**Name-** _____                              **M.M :  35**

**Date-**  _____                              **Duration: 1.5 Hours**

*General Instructions:*
- *(a)    All questions are compulsory.*
- *(b)    Section A: Q.no. 1 to 6 are short answer questions and carry 2 marks each.*
- *(c)    Section B: Q.no. 7 to 12 are long answer questions and carry 3 marks each.*
- *(d)    Section C: Q.no. 13-15 are also long answer questions and carry 5 marks each.*

**Section : A  ( two mark questions)     (Attempt any five)**

Q1 Answer the following

a)  Can a body has zero mass and zero weight? Support your answer

b)  Which of  following quantities is expressed as force per unit area?

   A.  Work.      B  Area.     C Volume.  D   Pressure

Q2 Fill in the blanks

(a) $1 \text{ kg m}^2 \text{ s}^{-2}$ = …. $\text{g cm}^2 \text{ s}^{-2}$

(b) 1 m = ….. ly

Q3 Distinguish between Average speed and Average velocity.

Q4 Show that there are two angles of projection for which the horizontal range is the same.

Q5 Give an example of a physical quantity which has

  a) neither unit nor direction.

  b) has a direction but not a vector

  Q6 Define Friction and  its types

**Section B  ( Three mark questions) Attempt any five**

Q7 Centripetal Force (F) acting on a body may depend upon mass of a body  (m), radius of a

   body (r), and frequency of revolution (*v*) . Derive the formula Dimensionally

 Q8 State the number of significant figures in the following :

  (a) $0.007 \text{ m}^2$      (b) $0.2370 \text{ g cm}^{-3}$          (c) 6.320 J        (d) $6.032 \text{ N m}^{-2}$

Q9 Explain why

   (a) passengers are thrown forward from their seats when a speeding bus stops suddenly,

   (b) it is easier to pull a lawn roller than to push it,

Q10  Obtain an expression for workdone in moving a body up on an inclined plane.

Q 11 A space shuttle with a lift off mass of 25000 kg is accelerating from the surface at 6 m/s$^2$.

   What is the initial thrust (Force) achieved from the blast?

Q12  Define error?  A body travels uniformly a distance of (13.8 +_ 0.2 )m. In a time (4.0+_0.3)s.

   Calculate it's velocity with errors limits .What is percentage error in velocity ?

**Section C:  Five mark questions ( Attempt any two)**

Q13 Find path of projectile, time of flight, maximum height,and horizontal range of projectile

   Projected with the speed **U** making an angle Θ with the horizontal direction from the

   ground.

 Q14 Show dimensionally that the relation t=2π(l/g) is incorrect where l is length and t is time

   Period of a simple pendulum; g is acceleration due to gravity. Find correct form of  the

   relation dimensionally.

Q15 What are the dimesions formula  of following:

   a)  Linear Momentum
   b)  Stress
   c)  Moment of inertia
   d)  Surface Tension
   e)  Work