

1. The term 'force' may be defined as an agent which produces or tends to produce, destroys or tends to destroy motion

A. Agree

B. Disagree

Answer: Option **A**

2. A force while acting on a body may

A. change its motion

B. balance the forces, already acting on it

C. give rise to the internal stresses in it

D. all of these

Answer: Option **D**

3. In order to determine the effects of a force, acting on a body, we must know

A. magnitude of the force

B. line of action of the force

C. nature of the force i.e. whether the force is push or pull

D. all of the above

Answer: Option **D**

8. The algebraic sum of the resolved parts of a number of forces in a given direction is equal to the resolved part of their resultant in the same direction. This is known as

- A. principle of independence of forces B. principle of resolution of forces
C. principle of transmissibility of forces D. none of these

Answer: Option **B**

9. Vectors method for the resultant force is also called polygon law of forces.

- A. Correct B. Incorrect

Answer: Option **A**

10. The resultant of two forces P and Q (such that $P > Q$) acting along the same straight line, but in opposite direction, is given by

- A. $P + Q$ B. $P - Q$
C. P / Q D. Q / P

Answer: Option **B**

11. The resultant of two equal forces P making an angle θ , is given by

A. $2 P \sin \theta/2$

B. $2 P \cos \theta / 2$

C. $2 P \tan \theta/2$

D. $2 P \cot \theta/2$

Answer: Option **B**

12. The angle between two forces when the resultant is maximum and minimum respectively are

A. 0° and 180°

B. 180° and 0°

C. 90° and 180°

D. 90° and 0°

Answer: Option **A**

13. If the resultant of two equal forces has the same magnitude as either of the forces, then angle between the two forces is

A. 30°

B. 60°

D. 120°

Answer: Option **D**

14. The resultant of the two forces P and Q is R . If Q is doubled, the new resultant is perpendicular to P . Then

A. $P = Q$

B. $Q = R$

C. $Q = 2R$

D. none of these

Answer: Option **B**

15. Two forces are acting at an angle of 120° . The bigger force is 40N and the resultant is perpendicular to the smaller one. The smaller force is

A. 20N

B. 40N

C. 40N

D. none of these

Answer: Option **A**

16. The terms 'leverage' and 'mechanical advantage' of a compound lever have got the same meaning.

A. Right

B. Wrong

Answer: Option **A**

17. A number of forces acting at a point will be in equilibrium, if

A. all the forces are equally inclined

B. sum of all the forces is zero

C. sum of resolved parts in the vertical direction is zero (i.e. $\sum V = 0$)

D. sum of resolved parts in the horizontal direction is zero (i.e. $\sum H = 0$)

Answer: Option **C and D**

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18. If a number of forces are acting at a point, their resultant will be inclined at an angle θ with the horizontal, such that

A. $\tan \theta = \frac{H}{V}$

B. $\tan \theta = \frac{V}{H}$

C. $\tan \theta = V \times H$

Answer: Option **B**

19. The triangle law of forces states that if two forces acting simultaneously on a particle, be represented in magnitude and direction by the two sides of a triangle taken in order, then their resultant may be represented in magnitude and direction by the third side of a triangle, taken in opposite order.

A. TRUE

B. FALSE

Answer: Option **A**

20. The polygon law of forces states that if a number of forces, acting simultaneously on a particle, be represented in magnitude and direction by the sides a polygon taken in order, then their resultant is represented in magnitude and direction by the closing side of the polygon, taken in opposite direction.

A. Correct

B. Incorrect

Answer: Option **A**

A. Agree

B. Disagree

Answer: Option **A**

25. The forces which meet at one point, but their lines of action

A. lie

B. do not lie

Answer: Option **B**

26. The forces which do not meet at one point and their lines of action do not lie on the same plane are known as

A. coplaner concurrent forces

B. coplaner non-concurrent forces

C. non-coplaner concurrent forces

D. none of these

Answer: Option **D**

27. Coplaner non-concurrent forces are those forces which

A. meet

B. do not meet

Answer: Option **B**

28. Coplaner concurrent forces are those forces which

- | | |
|---|---|
| <u>A.</u> meet at one point, but their lines of action do not lie on the same plane | <u>B.</u> do not meet at one point and their lines of action do not lie on the same plane |
| <u>C.</u> meet at one point and their lines of action also lie on the same plane | <u>D.</u> do not meet at one point, but their lines of action lie on the same plane |

Answer: Option C

29. Non-coplaner concurrent forces are those forces which

- | | |
|---|---|
| <u>A.</u> meet at one point, but their lines of action do not lie on the same plane | <u>B.</u> do not meet at one point and their lines of action do not lie on the same plane |
| <u>C.</u> meet at one point and their lines of action also lie on the same plane | <u>D.</u> do not meet at one point, but their lines of action lie on the same plane |

Answer: Option A

30. Non-coplaner non-concurrent forces are those forces which

- | | |
|---|---|
| <u>A.</u> meet at one point, but their lines of action do not lie on the same plane | <u>B.</u> do not meet at one point and their lines of action do not lie on the same plane |
| <u>C.</u> do not meet at one point, but their lines of action lie on the same plane | <u>D.</u> none of the above |

Answer: Option B

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31. If three coplaner forces acting on a point are in equilibrium, then each force is proportional to the sine of the angle between the other two

A. Right

B. Wrong

Answer: Option **A**

32. According to lami's theorem

A. the three forces must be equal

B. the three forces must be at 120° to each other

C. the three forces must be in equilibrium

D. if the three forces acting at a point are in equilibrium, then each force is proportional to the sine of the angle between the other two

Answer: Option **D**

33. If a given force (or a given system of forces) acting on a body

A. change

B. does not change

Answer: Option **B**

34. If three forces acting at a point are represented in magnitude and direction by the three sides of a triangle, taken in order, then

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the forces are in equilibrium

- A. Yes B. No

Answer: Option **A**

35. If a number of forces acting at a point be represented in magnitude and direction by the three sides of a triangle, taken in order, then the forces are not in equilibrium

- A. Agree B. Disagree

Answer: Option **B**

36. The moment of a force

- A. is the turning effect produced by a force, on the body, on which it acts B. is equal to the product of force acting on the body and the perpendicular distance of a point and the line of action of the force
- C. is equal to twice the area of the triangle, whose base is the line representing the force and whose vertex is the point, about which the moment is taken D. all of the above

Answer: Option **D**

37. If a number of coplaner forces acting at a point be in equilibrium, the sum of clockwise moments must be

- A. equal to B. less than

C. greater than

Answer: Option **A**

38. Varignon's theorem of moments states that if a number of coplaner forces acting on a particle are in equilibrium, then

A. their algebraic sum is zero

B. their lines of action are at equal distances

C. the algebraic sum of their moments about any point in their plane is zero

D. the algebraic sum of their moments about any point is equal to the moment of their resultant force about the same point

Answer: Option **D**

39. According to the law of moments, if a number of coplaner forces acting on a particle are in equilibrium, then

A. their algebraic sum is zero

B. their lines of action are at equal distances

C. the algebraic sum of their moments about any point in their plane is zero

D. the algebraic sum of their moments about any point is equal to the moment of their resultant force about the same point

Answer: Option **C**

40. For any system of coplaner forces, the condition of equilibrium is that the

A. algebraic sum of the horizontal components of all the forces should be zero

B. algebraic sum of the vertical components of all the forces should be zero

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- C. algebraic sum of moments of all the forces about any point should be zero
- D. all of the above
-

Answer: Option **D**