

Note: Encircle the correct option.

1. The horizontal range of projectile at 55° with horizontal is same at an angle
 a. 25° b. 35° c. 45° d. 65°
2. Which of the following quantity can be calculated from the velocity time graph:
 a. Acceleration b. Velocity c. Impulse d. Change of time
3. As a rocket moves upward, its acceleration
 a. increases b. decreases c. remains constant d. can't be calculated
4. The time rate of change in momentum of an isolated system is also called
 a. force b. acceleration c. torque d. impulse
5. The property of a body due to which it oppose the change in its state is called
 a momentum b. torque c. weight d. inertia
6. When velocity time graph is a straight line, then
 a. Velocity is constant b. acceleration is uniform c. velocity is variable d. acceleration is zero
7. Acceleration is always produced in the direction of
 a. velocity b. torque c. angular momentum d. force
8. The distance covered by a freely falling body is 2 s will be
 a. 4.9 m b. 19.6 m c. 9.8 m d. 39.2 s
9. Laws of motion are valid in a frame of reference which is
 a. inertial b. non-inertial c. both inertial & non inertial d. none of these
10. In projectile motion, vertical component of the velocity
 a. remains constant b. decreases c. increases d. changes continuously
11. Rate of change of momentum is equal to
 a. mass b. impulse c. force d. none of these
12. The range of projectile is maximum at an angle of
 a. zero degree b. 30° c. 45° d. 60°
13. The horizontal range and height of projectile are equal at an angle of
 a. 75° b. 76° c. 77° d. 78°
14. The range of the projectile is directly proportional to
 a. $\sin^2 \theta$ b. $\sin 2\theta$ c. $\sin \theta$ d. $2\sin \theta$
15. The acceleration of projectile at the highest point is
 a. zero b. 9.8 ms^{-2} c. 19.6 ms^{-2} d. 32.2 ms^{-2}
16. Newton's first law defines
 a. force b. speed c. acceleration d. displacement
17. A 10 N force is applied on a body which produces acceleration of 1 ms^{-2} in it, mass of the body is
 a. 10 kg b. 1 kg c. 5 kg d. 20 kg
18. An object have mass 10 kg moving with acceleration 5 ms^{-2} . The force applied on it is
 a. 1 N b. 10 N c. 15 N d. 50 N
19. When a bullet is fired by a gun, recoil is produced in
 a. gun b. bullet c. both gun and bullet d. no recoil is produced
20. A 5 kg object is falling freely, the weight of the object is
 a. 5 N b. 9.8 N c. 19.6 N d. zero
21. The motion of a rocket is in accordance with law of conservation of
 a. linear momentum b. energy c. mass d. angular momentum
22. Vertical height covered by a projectile when it is thrown horizontally from certain height if it takes 2 seconds to hit the ground.
 a. 4.9 m b. 19.6 m c. 39.2 m d. 44.1 m
23. The horizontal component of a projectile moving with an initial velocity of 500 m s^{-1} at angle of 60° with the X-axis is equal to
 a. 150 m s^{-1} b. 250 m s^{-1} c. 0 m s^{-1} d. 625 m s^{-1}
24. The property of body due to which it opposes its change in state is called
 a. Torque b. Weight c. Momentum d. Inertia
25. The area under the velocity time graph is equal to
 a. Acceleration b. Velocity c. distance traveled d. Change of time
26. When the body is moving with constant velocity then instantaneous velocity is equal to

27. a. Displacement b. Average acceleration c. Average velocity d. None of these
 If the time duration becomes $1/100$ s, the impulsive force is
28. a. $1/100$ times b. 10 times c. 100 times d. 500 times
 The total change in momentum of an isolated system is
29. a. maximum b. minimum c. zero d. None of these
 When light body collides elastically with massive body at rest, velocity of light body after collision
30. a. remains same b. becomes double c. same but in opposite direction d. becomes zero
 The flight of Ballistic missile is an example of
31. (a) linear motion (b) projectile motion (c) semicircular motion (d) circular motion
 The of the burnt gases ejected from the back of rocket is
32. a. 3000 m s^{-1} b. 3500 m s^{-1} c. 4000 m s^{-1} d. 4500 m s^{-1}
 The horizontal component of a projectile throughout its motion
33. a. remains constant b. increases c. becomes zero d. decreases
 When the body is moving with constant acceleration then instantaneous acceleration is equal to
34. a. Displacement b. Average acceleration c. Average velocity d. None of these
 The total change in momentum of an isolated system is
35. a. maximum b. minimum c. zero d. None of these
 When heavy body collides elastically with light body at rest, velocity of light body after collision
36. a. remains same b. becomes double c. same but in opposite direction d. becomes zero
 A neutron is in head-on elastic collision with a stationary nitrogen nucleus. The mass of a nitrogen nucleus is 14 times greater than the mass of a neutron. The velocity of neutron after collision is
- (a) Zero.
 (b) less in magnitude than its initial velocity.
 (c) less in magnitude than the final velocity of nitrogen atom.
 (d) equal in magnitude to its initial velocity but in the opposite direction.
37. Which of the following statements relating to Newton's third law is not correct?
 (a) The two forces must be of same type.
 (b) The two forces must act on different bodies.
 (c) The two forces are always opposite in direction.
 (d) The two forces are equal and opposite so the bodies are in equilibrium.
38. The shortest distance between two points is called
 a. speed b. distance c. acceleration d. displacement
39. The slope of the velocity time graph is equal to
 a. Acceleration b. Velocity c. Distance covered d. Change of time
40. When the values of average and instantaneous velocities are equal then body is said to be moving with
 a. uniform speed b. uniform acceleration c. uniform velocity d. average velocity
41. When a massive body collides elastically with a light stationary body, velocity of massive body after collision
 a. massive body comes to rest b. becomes double c. same but in opposite direction d. remains same
42. Acceleration in a body is always produced in the direction of
 a momentum b. force c torque d velocity
43. A mass of 5 kg moves with an acceleration of 10 m/s^2 , the force action on it is equal to
 a. 1 N b. 10 N c. 15 N d. 50 N
44. Pull of earth on a mass of 20 kg on the surface of earth is
 a. 19.6 N b. 20 N c. 196 N d. 1960 N
45. Inertia of a body is measured in terms of
 a. its mass b. its weight c. its force d. its velocity
46. To cover maximum horizontal distance, a long jumper must jump at an angle of
 a. 20° b. 30° c. 45° d. 60°
47. A collision in which K.E of a system remains constant is called
 a. inelastic collision b. elastic collision c. both elastic and inelastic d. none of these
48. Before launch of a rocket, mass of fuel of rocket consist of approximately
 a. 40 % of mass of rocket b. 50 % of mass of rocket c. 60 % of mass of rocket d. 80 % of mass of rocket
49. A particle collides elastically with another particle of same mass at rest, the velocity of incident particle after collision
 a. becomes double b. becomes zero c. remains same d. same but opposite

50. A projectile has initial velocity 9.8 m/s. The maximum height gained by the projectile is equal to
 a. 4.9 m b. 9.8 m c. 19.6 m d. zero
51. For which pair of angle, the horizontal range of a projectile is equal
 a. 30° & 60° b. 20° & 30° c. 40° & 60° d. 30° & 90°
52. Acceleration of a body moving with uniform velocity is
 a. 9.8 m/s^2 b. zero c. not zero d. variable
53. According to Newton's second law of motion, the magnitude of force is directly proportional to
 a. velocity b. acceleration c. inertia d. mass
54. The dimension of force are
 a. MLT^{-2} b. M^2LT^{-2} c. MT^{-2} d. ML^2T
55. The discuss used by an athlete has a mass of 1 kg. Its weight in Newton is
 a. 100 N b. 98 N c. 80 N d. 9.8 N
56. When a person reaches the top of a high mountain
 a. his mass increases b. his weight increases c. his mass decreases d. his weight slightly decreases
57. Acceleration of two objects of different masses allowed to fall freely is
 a. variable b. same c. different for different heights d. different for different objects
58. In an elastic collision of two bodies having equal masses
 a. K.E is lost b. momentum is lost c. P.E. is lost d. K.E and momentum are conserved
59. Range of projectile is
 a. $2 v_i \sin\theta/g$ b. $2 v_i^2 \sin\theta/g$ c. $v_i^2 \sin\theta/g$ d. $v_i^2 \sin 2\theta/g$
60. Horizontal range of projectile is related with maximum range according to the relation
 a. $R = R_{\max} \sin\theta$ b. $R = R_{\max} \sin 2\theta/g$ c. $R_{\max} = R \sin 2\theta/g$ d. $R = R_{\max} \sin 2\theta$
61. The horizontal range of projectile at 30° with horizontal is same at an angle of
 a. 40° b. 45° c. 60° d. 90°
62. Water flows out from a pipe at 3 kg/s and its velocity changes from 5m/s to zero on striking the wall. The force due to water flows is
 a. 3 N b. 5 N c. 10 N d. 15 N
63. S.I. units of impulse is
 a. kg m b. N s c. N d. kg m s
64. The unit of impulse is same as that of
 a. force b. weight c. momentum d. acceleration
65. A cricket ball is hit so that it travels to reach the maximum height 44m, its initial velocity is
 a. 10 m/s b. 15 m/s c. 29.4 m/s d. 12.2 m/s

Assignment No. 2

Chapter No. 3

Class: 1st Year

Section:

Max. Marks = 12

Note: Write short answer to the following question

- Q. 1** Prove that change of momentum is equal to impulse.
- Q.2** Describe briefly two uses of ballistic missiles.
- Q.3** State 2nd law of motion and define S.I units of force.
- Q.4** What is projectile motion? In which direction acceleration is zero in this motion?
- Q.5** When a body is dropped from a height 4m, calculate its velocity.
- Q. 5** Find out the velocity of a heavy body when it collides elastically with a light stationary body.
- Q. 6** What is the vertical component of projectile velocity at the highest point?