

QUIZ PAPER

SUB:ENGINEERING MECHANICS(EME-102)

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1.While studying the planetary motion, sun and planets are considered as

- a. Deformable body b. Rigid body c. Particle d. None of them

2.Force can be characterized by

- a. Point of application b. Direction c. Magnitude d. All of the them

3.The angle between two forces to make their resultant a minimum and maximum respectively are

- a.0 and 90 degree b.180 & 90 degree c.90 & 180degree d.180 & 0 degree

4. Two forces can be in equilibrium only if they are

I.equal in magnitude II.opposite in direction III.collinear in action

- a.I & II only b.I & III only c.II & III only d.I, II & III

5. The resultant of two forces is equal to each of the force.The angle between them is----- degree

- a.0 b.90 c.180 d.120

6. The force that cancels the effect of the force system acting on the body is known as

- a. Resultant b. Neutral force c. Balancing force d. Equilibrant

7. Consider the following statements:

The magnitude of the moment does not change

I.if the point of application of the force is transmitted along its line of action

II.if the moment centre is moved along a line parallel to the line of action of the force

Of these statements

- a.I alone is correct
b.II alone is correct
c.I & II are correct
d.Neither I nor II is correct

8. A wege is generally used for lifting a

- a. Heavy load through large distance
b. Heavy load through small distance
c. Light load through large distance
d. Light load through small distance

9. If a ladder is not in equilibrium against a smooth vertical wall, then it can be made in equilibrium by

- a.increasing the angle of inclination with horizontal
b.increasing the area of the ladder
c. decreasing the angle of inclination with horizontal
d. decreasing the area of the ladder

10. Consider the following examples;

I. Opening or closing a water tap

II. Turnig the cap of a pen

III. Steering a motor car

IV. Winding a watch with a key

Which of these are example of couples in everyday life

- a.Only I b.II & II only c.I,II,III only d.All

11. Poisson ratio is defined as the ratio of

- a. Lateral strain/linear strain
- b. linear strain /Lateral strain
- c. linear strain /volumetric strain
- d. Linear strain /shear strain

12. Ratio of total elongation produced in bar due to external load and self weight is

- a.1 b.0.5 c.0.33 d. 2

13. Strain energy due to pure shear per unit volume is given by

- a. $\zeta^2 / 2C$ b. $\zeta^2 / 4C$ c. $\zeta^2 / 2E$ d. None

14. When a square or rectangular block subjected to a shear load is in equilibrium, the shear stress in one plane is always associated with complementary shear stress of equal value in the other plane at ----- degree to it

- a. 45 b.90 c.180 d.60

15. Ratio of hydrostatic stress to the volumetric strain is called

- a. Shear modulus
- b. Bulk modulus
- c. Young's modulus
- d. All of the above

16.Relation between the three elastic constants

- a. $1/m=(3K-2C)/(6K-2C)$
- b. $1/m=(2K-3C)/(6K-2C)$
- c. $1/m=(3K-2C)/(2K-6C)$
- d. $1/m=(3K-C)/(6K-C)$

17.If v=velocity s=distance covered t=time taken, then acceleration 'a' is given by

- a. dv/dt
- b. d^2s/dt^2
- c. vdv/ds
- d. All of the above

18. Distance travelled by a body moving with uniform acceleration 'a' in nth second is given by

- a. $u_n+1/2a(n-2)$
- b. $2u+a(2n-1)$
- c. $u+a/2(2n-1)$
- d. $u+2a(n-1)$

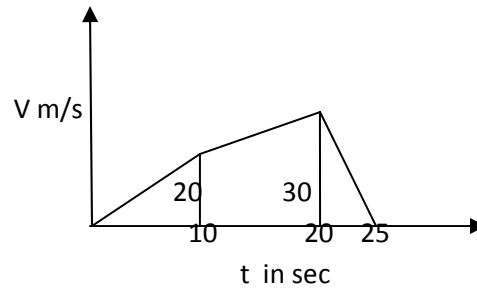
19.The instantaneous centre

- a. has zero velocity
- b. may be out side the body
- c. may be within the body
- d.All of the above

20. Velocity-time graph is shown in Fig Total distance travelled is

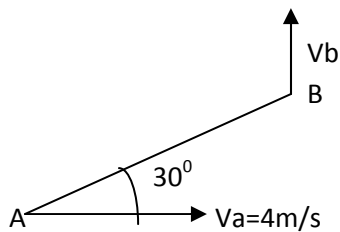
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- a. 400m
- b. 350m
- c. 425m
- d. 325m



21. If a body is having combined motion of translation and rotation then the body is assumed to be rotating about a certain point which is known as -----

5.



AB is a link, velocity at B, V_b is equal to

- a. $4\sqrt{3}$
- b. $4/\sqrt{3}$
- c. 0
- d. $\sqrt{3}/4$

22. Horizontal range will be maximum when the angle of projection is equal to

- a. 90°
- b. 45°
- c. 180°
- d. 0°

23. Impulse is equal to

- a. Change of momentum
- b. Mass \times velocity
- c. Virtual work
- d. A & b

24. Plane motion of a rigid body will have

- a. Translation only
- b. Rotation only
- c. Both translation & Rotation
- d. Neither translation nor rotation

25. A beam having more than two support is called

- a. Over hanging beam
- b. Cantilever beam
- c. Continuous beam
- d. both a & c

26. The point at which shear force is zero will have

- a. zero B.M
- b. Maximum B.M
- c. Maximum S.F
- d. both a & c

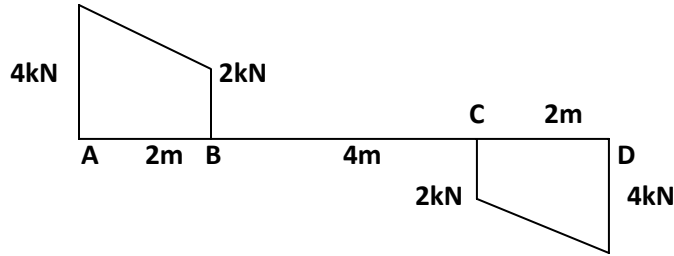
27. At point of contraflexure

- a. shear force is zero
- b. B.M is zero
- c. B.M change its sign
- d. Both b & c

28. Which relation is correct

- a. $dM/dx = F$
- b. $dF/dx = -w$
- c. $dM/dx = -F$
- d. Both a & b

29.



From the above SFD what will be the reaction at the support A & B

- a.6kN each b.4kN each c.2kN each d.none

30.From the above SFD What will be the maximum bending moment

- a.4kNm b.6kNm c.8kNm d.none

31. A cantilever of length 10m carries a udl of intensity 100kN/m. What will be the maximum bending moment

- a.5MNm b.50MNm c.1000kNm d.250kNm

32.A simply supported beam carries a udl of intensity w /length over a span of L m, the bending moment diagram will be a

- a.Triangle b.Parabola c.Rectangle d. none

33. In Q.No-32 what will be the maximum bending moment-----

34.In Q.No-32 maximum bending moment and minimum bending moment will occur at

- a.both at $L/2$ b.both at support c. at $L/2$ and support d. outside the beam

35. In method of joint : A says forces taken in members should be tensile

B says forces taken in members should be compressive

Who is correct

- a.Only A b.Only B c.Both A & B d.Neither A nor B

36.In method of section: A says section should not be pass through more than three members

B says section should be pass through more than three members

C says section should not be pass through more than three unknown members

Who is correct

- a.A and B b.A and C c.B and C d.A,B and C

37.The point at which the whole weight of the body acts is called-----

38. At principal axes the product of inertia is

- a.zero b.Maximum c.Minimum d.None

39.Moment of inertia of a triangle section of base 'b' and height 'h' about its base is

- a. $bh^3/36$ b. $bh^3/12$ c. $bh^3/3$ d. $bh^3/6$

40. The C.G. of a solid hemisphere lies on the central radius at a distance of

(a) $3r/2$

(b) $3r/4$

(c) $3r/5$

(d) $3r/5$ from the plane of the base

41. Which of the following is the basic concept of mechanics

- a. Charge
- b. Power
- c. Force
- d. Energy

42. If two forces P and Q ($P > Q$) act on the same straight line but in opposite direction, their resultant is

- a. $P+Q$
- b. P/Q
- c. $Q-P$
- d. $P-Q$

43. A body of weight Q is placed on an inclined rough plane. The inclination of plane with the horizontal is less than the angle of friction. The body will

- a. be in equilibrium
- b. move downward
- c. be in motion
- d. move upwards

44. The force of friction developed between the two surfaces in contact is independent of

- a. roughness of surfaces
- b. area of contact between the surfaces
- c. reaction of surface
- d. force tending cause motion

45. Two equal parallel force acting in opposite direction is known as

- a. Couple
- b. Moment
- c. Equilibrant
- d. Resultant

46. rotational tendency of a force is called-----

47. The resultant of two equal force of magnitude 'F' acting at an angle of α is with each other is ----

48. The member in a truss under tension is called----- and under compression is called-----

49. If m = number of member and j = no of joints then the condition of redundant truss is given by-----

50. Coefficient of friction is ----- for smooth surface