Physics - ICS Part 1 Physics Chapter 3 Short Questions Test

Q1. Differentiate between distance and displacement.

Ans 1:

Q2. Why ballistic missiles are not useful for long ranges?

Ans 1: Ballistic missiles are unpowered and unguided missiles. For long ranges, air friction is not negligible and some times the force of air friction is more than gravity. It affects both horizontal as well as vertical motions of the missile.

Q3. Derive the 2nd equation of motion ?

Ans 1:

Q4. Define inertial and non-inertial frame of references.

Ans 1: Inertial Frame of References: The frame of reference in which Newton's first law holds is called inertial frame of reference. It is not an accelerated frame of reference.e.g,, Earth is approximately an inertial frame of reference.
Non-Inertial Frame of Reference: The frame of reference in which Newton's first law does not hold true is called non-inertial frame of reference.It is an accelerated frame of reference e.g., Space ship etc.

Q5. Define the following terms?
Velocity,
Uniform Velocity,
Variable Velocity,
Average Velocity.
Instantaneous Velocity.

Ans 1: **Velocity:**The distance between covered by a body in one second along a particular direction is known as velocity.
V = S/t velocity is a vector quantity. its standard unit is "m/sec
Uniform Velocity:A body is said to be moving with uniform velocity, if it covers equal displacement in equal intervals of time .
Variable Velocity:A body is said to be moving with variable velocity, if it covers unequal displacement in equal intervals of time.
Average Velocity: The average velocity can be obtained by dividing total displacement by total time taken.
Average velocity = Total Displacement /Total time taken
V = S/T
Instantaneous Velocity: The velocity of a body at any particular instant of time is known as instantaneous velocity.

Q6. Motion with constant velocity is a special case of motion with constant acceleration.Is this statement true?

Ans 1: Yes, this statement is true. When a body moves with constant velocity in the straight line, its acceleration is zero.Hence,The acceleration of the body will always remain constant during such motion.As the zero is a constant quantity, therefore this is a special case of motion.

Q7. Derive the 3rd equation of motion?

Ans 1:

Q8. Define the following terms?
Acceleration
Uniform Acceleration
Variable Acceleration
Radical Acceleration
Linear Acceleration
Positive Acceleration
Negative Acceleration
Instantaneous Acceleration

Ans 1: **Acceleration:** The rate of change of velocity is known as acceleration.
Mathematically, we have
Acceleration = v/t It is a vector quantity. It SI unit m/sec^2
Dimensions of acceleration: We know that
V= Displacement / time = m/sec= Length / Time
$V=[L\ T^{-1}]$
Dimensions of acceleration: We Known that
a = Velocity/time = m/sec . sec = m/sec^{-2}
a = Length/$time^2$ $a = [L\ T^{-2}]$
Uniform Acceleration: A body is said to be moving with the uniform acceleration if equal change occurs in velocity in equal intervals of time.
Variable Acceleration: A body is said to be moving with variable Acceleration if unequal change occurs in velocity in equal intervals intervals of time.
Linear Acceleration: The acceleration which is produced due to change in magnitude of velocity is known as linear acceleration.
Radical Acceleration: The acceleration which is produced due to change indirection of velocity is known as radical acceleration.
Positive Acceleration: The acceleration is said to be positive if the magnitude of velocity increases with respect to time.
Negative Acceleration: The acceleration will be magnitude of velocity decreases with respect to time.
InstantaneousAcceleration: The acceleration of a body at any particular instant of time is known as instantaneous acceleration.

Q9. Why Newton's first law of motion is known as law of inertia?

Ans 1: Newton's first law of motion is:
A body at rest will remain at rest and a body moving with uniform velocity will continue to do so unless acted upon by some unbalanced external force.
It is based on mass and inertia is the quantitative measure of an object's mass. So Newton's first law of motion is also Known as law of inertia.

Q10. Write two object?

Ans 1: Velocity time graph can be used to

1. Calculate the distance covered by the body .
2. Find the instantaneous acceleration of the body.