

1. In order to determine the effects of a force acting on a body, we must know
- (a) Its magnitude and direction of the line along which it acts.
 - (b) Its nature (whether push or pull).
 - (c) Point through which it acts on the body.
 - (d) All of the above.

[d]

2. Two forces of 100 N and 150 N are acting simultaneously at a point. What is the resultant of these two forces, if the angle between them is 45° ?
- (a) 232
 - (b) 242
 - (c) 252
 - (d) 323

[a]

3. The moment of a force about any point is geometrically equal to... area of the triangle whose base is the line representing the force and vertex is the point about which the moment is taken.
- (a) Half (b) Same (c) Twice (d) None of these

[a]

4. If a number of coplaner forces are acting simultaneously on a particle, the algebraic sum of the moments of all forces about any point is equal to the moment of their resultant force about the same point. This principle is known as
- (a) Principle of moments. (b) Principle of levers
 - (c) None of them (d) Both (a) & (b)

[a]

5. A couple consists of
- (a) two like parallel forces of same magnitude.
 - (b) two like parallel forces of different magnitudes.
 - (c) two unlike parallel forces of same magnitude.
 - (d) two unlike parallel forces of different magnitudes.

[c]

6. A rod AB 2.5 m long is supported at A and B. The rod is carrying a point load of 5 kN at a distance of 1 m from A. What are the reactions at A and B ?
- (a) 1 kN and 2 kN
 - (b) 2 kN and 3 kN
 - (c) 4 kN and 5 kN

(d) 6 kN and 7 kN

[b]

7. Two like parallel forces of 50 N and 100 N act at the ends of a rod 360 mm long. Find the magnitude of the resultant force and the point where it acts.

- (a) 140 mm
- (b) 340 mm
- (c) 240 mm
- (d) 430 mm

[c]

8. The Lami's Theorem is applicable only for

- (a) Coplaner forces (b) Concurrent forces
- (c) Coplaner and concurrent forces (d) Any type of forces

[a]

9. If a body is in equilibrium. We may conclude that

- (a) No force is acting on the body
- (b) The resultant of all the forces acting on it is zero.
- (c) The moments of the forces about any point is zero.
- (d) Both (b) and (c)

[d]

10. If the sum of all the forces acting on a body is zero, then the body may be in equilibrium

provided the forces are

- (a) Concurrent (b) Parallel
- (c) Like parallel (d) Unlike parallel

[a]

11. For simple supported beam having load at the center the bending moment will be

- (a) minimum at the support (b) minimum at the center
- (c) maximum at the support (d) none of the above

[a]

12. Bending moment at the center of a beam of length "l" firmly supported at both ends and having a central load of W is

- (a) Wl (b) $Wl/2$ (c) $Wl/4$ (d) $Wl/8$

[d]

13. A truss structure is perfect, if the number of members are _____ ($2j - 3$), where j is the number of joints.

- (a) less than (b) equal to (c) greater than (d) either (a) or (c)

[b]

14. A redundant truss is also calledframe

- (a) perfect (b) imperfect (c) deficient (d) none of these

[b]

15. A truss structure of a triangular shape is

- (a) perfect (b) imperfect (c) deficient (d) redundant

[a]

16. In determining stresses in trusses by methods of sections, the truss is divided into two

parts by an imaginary section drawn in such a way as not to cut more than

- (a) two members with unknown forces of the truss
(b) three members with unknown forces of the truss
(c) four members with unknown forces of the truss
(d) three members with known forces of the truss

[b]

17. The following shear force diagram will be obtained when a cantilever carrying a uniformly varying load starting from zero at the free end,

- (a) A horizontal line parallel to x-axis
(b) A line inclined to x-axis
(c) Follows a parabolic law
(d) Follows a cubic law

[c]

18. The following bending moment will be obtained for any part of a beam between two concentrated load

- (a) Horizontal straight line
(b) Vertical straight line
(c) Line inclined to x-axis
(d) Parabola

[c]

19. The point where the bending moment changes its sign and is zero is called as,

- (a) Point of contraflexure
- (b) Point of inflexion
- (c) Both (a) and (b)
- (d) None of the above

[c]

20. Maximum bending moment that is obtained when a cantilever subjected to a concentrated load (W) at the free end and having length $=l$,

- (a) Wl at the free end
- (b) Wl at the fixed end
- (c) $Wl/2$ at the fixed end
- (d) Wl at the free end

[b]