**MOTION IN A STRAIGHT LINE-3**

**1. Calculation of Distance Covered Displacement, Average Speed and Average Velocity** 1. Distance covered = Length of actual path traversed by the body 2. Displacement = Vector drawn from initial to final position of the body 3. Average speed =  ****

**2. Instantaneous Velocity and Instantaneous Acceleration** 1.  2.  3.  4. 

**3. Motion with Uniform Acceleration** 1. Equations of motion in conventional form, (i) *v = u + at*  (ii) *s = ut + * (iii)  or  (iv)  2. Equations of motion in Cartesian form, (i)  (ii)  (iii)  (iv)  (v) 

**4. Motion under Gravity** 1. For a freely falling body, the equations of motion are (i)  (ii)  (iii)  2. For a body falling freely under the action of gravity, *g* is taken *positive*. 3. For a body thrown vertically upward, *g* is taken *negative* 4. When a body is just dropped, *u = 0* 5. For a body thrown vertically up with initial velocity *u*. (i) Maximum height reached, *h = * (ii) Time of ascent = Time of descent =  (iii) Total time of flight =  (iv) Velocity of fall at the point of projection = *u* (v) Velocity attained by a body dropped from height *h*, 

**5. Position –Time and Velocity –Time Graphs** 1. Slope of position-time (*x-t*) graph gives velocity.  2. Slope of velocity-time (*v-t*) graph gives acceleration  3. Distance travelled = Area between the (*v- t)* graph and time-axis 4. Change in velocity = Area between the *(a-t*) graph and time-axis

**6. Relative Velocity** 1. Relative velocity of object *A* w.r.t. object B,  2. Relative velocity of object B w.r.t. object A,  where andare the velocities w.r.t. the ground

3. When the objects A and B move in the same direction,  4. When the object B moves in the opposite direction of A, 