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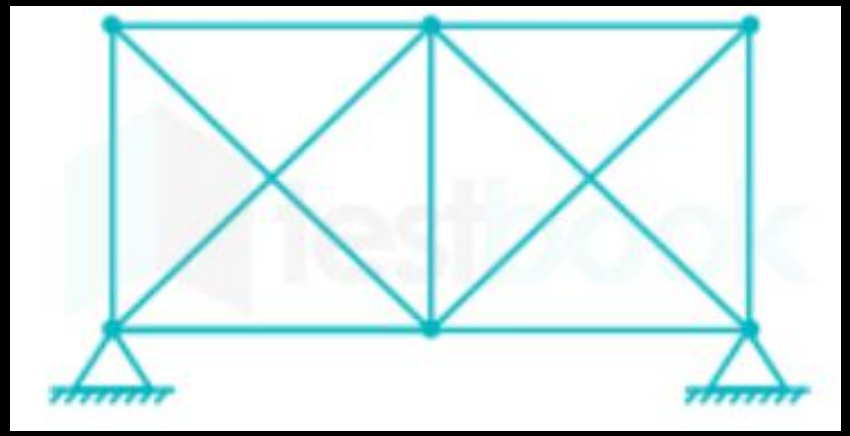
Q : 1) The following truss is _____

A : Deficient

B : Redundant

C : Perfect truss

D : None



Q :2) A car travelling at a speed of 60 km/hr is braked and comes to rest in 6 s after the brake is applied. The minimum coefficient of friction between the wheels and the road would be

A : 0.107

B : 0.227

C : 0.3

D : 0.417

Q :3) If three non parallel forces hold a rigid body in equilibrium, they must be-

A : Equal in magnitude

B : Concurrent

C : Non-concurrent

D : Colinear

Q : 4) The tension in the cable supporting a lift moving upwards is twice the tension when the lift moves downwards. What is the acceleration of the lift?

A : g/4

B : g/3

C : g/2

D : g

Q : 5) Section modulus of Hollow circular section having external dia. (D) and internal dia. (d) is

A : $\frac{\pi}{32} \times (D - d^4)$

B : $\frac{\pi}{36} \times \frac{(D^4 - d^4)}{D}$

C : $\frac{\pi}{32} \times \frac{(D^4 - d^4)}{D}$

D : $\frac{\pi}{36} \times (D - d^4)$

Q : 6) A bullet of mass 20 gm is fired from a gun of mass 15 kg. If the speed of bullet is 650 m/s, then the recoil velocity of gun is

A : 0.5 m/s

B : 0.86 m/s

C : 1.25 m/s

D : 1.5 m/s

Q : 7) The BM diagram of the beam shown in figure is:

A : A rectangle

B : A triangle

C : A trapezium

D : A parabola

Q : 8) In elastic collisions of bodies:

A : Both of the momentum and total kinetic energy are conserved

B : Neither momentum of the colliding bodies nor the total kinetic energy are recoverable.

C : Only the total kinetic energy is conserved

D : Only the total momentum of the colliding objects is conserved

Q : 9) Two bars of different materials are of the same size and are subjected to the same tensile forces. If the bars have unit elongations in the ratio of 4 : 7, then the ratio of modulus of elasticity of the two materials is

A : 4 : 7

B : 4 : 10

C : 16 : 49

D : None of these

Q : 10) The 2D stress at a point is given by the matrix $\begin{bmatrix} \sigma_{xx} & \sigma_{xy} \\ \sigma_{xy} & \sigma_{yy} \end{bmatrix} = \begin{bmatrix} 50 & 15 \\ 15 & 10 \end{bmatrix}$ MPa

The maximum shear stress in (MPa) units is:

A : 55

B : 45

C : 30

D : 25

Q : 11) Which among the following is/are the correct assumptions made in the torsion formula?

A : Twist along the shaft is uniform

B : Plane sections before twisting remain plane after twisting

C : Plane sections before twisting remain plane after twisting

D : Circular sections before twisting remain circular even after twisting.

A : A, B, C and D

B : C and D

C : A, B and C

D : B and D

Q : 12) The yield strength of bolt material is 300 MPa and factor of safety is 2.5. What is the maximum principal stress using maximum principal stress theory?

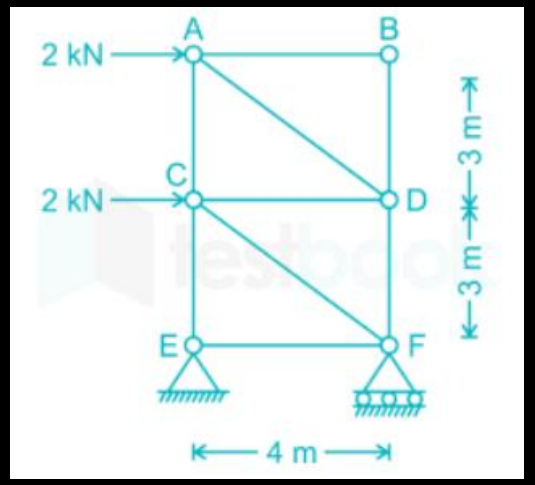
A : 750 MPa

B : 120 MPa

C : 27.38 MPa

D : 10.95 MPa

Q : 13) A pin-jointed tower truss is loaded as shown in the below figure. The force induced in the member DF is



A : 1.5 kN (tension)

B : 4.5 kN (tension)

C : 1.5 kN (Compression)

D : 4.5 kN (Compression)

Q : 14) A long column of length 'L' an flexural rigidity 'EI' has pined ends, the critical load is given by:

A : $\frac{4\pi^2 EI}{L^2}$

B : $\frac{\pi^2 EI}{4L^2}$

C : $\frac{4L^2}{\pi^2 EI}$

D : $\frac{\pi^2 EI}{L^2}$

Q : 15) Let F be the force, K the spring and δ be the deflection, for a linear elastic spring, which of the following equations can be written?

A : $\frac{1}{4}k\delta^2 = \frac{F^2}{k}$

B : $\frac{1}{2}k\delta^2 = \frac{F^2}{k}$

C : $\frac{1}{2}k\delta^2 = \frac{F^2}{2k}$

D : $k\delta^2 = \frac{F^2}{4k}$

Q : 16) Which are the corrections. Applied to the hydrometer readings?

(i) Meniscus correction

(ii) Temperature correction

(iii) Density correction

(iv) Dispersing agent correction

A : (i) and (ii)

B : (i), (ii) and (iii)

C : (i), (ii) and (iv)

D : (i), (ii), (iii) and (iv)

Q : 17) Maximum shear stress in any point in a thin cylinder is given by _____

A : pd / 8t

B : pd/2t

C : pd/16t

D : pd/4t

Q : 18) The propped cantilever beam of length L, m carries a uniformly distributed load W k/m. The reaction at the propped end is

A : 5WL/8

B : 3WL/8

C : WL/2

D : 3WL/4

Q : 19) A steel bar is sandwiched between two copper bar and both ends are fixed, for temperature rise how much tension or compressive stress on steel bar will be found:

A : Compressive stress twice of copper bar

B : Tensile stress twice of copper bar

C : Tensile stress half of copper bar

D : Compressive stress half of copper bar

Q : 20) The modulus of elasticity of a material is 208 GPa and its Possion's ratio is 0.3. What is the value of shear modulus?

A : 74 GPa

B : 80 GPa

C : 100 GPa

D : 128.5 GPa

Q : 21) An inverted T-section is subjected to a shear force F. The maximum shear stress will occur at:

A : Top of the section

B : Junction of web and flange

C : Neutral axis of the section

D : Bottom of the section

Q : 22) The change in shearing force between two points on the beam is equal to the area of

A : Loading diagram between the two points

B : Shear force diagram between the two points

C : Bending moment diagram between the two points

D : M/EI diagram between the two points

Q : 23) In the natural condition, the soil sample has a mass of 1.98 kg and volume 0.001 m^3. After completely over drained the mass becomes 1.8 kg. Find the degree of saturation (Specific gravity = 2.7)

A : 0.54

B : 0.61

C : 0.65

D : 0.7

Q : 24) A free end of a cantilever beam rotates by 0.001 radians under a point load 10 kN. Then deflection at the free end due to a moment of 100 kN-m is:

A : 10 mm

B : 20 mm

C : 25 mm

D : 40 mm

Q : 25) A specimen of clayey silt contains 70% silt size particles. Its liquid limit is 40% and its plastic limit is 20%. In the liquid limit test, at a moisture content of 30%, The required no. of blows was 50. Its plasticity index. Activity, and consistency index will respectively be

A : 20, 0.67 and 0.5

B : 20, 1.5 and 2.0

C : 30m 1.5 and 0.72

D : 20, 0.286 and 0.38

Q : 26) Unified soil classification system is almost similar to _____ classification.

A : IS soil

B : AASHTO

C : MIT

D : Textural

Q : 27) Cone penetrometer is used to determine

A : Liquid limit

B : Plastic limit

C : Shrinkage limit

D : Plasticity index

Q : 28 The clay mineral, whose structural units are held together by potassium bond is

A : Halloysite

B : Illite

C : Kaolinite

D : smectite

Q : 29) If the permeability of soil at the void rations e1 and e2 are k1 and k2 respectively, then which relation is correct?

A : $k_1/k_2 = (1+e_1) / (1+e_2)$

B: $k_1/k_2 = (1-e_1) / (1-e_2)$

C: $k_1/k_2=e_1/e_2$

D: None of these

Q : 30) If the flow net of a cofferdam foundation had 6 numbers of flow channels and 16 numbers of equipotential drops, with the head of water lost during seepage being 6 m through the foundation having k = 4×10^{-5} m/minute, then the seepage loss (in m^3/day) per meter length of the dam will be

(a) 2.16×10^{-3}

(b) 6.48×10^{-3}

(c) 12.96×10^{-2}

(d) 25.92×10^{-2}

Result : SSC JE 2019

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Many More.....