

Sample Questions SEE ATKT SEP2020 (CBCGS/CBSGS)

Subject: Engineering Mechanics (FEC104)

- 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) $\sqrt{3}:1$
 - b) $1:\sqrt{3}$
 - c) $1:3\sqrt{3}$
 - 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 40° 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 30° 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 _____.
(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