I.M PRACTICE PAPER [CLASS 11th]
Unit 1 to 5

Q1.Convert an energy of one joule into ergs.   2

OR

A physical quantity x is calculated from the relation $x = \dfrac{a^2 b^3}{c\sqrt{d}}$.   If percentage error in a, b, c , d are 2% , 1%

3% and 4% respectively , what is the percentage error in x?

Q2In a one dimensional elastic head on collision, prove that relative velocity of separation is equal to relative velocity of approach? 3

Q3 State triangle law of vector addition. Find analytically the magnitude and direction of resultant vector.3

Q4. When an air bubble rises in water. What happens to its potential energy?1

**Q5**. On which law of motion launching of rocket is based?1

Q6. Why is it easier to roll a barrel that to pull it along the road?2

Q7. State the Laws of friction. Derive an expression for work done in moving a body up an inclined plane.?3

Q8. Define Torque and Angular momentum. Derive the relation between them?3

Q9.The velocity-time graph of a particle moving along a straight line is shown in Fig 2(b). 19. Calculate the distance covered between t= 0 to t = 10 seconds. Also find displacement in time 0 to 10 seconds.   2
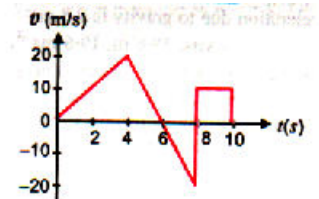
OR

Two forces. whose magnitude are in the ratio 3 : 5 give a resultant of 28 N. If the angle of their inclination is 60°, find the magnitude of each force.

Q10.A hiker stands on the edge of a cliff 490 m above the ground and throws a stone horizontally with an initial speed of 15 ms^{-1}. Neglecting air resistance, find the time taken by the stone to reach the ground, and the speed with which it hits the ground. Take g = 9.8 m/s^2.   2

OR

A bullet of mass 0.04 kg moving with a speed of 90 ms^{-1} enters a heavy wooden block and is stopped after a distance of 60 cm. What is the average resistance force exerted by the block on the bullet?

Q11.Two bodies whose masses are m$_1$ = 50 kg and m$_2$ = 150 kg are tied by a light string and are placed on a frictionless horizontal surface. When m$_1$ is pulled by a force. F, an acceleration of 5 ms^{-2} is produced in both the bodies. Calculate the value of F. What is the tension in the string?   2

OR

A body of mass 2.0kg makes an elastic collision with another body at rest and continues to move in the original direction with a speed equal to half its original speed. Find the mass of the second body.

Q12. From a uniform disc of radius 'R' a circular section of radius r/2 from the center of disc. Locate the centre of mass of resulting flat body?   3

OR

 Find the location of the centre of mass of given strip whose total mass is 12 kg?
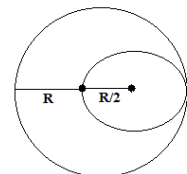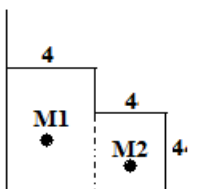
Q13. Find (a) time of flight   (b) maximum height (c) horizontal range of projectile with speed v making an angle θ with horizontal direction from ground?3