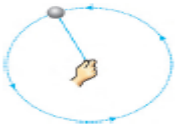
4.. Robots will replace human in future. **False**

IV. Match the following.

1.  - **Circular motion** **4**

2.  - **Oscillatory motion** **3**

3.  - **Linear motion** **1**

4  - **Rotatory motion** **2**

V. Given below is the distance-travelled by an elephant across a forest with uniform speed. Complete the data of the table given below with the idea of uniform speed.

Distance (m)	0	4		12		20
Time (s)	0	2	4		8	10

Answer:

Distance (m)	0	4	**8**	12	**16**	20
Time (s)	0	2	4	**6**	8	10

i)Distance / Time $=\frac{4}{2}$ x 4 = $\frac{16}{2}$ =8

ii) Distance / Time = 4 / 2 x 8 = 32 /2 =16

iii) Time/ Distance =10 / 20 x 12 = 12/2 =6

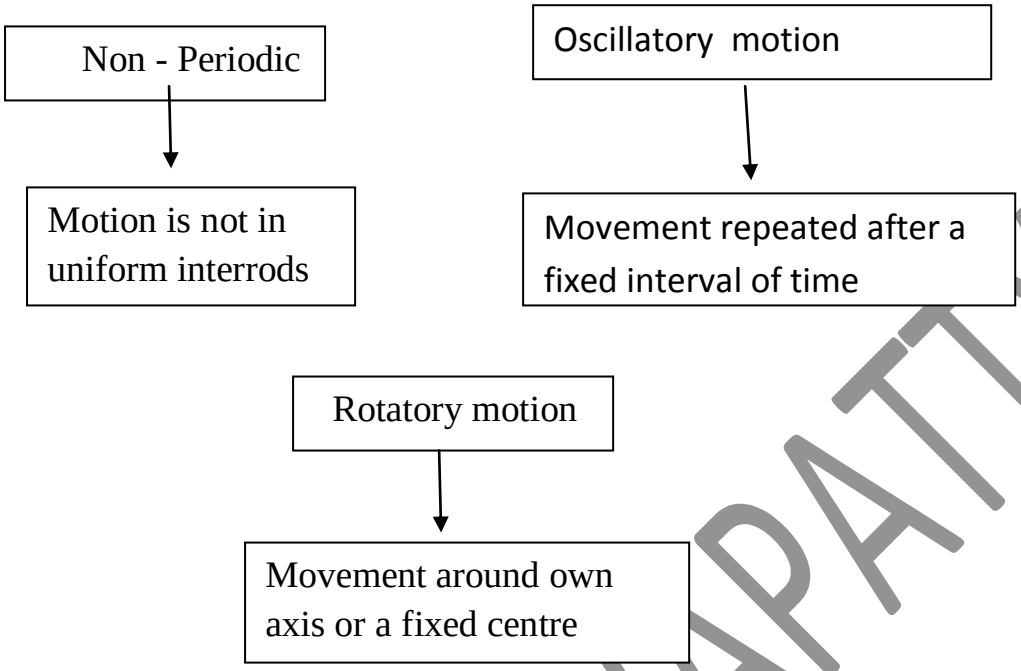
VI. Complete the analogy.

1. Kicking a ball : Contact force :: Falling of leaf : **non contact Force** ?

2. Distance : metre :: Speed : **Metre / Second** ?

3. Circulatory motion : A spinning top :: Oscillatory motion **: swinging of a pendulum?**

VII. Complete the web chart.



VIII. Answer in a word or two.

1. The force which acts on an object without physical contact **Non Contact Forces.**

2. A change in the position of an object with time **Motion .**

3. The motion which repeats itself after a fixed interval of time **Oscillatory motion .**

4. The motion of an object which covers equal distances in equal intervals of time **Uniform motion .**

5. A machine capable of carrying out a complex series of actions automatically **artificial intelligence.**

IX. Answer briefly.

1. Define force.

Forces are push or pull by an animate or inanimate agency

2. Name different types of motion based on the path.

- Linear motion
- Curvilinear
- Circular motion
- Rotatory motion
- Oscillatory motion
- Irregular motion

.3. If you are sitting in a moving car, will you be at rest or motion with respect your friend sitting next to you?

I am in rest with respect to my friend ,sitting inside the car.

4. Rotation of the earth is a periodic motion. Justify.

Rotation of the earth is a periodic motion because it takes equal interval of time for all Rotations.

5. Differentiate between rotational and curvilinear motion.

Rotational motion	Curvilinear motion
A body moves along a circular path	A body moves along a curved path
Without changingits position,about its own (fixed axis)	Changes its position with motion
Eg . Rotation of a spinning top	Eg . Throwing paper Airplanes or paper darts

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X. Answer in detail.

1. What is motion? Classify different types of motion with examples.

a.Linear motion - Motion in a straight line. Eg. A person walking on a straight path.

b. Curvilinear motion - Motion of a body moving ahead but changing direction. Eg Motion of a ball thrown.

c. Circular motion - Motion in a circle. Eg. Swirling stone tied to the rope.

d. Rotatory motion - Motion of a body about its own axis. Eg. Rotating top.

e. Oscillatory motion - A body coming back to the same position after a fixed time interval. Eg : A pendulum.

f. Zigzag (irregular) - The motion of a body in different direction. Eg. People walking in a crowded street.

XI. Problems.

1. A vehicle covers a distance of 400km in 5 hour. Calculate its speed.

   Distance covered by the vechicle = 400 km

   Time taken = 5 hour

   Averege Speed = $\frac{Distance\ \ covered}{time\ \ taken}$ = $\frac{400\ Km}{5\ hour}$ = 80 km /m

XII. Give examples.

Linear motion	Free fall objects
Curvilinear motion	Throwing ball
Self rotator motion	Motion of wheel in a cart
Circular motion	Athlete running around a track
Oscillatory motion	Flapping of elephants car
Irregular motion	Playing foot ball