1) Which axial force is determined while analysing a truss?

   a) compressive force

   b) tensile force

   c) both a. and b.

   d) Rotational Force

2) If a body is subjected to plastic impact, _____

   a) only kinetic energy is conserved

   b) only momentum is conserved

   c) volume is constant

   d) area is constant

3) An object of 30 kg is moved with a velocity of 2 m/s on a horizontal smooth surface. What is the velocity of the block for 4 seconds if force of 40 N is applied on it in the direction of force?

   a) 2 m/s

   b) 4.6 m/s

   c) 7.33 m/s

   d) 9.33 m/s

4) If two objects of 30 kg and 10 kg move with equal kinetic energy, then what is the ratio of magnitudes for linear momentum?

   a) √3:1

   b) 1:√3

   c) 1:3√3

   d) 1:3

5) The total momentum of a system _____, if no external impressed force acts on it.

   a) Increases

   b) Decreases

   c) Remains Constant

   d) None of the above

6) According to the principle of conservation of energy, under the action of _____ force, the sum of P.E and K.E of a particle remains constant.

   a) conservative force

b) dissipative force

c) frictional force

d) air resistance force

7) If a particle of mass 5 kg moves uniformly along a circle of radius 10 m at 10 m/s, then what is the work done by centripetal force during its one revolution?

a) 0.5kNm

b) Zero

c) Infinity

d) 1kNm

8) What is the minimum velocity attained by a ball thrown with velocity of 20 m/s at an angle of 40o with the horizontal?

a) 15.32 m/s

b) 12.85 m/s

c) 16.78 m/s

d) Zero

9) A stone undergoes projectile motion when thrown from top of the building. If it strikes the ground surface at a distance away from the building, then its horizontal direction is

_____

a) less than range

b) more than range

c) same as range

d) unpredictable

10) The radial component of velocity for a particle moving in circular path is _____

a) Constant

b) Radius Itself

c) Variable

d) Zero

11) The radius of curvature of trajectory for a profile is minimum, if _____

a) velocity is minimum

b) acceleration is maximum

c) both 'a' and 'b'.

d) density is maximum

12) A block sliding down an inclined plane has acceleration _____ acceleration due to gravity.

a) **Less Than**

b) Greater Than

c) Same as

d) zero

13) What is the average resistance required to stop a truck of mass 600 kg in a distance of 30 m, if initial speed is 30 m/sec?

a) 8000 N

b) **9 kN**

c) 9.5 kN

d) 9 N

14) A ball dropped from a wall of height h travels a distance of 50 m in last two seconds before landing. What is the height of the wall from which the ball was dropped?

a) 120.15 m

b) **127.37 m**

c) 183.48 m

d) Insufficient data

15) What is the centroidal distance of an equilateral triangle of side 2 m?

a) 0.866m

b) 0.769m

c) 1.000m

d) **0.577m**

16) The maximum and minimum magnitude of resultant forces is 1000 N and 500 N at point. What are the values of two forces acting on it?

a) 500 N, 500 N

b) 450 N, 550 N

c) 300 N, 700 N

d) **250 N, 750 N**

17) If a truss consists of 8 joints, 10 members and 4 reaction components then, it is a _____

a) Cantilever Truss

b) **Deficient Truss**

c) Redundant Truss

d) Frame

18) Indeterminate structures have number of unknown quantities_____available conditions of equilibrium

a) Equal to

b) Less Than

c) **More Than**

d) Approximate equal

19) Coefficient of restitution is the ratio of impulse during _____

a) plastic deformation and elastic deformation

b) elastic deformation and plastic deformation

c) **restoration period and deformation period**

d) deformation period and restoration period

20) What is the kinetic energy at the highest point, if at an angle of 30o with the horizontal a ball is projected with a kinetic energy E?

a) E/2

b) E/$\sqrt{2}$

c) 5E/4

d) **3E/4**

21) Uniformly distributed load of 5 kN acts on a simply supported beam of length 10 m. What are the reactions at end points of the beam?

a) 12.5 kN

b) **25 kN**

c) 50 kN

d) 75 kN

22) What is the angle made by side of a square lamina, if it is freely suspended from a corner with the horizontal?

a) 0 degree

b) **45 degree**

c) 90 degree

d) 180 degree

23) Frictional force depends on _____

a) surface area in contact

b) **roughness of surface**

c) surface density

d) polarity

24) If n > 2j – R, then the truss is called as _____.

s(n = number of joints, j = number of members, R = number of reaction components)

a) Perfect Truss

b) **Redundant Truss**

c) Deficient Truss

d) Efficient Truss

25) According to work energy principle, a particle of mass m when subjected to unbalanced force system, the work done during displacement by all forces is equal to change in _____ during displacement.

a) Gravitational Energy

b) **Kinetic Energy**

c) Mechanical Energy

d) Potential Energy

26) Which of the following is represented by the area under force-displacement diagram?

a) Impulse

b) Momentum

c) Power

d) **Work Done**

27) When motion is _____, the normal component of acceleration is zero.

a) Curvilinear

b) Rotational

c) **Rectilinear**

d) Translation

28) A man of 60 kg moves in a lift of constant velocity 5 m/s. What is the reactive force acting on the man by the elevator?

a) 888N

b) 588N

c) 288N

d) Zero

29) A body exerts a force of 800 N on the floor of the lift which moves upwards with a retardation of 2 m/s2. What is mass of the body carried in the lift?

a) 74.02N

b) 81.54N

c) 102.43N

d) 96.2N

30) A boat sails across a river with a velocity of 10 km/hr. If resultant boat velocity is 14 km/hr, then what is the velocity of river water?

a) 17.20 kmph

b) 10 kmph

c) 9.79 kmph

d) 4.88 kmph