Q: 1) The forces which meet at one point and have their line of action in different planes are called

A : Coplaner non-concurrect forces

B : Non-coplaner non-concurrect forces

C : Non-coplanar concurrent forces

D : Intersecting force

Q: 2) The phenomenon for the internal transfer of forces from one leg to the other is

A : Shear lag

B : Shear leg

C : Shear force

D : Shear stress

Q: 3) A member is balanced at its end by two inclined members carring equal forces, for equilibrium the angle between the inclined bars must be

A : 60^0

B : 80^0

C : 100^0

D : 120^0

Q: 4) Castigliano's theorem represents which of the following method?

A : Force

B : Equilibrium

C : Flexibility

D : Displacement

Q: 5) The resultant of two force P_1 and P_2 acting at an angle of 90 degrees is given by-

A : $\sqrt{(P_1)2+(P_2)^2}$

B : $\sqrt{(P_1)2-(P_2)^2}$

C : $\sqrt{(P_1)+(P_2)}$

D : $\sqrt{(P_1)-(P_2)}$

Q: 6) Two forces of 6 newton and 8 Newton which are acting at right angles to each other, will have a resultant of:

A : 5 Newton

B : 8 Newton

C : 10 Newton

D : 12 Newton

Q: 7) Dimension of the power is:

A : $M^{-1}L^{2}T^{-2}$

B : $M^{1}L2T^{-3}$

C : $M^{-1}LT^{-3}$

D : $M^{-1}LT^{-2}$

Q: 8) A stone freely from its position at rest. What will be the distance travelled in 3 second under gravity with no air friction?

A : 88.2 m

B : 22.0 m

C : 44.1 m

D : 66.3 m

Q: 9) bar A has diameter 'd' and length 'L'. Bar B has diameter '2d' and length '2L'.If both the bars are made up of same material and subjected to same load.The ratio of change in length of A to chnage in Length of B is:

A : 0.50

B : 2.00

C : 0.25

D : 4.00

Q: 10) Bar A and bar B are made up of the same material and are of same length.But bar A has diameter 'd' while bar B has diameter '2d'.If both are subjected to same axial load, the ratio of strain energy of bar A to strain energy of bar B is:

A : 4

B : 8

C : 1

D : 2

Q: 11) Stress developed due to application of a load suddenly is____ time that due to same load being applied gradually.

A : 2.0

B : 4.0

C : 1.0

D : 0.5

Q: 12) A spherical ball of volume 10^5 mm^3 is subjected to a hydrostatic pressure of 90 Mpa.If the bulk modulus for the material is 180 kN/mm^2, the change in the volume of:

A : 50 mm^3

B : 100 mm^3

C : 250 mm^3

D : 500 mm^3

Q: 13) A 8 mm thick copper sheet is cut with a 9 cm diameter round punch.If the punch exerts a force of 16 kN.Find the shear stress in the sheet.

A : 7.08 MPa

B : 9.80 MPa

C : 11.43 Mpa

D : 17.86 MPa

Q: 14) A cylinder is consider to be a 'thin cylinder'.If the thickness to internal diameter of the cylinderical shell is:-

A : Less than 1/10

B : Greater than 1/20

C : Less than 1/20

D : Greater than 1/10

Q: 15) A spherical vessel with an inside diameter of 2m is made of material with max allowable tensile stress is 500 N/mm^2.If the vessel is pressurized to 25 bar, then the thickness required for the vessel is

A : 2.5 mm

B : 10 mm

C : 5 mm

D : 1.25 mm

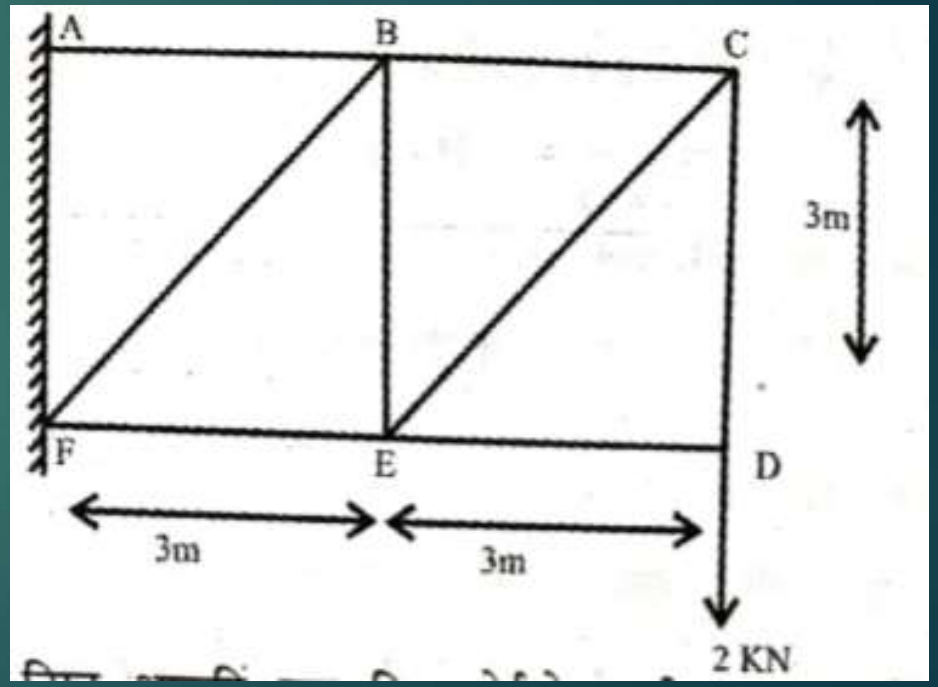
Q: 16) The following diagram shown a pin jointed steel truss.The force in the member DE will be:

A : Zero

B : 2 kN tensile

C : 2 kN compressive

D : 3 kN tensile



Q: 17) A steel frame consists of members OA, OB, OC and OD all having same length L and same flexural stiffness EI.If joint O of the frame is rigid and end A and C are Fixed, B is hinged and D is free, then the rotational stiffness of the frame at point O is given by:

A : 6 (EI/L)

B : 8 (EI/L)

C : 10 (EI/L)

D : 11 (EI/L)

Q: 18) A single-bay, single-storeyed portal frame ABCD has its column ends fixed.If axial deformation is neglected, the kinematic indeterminacy is:

A : 3

B : 2

C : 6

D : 4

Q: 19) The degree of static indeterminacy N_s and degree of kinematic indeterminacy, N_K for the plane frame as shown axial deformation are given by-

A : $N_s = 6$, $N_k = 11$

B : $N_s = 4$, $N_k = 6$

C : $N_s = 6$, $N_k = 6$

D : $N_s = 4$, $N_k = 4$

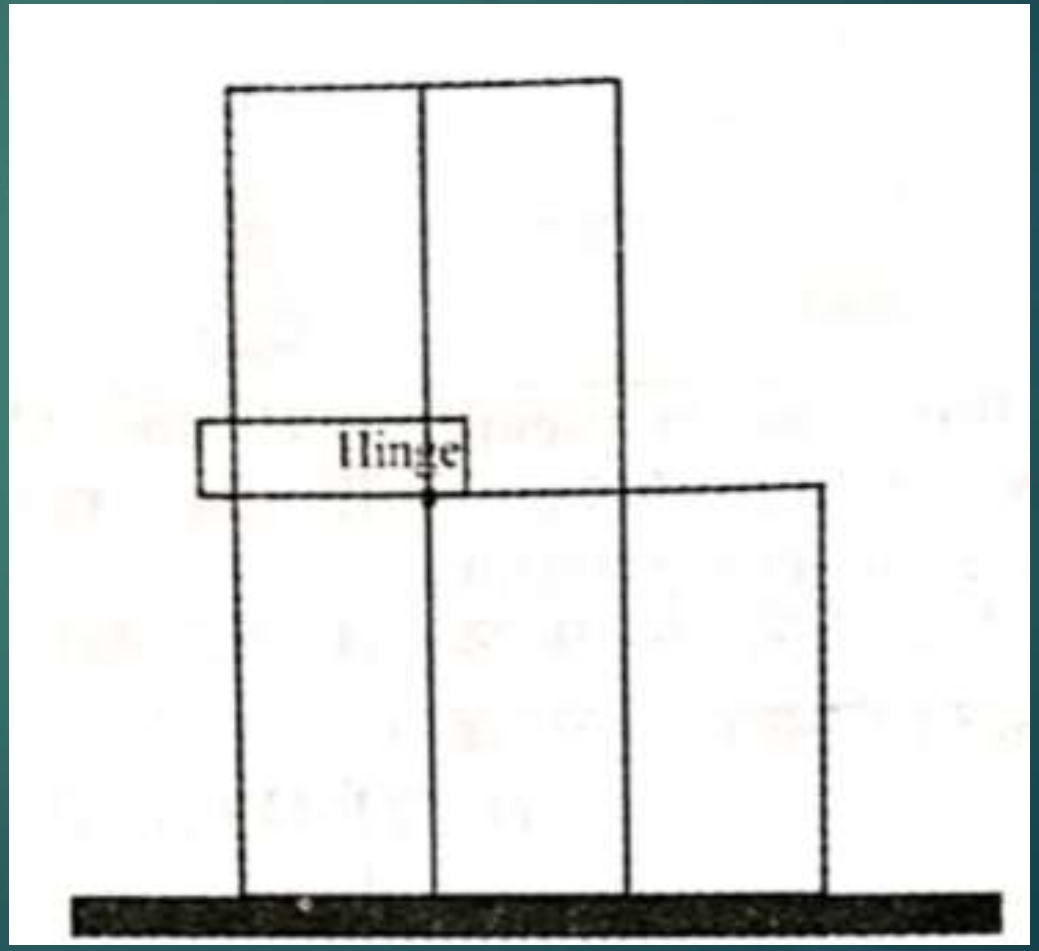
Q: 20) What is the static indeterminacy of the 2D frame given below?

A : 10

B : 12

C : 14

D : 16



Q: 21) What is the force in the vertical member CD of the pin-joined frame shown below?

A : 12T (Tensile)

B : 2T (Compression)

C : 5T (Compression)

D : 5T (Tensions)