Q:) The dimensions of dynamic viscosity are

A : L^2/T

B : M/LT

C : M/TL

D : T/L^2

Q:) If the velocity potential function $\phi = 5(x^2-y^2)$, the velocity components at the points (4, 5) will be

A : u = -35, v = 40

B : u = -40, v = 55

C : u = -40, v = 50

D : u = 40, v = -50

Q:) Printer's ink is an example of

A : Newtonian fluid

B : Non-Newton fluid

C : Thixotropic substance

D : Elastic solid

Q:) Dynamic Viscosity of a gas

A : Increases as temperature decreases

B : Increases as temperature increases

C : Is independent of temperature

D : May increase or decrease with increase in temperature, depending on the nature of gas

Q:) According to Froude's model law

A : $\frac{V_p \times L_p}{v_p} = \frac{V_m \times L_m}{v_m}$

B : $\frac{V_m}{\sqrt{g_m L_m}} = \frac{V_p}{\sqrt{g_p L_p}}$

C : $\frac{V_m}{\sqrt{p_m}} = \frac{V_p}{\sqrt{p_p}}$

D : $\frac{V_m}{\sqrt{\frac{\sigma_m}{p_m L_m}}} = \frac{V_p}{\sqrt{\frac{\sigma_p}{p_p L_p}}}$

Q:) For a hydrostatic pressure measurement in fluids at rest

A : The shear stress depends upon the coefficient of viscosity

B : The shear stress is maximum on a plane inclined 45° to horizontal

C : The shear stress is zero

D : The shear stress is zero only on horizontal plane

Q:) If in a flow field $p/\gamma+v^2/2g+z=$ constant between any two points, flow must be

A : Steady, compressible and irrigational

B : Unsteady, incompressible and irrigational

C : Steady, incompressible and irrigational

D : Steady, compressible and along a stream line

Q:) For a centrifugal pump, suction lift head is the

A : vertical distance between the top surface of liquid level in the discharge tank and pump centre line

B : Vertical distance between free surface of liquid level in the sump and pump centre line

C : Head for overcoming friction loss in the suction pipe, entry loss at entrance to the friction pipe and during fluid in the suction pipe

D : None of the above

Q:) The centre of buoyancy of a submerged body

A : coincides with the centre of gravity of the body

B : Coincides with the centroid of the displaced volume of the fluid

C : Is always below the centre of gravity of the body

D : Is always above the centroid of the displaced volume of the liquid

Q:) What is the range of the speed ratio for a Francis Turbine?

A : 0.10 to 0.30

B : 0.60 to 0.90

C : 0.85 to 0.00

D : 1.40 to 2.25

Q:) For high head, the suitable turbine is

A : Pelton

B : Francis

C : Kaplan

D : None of the above

Q:) The discharge through a single-acting reciprocating pump is

A : Q = ALN/60

B : Q = 2ALN/60

C : Q = ALN

D : Q = 2 ALN

Q:) The specific speed (N_s) of a pump is given by the expression

A : $N_s = \frac{N\sqrt{Q}}{H_m^{5/4}}$

B : $N_s = \frac{N\sqrt{P}}{H_m^{3/4}}$

C : $N_s = \frac{N\sqrt{Q}}{H_m^{3/4}}$

D : $N_s = \frac{N\sqrt{P}}{H_m^{5/4}}$

Q:) Jet ratio (m) is denned as the ratio of

A : Diameter of the jet of water to diameter of the Pelton wheel

B : Velocity of vane to velocity of the jet of water

C : Velocity of flow to velocity of the jet of water

D : Diameter of Pelton wheel to diameter of the jet of water

Q:) A turbine is called impulse if at the inlet of the turbine

A : Total energy is only kinetic energy

B : Total energy is only pressure energy

C : Total energy is the sum of kinetic energy and pressure energy

D : None of the above

Q:) The manometer head (H_m) of a centrifugal pump is given by

A : Pressure head at outlet of pump-pressure head at inlet

B : Total head at inlet total head at outlet

C : Total head at outlet-total head at inlet

D : None of the above

Q:) The Goodrich method is used for

A : Determining reservoir capacity

B : Flood routing

C : Reservoir sediment evaluation

D : Trap efficiency

Q:) A permeable stratum which is capable of yielding appreciable quantities of groundwater under gravity is known a/an

A : Well

B : Artesian well

C : Aquifer

D : Aquiculture

Q:) In routing a flood through a reach, the point of intersection of inflow and outflow hydrographs coincides with the peak of outflow hydrograph

A : In all cases of flood routing

B : In channel routing only

C : In all cases of reservoir routing

D : When the inflow is into a reservoir with an uncontrolled outlet

Q:) The volume of groundwater extracted by gravity drainage from a saturated water bearing material is known as

A : Field capacity

B : Specific retention

C : Specific capacity

D : Yield

Q:) The distance from the centre of a pumped well to the point, where the drawdown is zero or is inappreciable, is known as

A : Drawdown

B : Cone of pressure

C : Radius of influence

D : Piezo metric surface

Q:) The wall yield per unit drawdown is known as

A : Specific capacity of a well

B : Efficiency of a well

C : Retention of a well

D : Well loss

Q:) If within a zone of saturation, an impervious deposit below a pervious deposit is found to support a body of saturated material, then this body of saturated material is known as

A : Plowing well

B : Aquiculture

C : Artesian aquifer

D : Perched aquifer

Q:) If S_y = Specific yield and S_r = Specific retention, then

A : $S_y + S_r = 0.50$

B : $S_y + S_r$ = Porosity

C : $S_y + S_r = 1.0$

D : $S_y + S_r$ = Permeability

Q:) In case of gravity dams, the factor of safety against over turning should not be less than

A : 1

B : 1.1

C : 1.25

D : 1.5

Q:) The centre-to-centre distance between any two adjacent supports i called the _____ of a bridge.

A : span

B : clear span

C : nominal span

D : effective span

Q:) An owner of a building requires rs. 15,000 to repair his building after 5 years. What sum should the owner have to invest now in order to receive the required amount of money at a rate of compound interest 8%?

A : rs. 10,207.50

B : rs. 10,720.50

C : rs. 10,270.50

D : rs. 10,072.50

Q:) While writing specifications, the following principles shall be adopted:

(i) Description of materials

(ii) Workmanship, tools and plants

(iii) Protection of new work

(iv) Clauses of the specifications

(v) Expression

A : (i), (ii) and (v)

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

C : (ii) and (v)

D : (i), (iv) and (v)

Q:) Purposes of rate analysis are:
(i) To determine the current rate per unit of an item at the locality.
(ii) To examine the viability of rated offered by contractors.
(iii) To calculate the quantity of materials and labor strength required for project planning.
(iv) To fix labor contract rates.
A : (i), (ii) and (iv)
B : (ii), (iii) and (iv)
C : (i), (ii) and (iii)
D : (i), (ii), (iii) and (iv)

Q:) The usual practice of bending of a bar near a support is at an angle of

A : 30^{o}

B : 45^{o}

C : 60^{o}

D : 15^{o}

Q:) For painting corrugated steel sheet, surfaces shall be measured flat and the area worked out shall be increased by

A : 0.1

B : 0.12

C : 0.14

D : 0.2

Q:) The nominal lead and lift allowed for earthwork in excavations of foundations are

A : 30 m and 1.5 m

B : 20 m and 2.0 m

C : 15 m and 30 m

D : 10 m and 4.5 m

Q:) which method of depreciation is suitable for finding depreciation of a building having a life of 100 years?

A : Constant percentage method

B : Straight-line method

C : Sinking fund method

D : Quantity survey method

Q:) For 1 cumec of cement concrete proportion with stone chips 1 : 2 : 4, the required number of cement bags is

A : 6.35

B : 6

C : 5.5

D : 4.5

Q:) In a fixed beam of span 'L' subjected to a central concentrated load 'W', the fixed end moment and moment at midspan are respectively

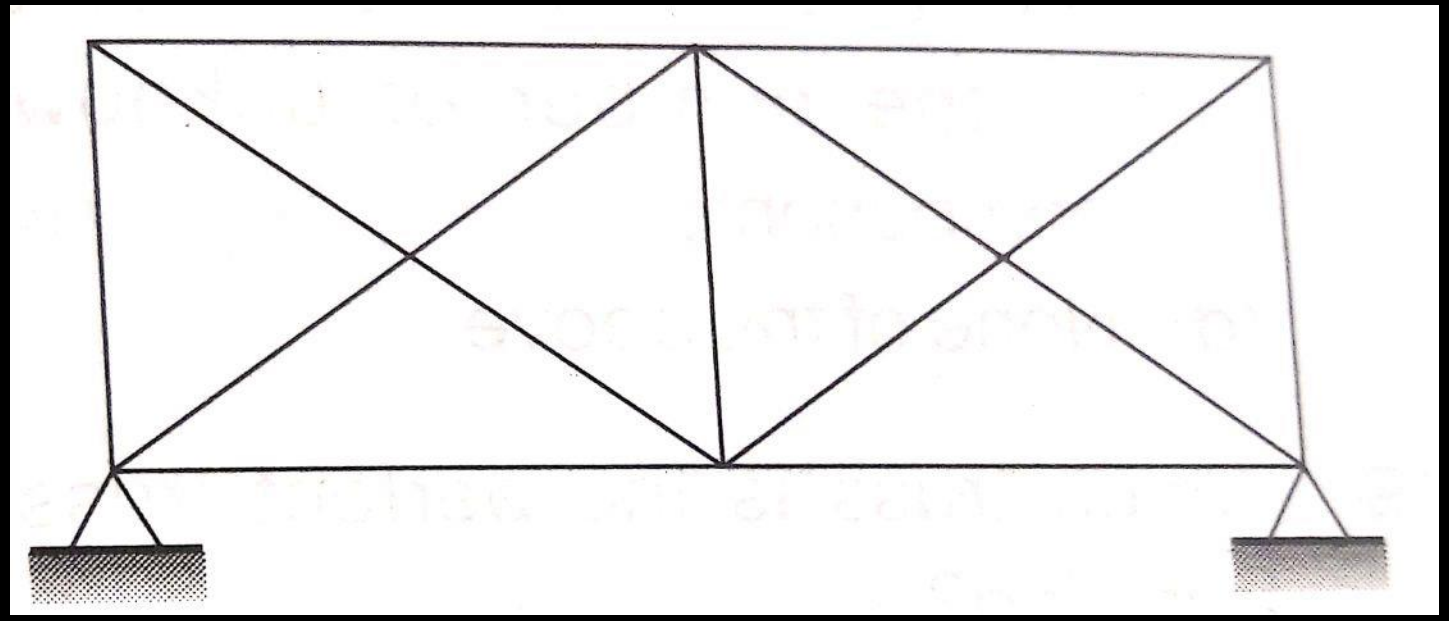
A : WL/12 and WL/6

B : WL/8 and WL/8

C : WL/6 and WL/12

D : None of the above

Q:) In the pin-jointed truss shown in the figure, the static degree of indeterminacy is



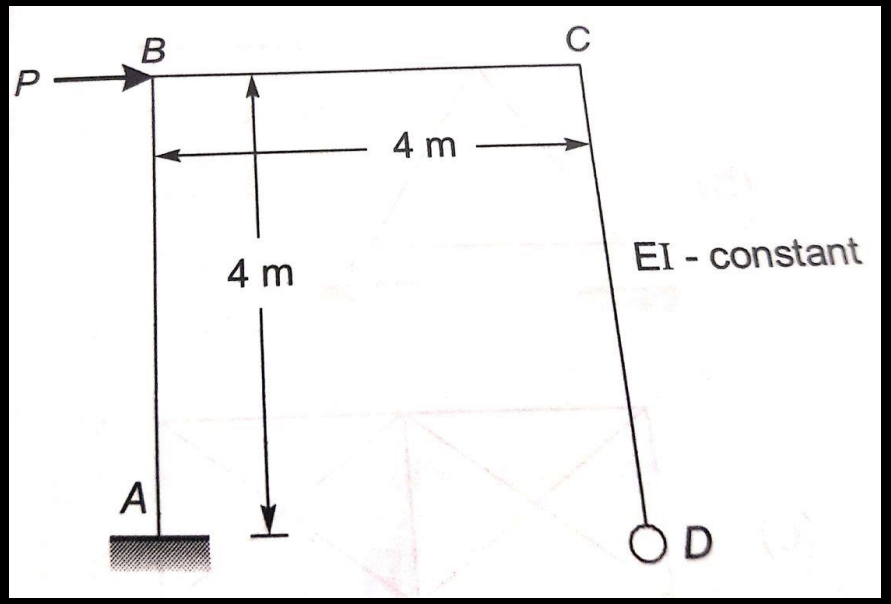
A : 2

B : 1

C : 3

D : 4

Q:) For the frame shown in the figure, the shear equation is



A : (MBA+MAB)/4+MCD4+P=0

B : (MAB+MBC)/4+MDC4+P=0

C : MAB+MBA+MCD+MDC=0

D : MAB+MBA+MCD+MDC=P

Q:) In the force method of analysis of indeterminate trusses, if the truss is indeterminate to degree one, the change in length of redundant member due to unit force is found by using the formula where A is cross-sectional area

I - Moment of India

η - force in the member due to unit load application

N - force in the member due to actual load

E - Modulus of Elasticity

A : ∑η NL/EI

B : η∑NL/AE

C : ∑η NL/AE

D : ∑NL/AE

Q:) In the moment distribution method, the carry over moment is equal to

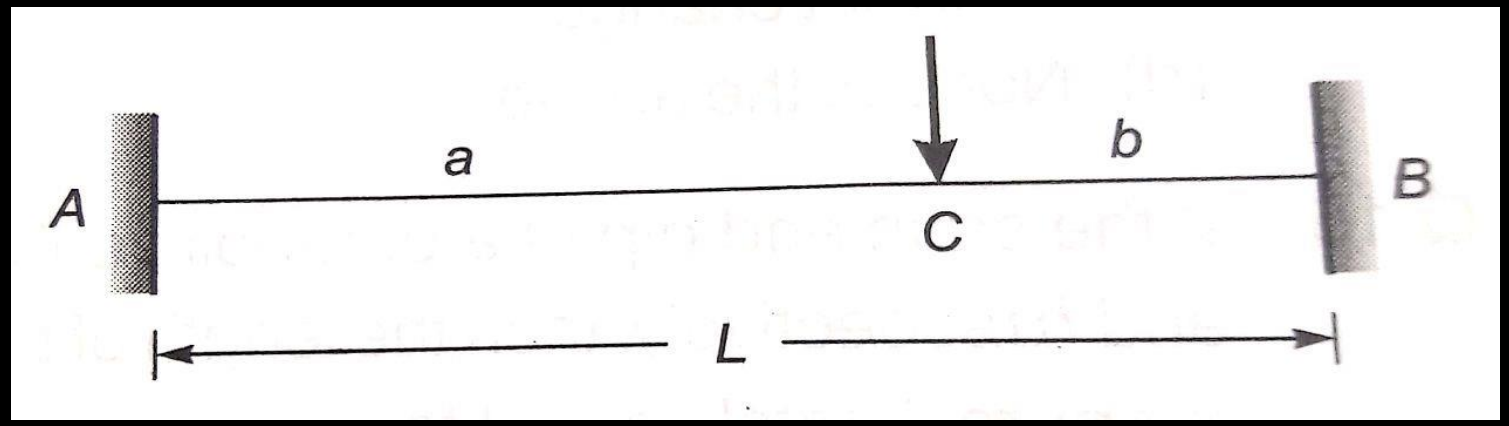
A : double of its corresponding distributed moment and has same sign

B : one-half of its corresponding distributed moment and has same sign

C : one-half of its corresponding distributed moment and has opposite sign

D : None of the above

Q:) For both ends of the fixed beam shown in the figure carrying a concentrated load eccentrically placed on the beam, deflection under load is



A : $-Wa^2b^2/3EIL^2$

B : $-Wab^2/3EIL$

C : $-Wa^3b^3/3EIL^3$

D : $-Wa^3b^2/3EIL^2$

Q:) A continuous beam ABC is simply supported at supports A, B and C. Portion AB has span of 6 m and BC 4 m. Portion AB is loaded with a concentrated load of 120 kN downward at 3 m from A. The qualitative reactions shall be

A : Reactions at A and B shall be upward and reaction at C shall be zero

B : Reactions at A and B shall be upward and reaction at C shall be downward

C : All reactions i.e., at A, B and C shall be upwards

D : None of the above

Q:) A beam AB is simply supported and has flexural rigidity EI. The flexural strain energy of the beam having span 6 m and carrying a central point load of 10 kN is

A : 142.38/EI

B : 775/EI

C : 225/EI

D : None of the above

Q:) A given determinates truss is loaded with gravity loads. Under these loads different nodes undergo deflection horizontally and vertically. Thereafter the truss is subjected to a temperature drop of 50^oC in the lower chord only. The coefficient of expansion or contraction $\alpha=11.7\times10^{-6}/^oC$. Which of the following statements is true?

A : Vertical and horizontal deflection along lower chord nodes remains the same.

B : Vertical and horizontal deflection along lower chord nodes shall change.

C : Horizontal deflection along lower chord nodes shall change but vertical deflection shall not change.

D : None of the above

Q:) A three-hinged semicircular arch of radius R carries a uniformly distributed load W per unit run over the whole span. The horizontal thrust is

A : R

B : WR/2

C : 4/3πWR

D : 2/3πWR

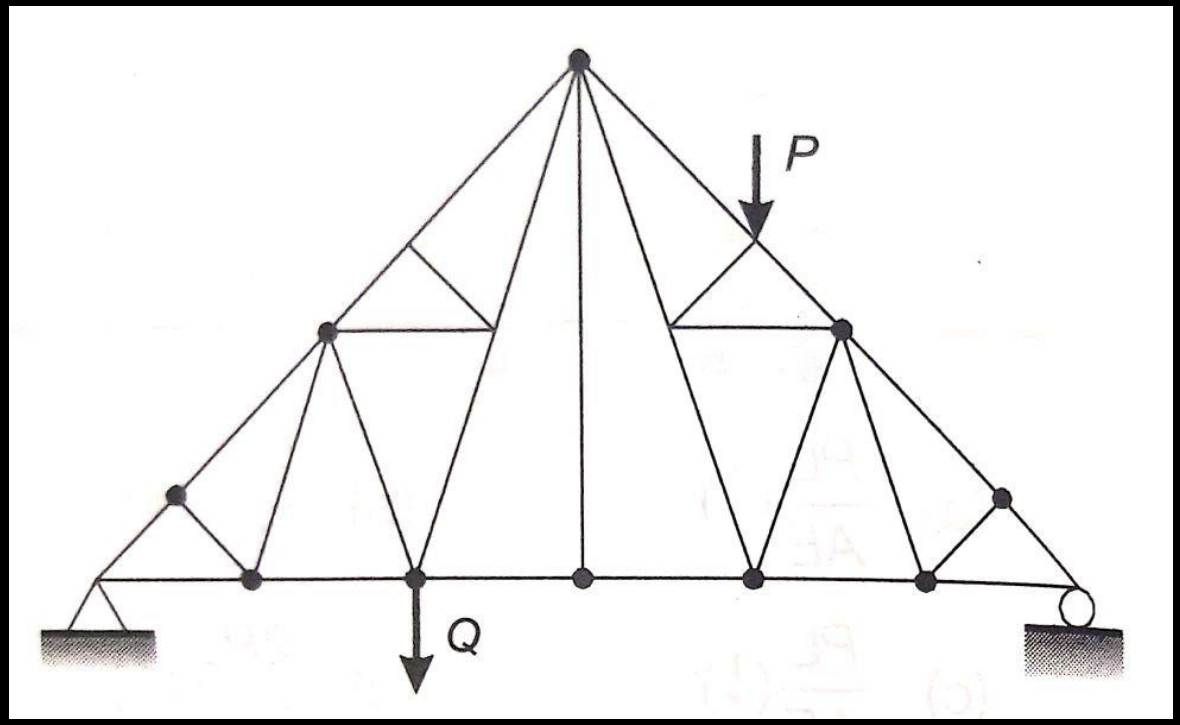
Q:) For the plane truss shown in the figure, the number of zero force members for the given loading is

A : 4

B : 8

C : 11

D : 13



Q:) A structure is said to be statically indeterminate when

A : the number of unknown reaction components exceeds the number of equilibrium conditions.

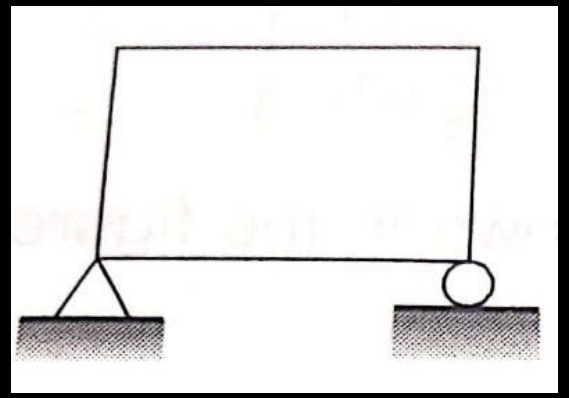
B : the number of equilibrium conditions exceeds the number of unknown reaction components.

C : the number of equilibrium conditions equal to the number of unknown reaction components.

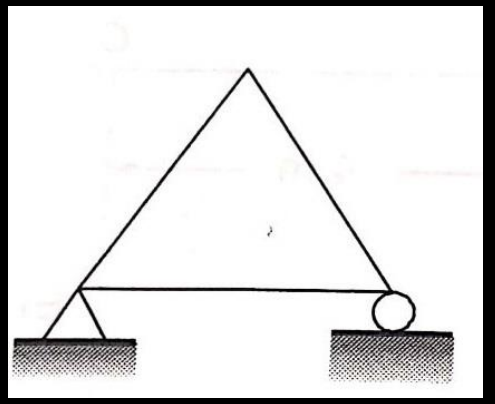
D : None of the above

Q:) Which truss is the perfect truss out of the following?

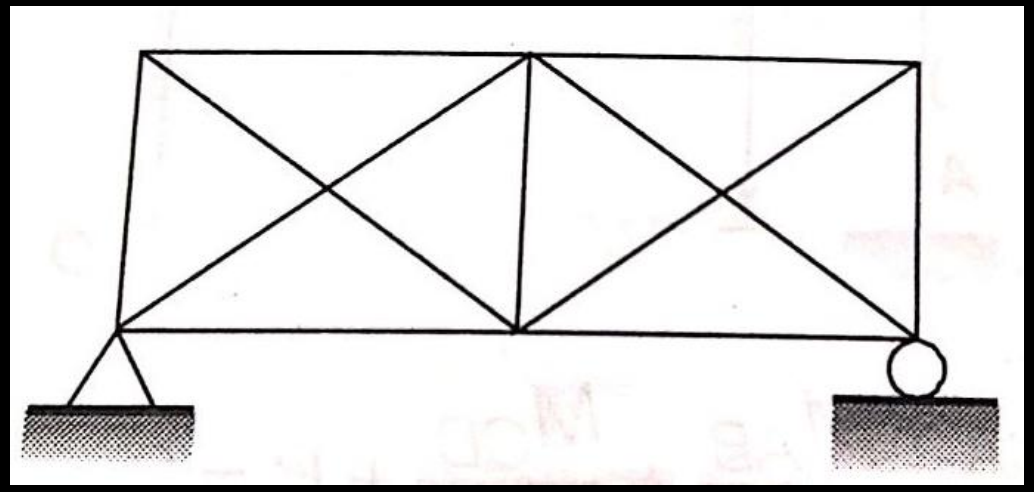
A.



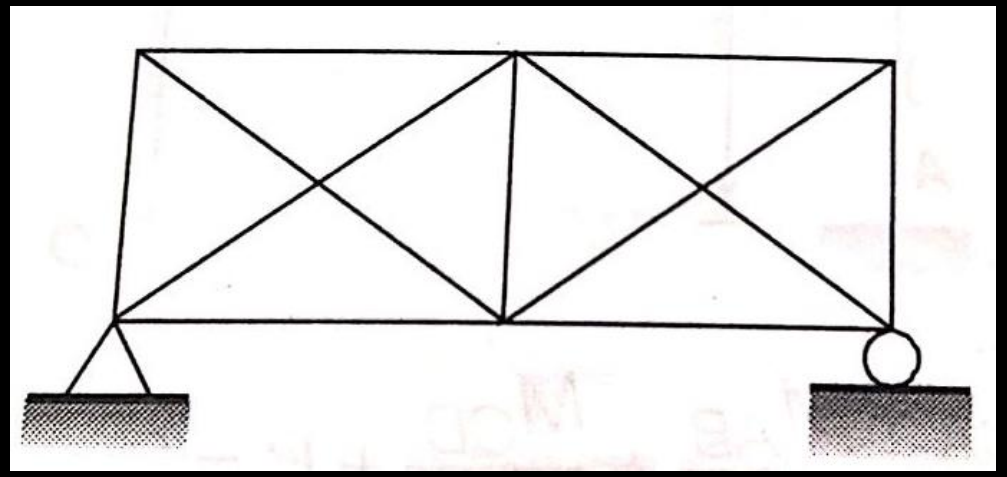
B.



C.



D.



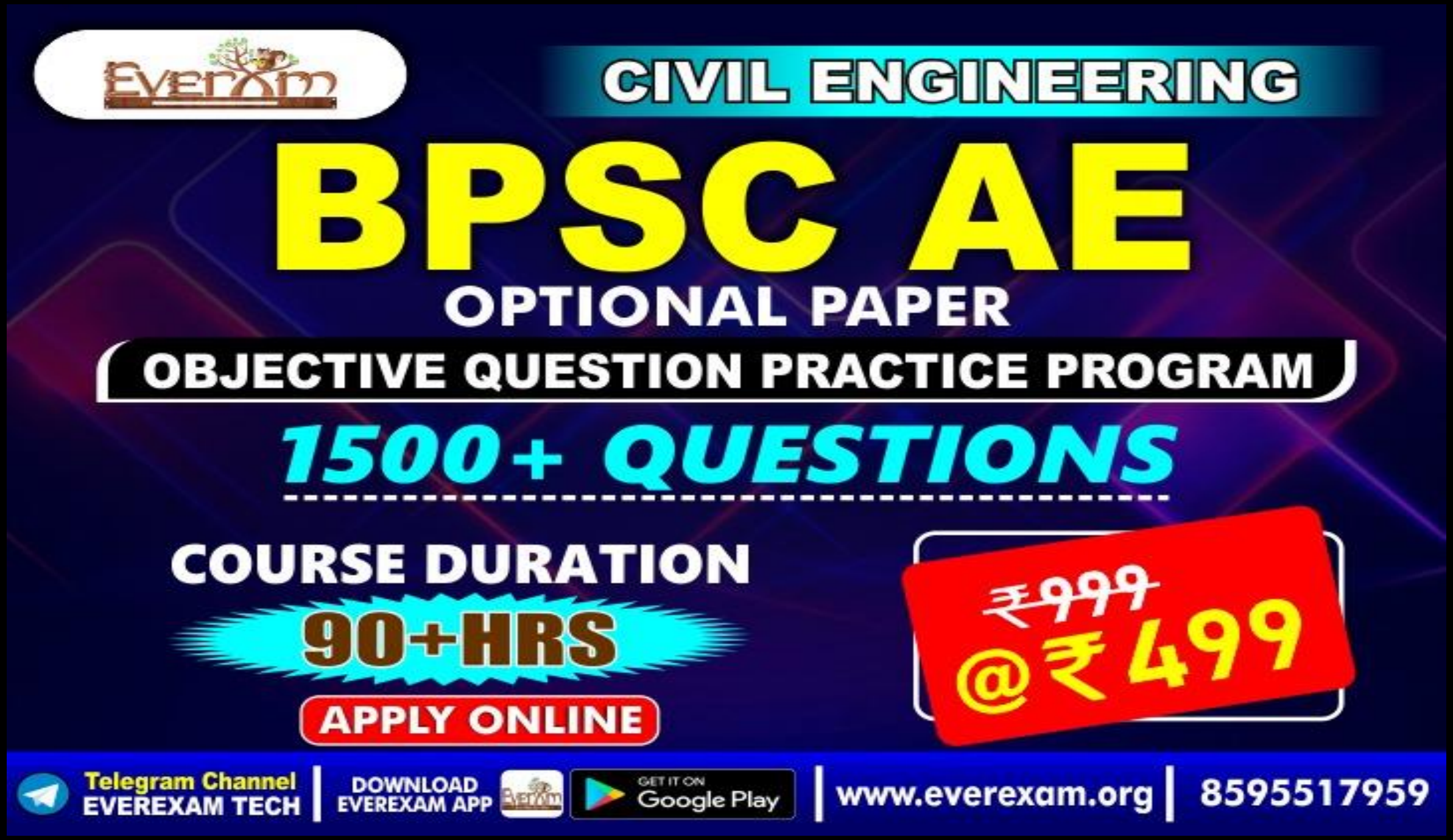
Q:) The flexibility method is also known as the

A : Energy method

B : Equilibrium method

C : Displacement method

D : Force method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