Q:) The effect of sinking of supports by δ is to create a bending moment equal to

A : $2EI\delta/l^2$

B : $6EI\delta/l^2$

C : $3EI\delta/l^2$

D : $EI\delta/l^2$

Q:) Column analogy method may be used to analyze

A : Fixed beam

B : Portal frame

C : Box frame

D : All of the above

Q:) Which of the following are indeterminate structure?

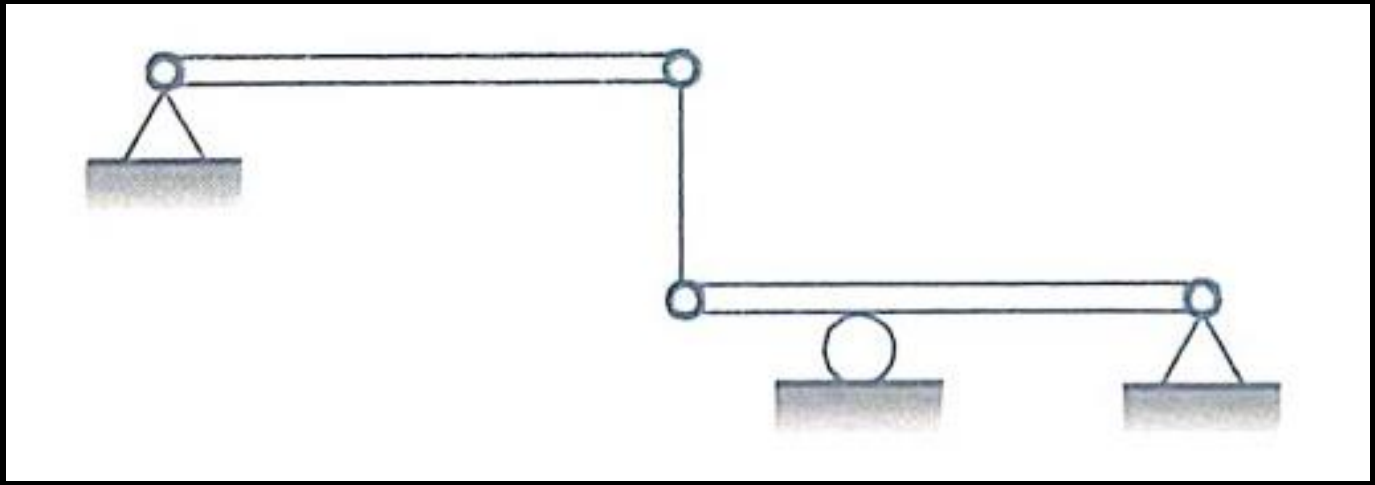
A : 3-hinged arch

B : Continuous beam

C : Redundant frame

D : Both (b) and (c)

Q:) No. of degree of static indeterminacy for the beam shown below is



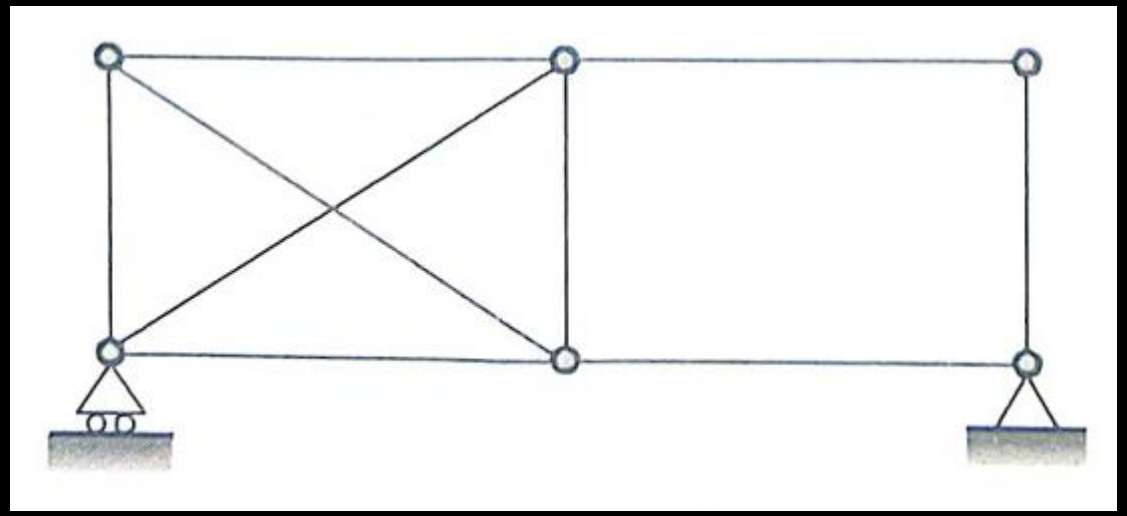
A : -1

B : 0

C : 1

D : 2

Q:) In the truss shown below which statement is correct?



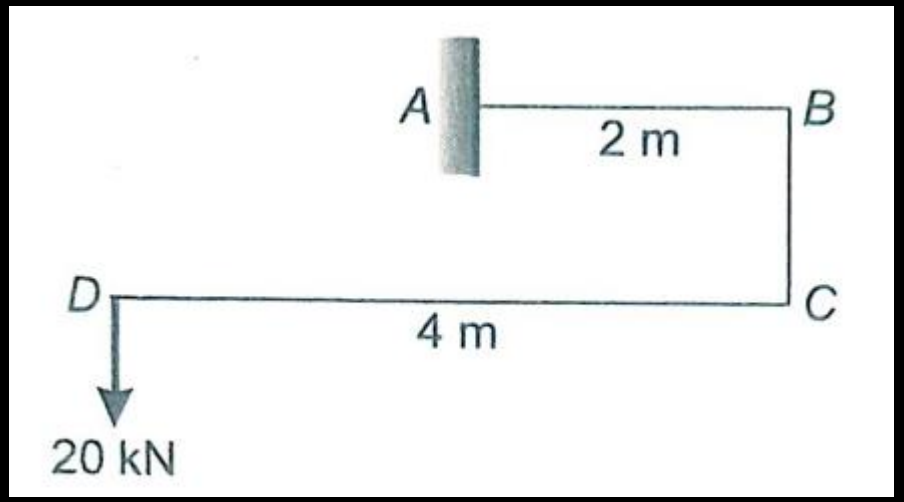
A : Externally unstable

B : Internally unstable

C : Statically determinate structure

D : Statically indeterminate structure

Q:) The fixed end moment at A for the structure shown below is



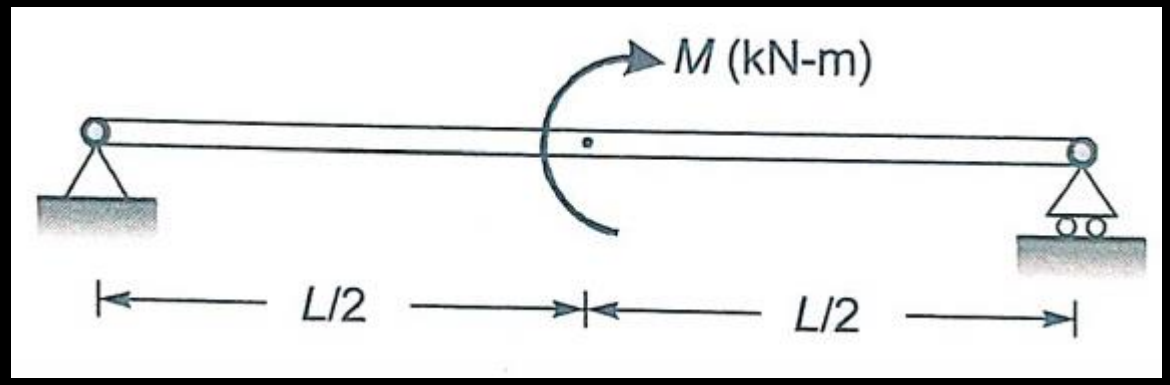
A : 40 kN-m

B : 80 kN-m

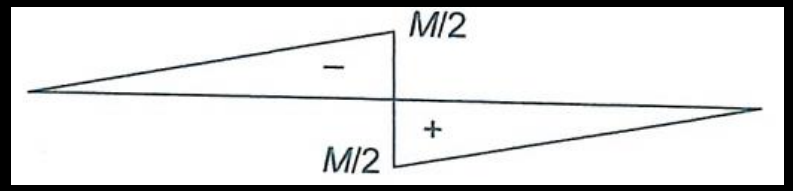
C : 100 N-m

D : 120 N-m

Q:) For the beam shown below, correct BMD is

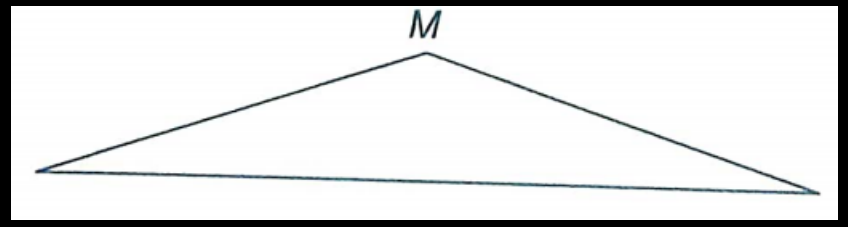


A :

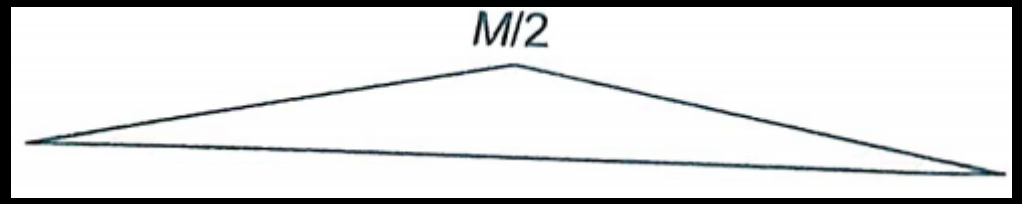


B :

C :



D :



Q:) The line of thrust in a parabolic arch is

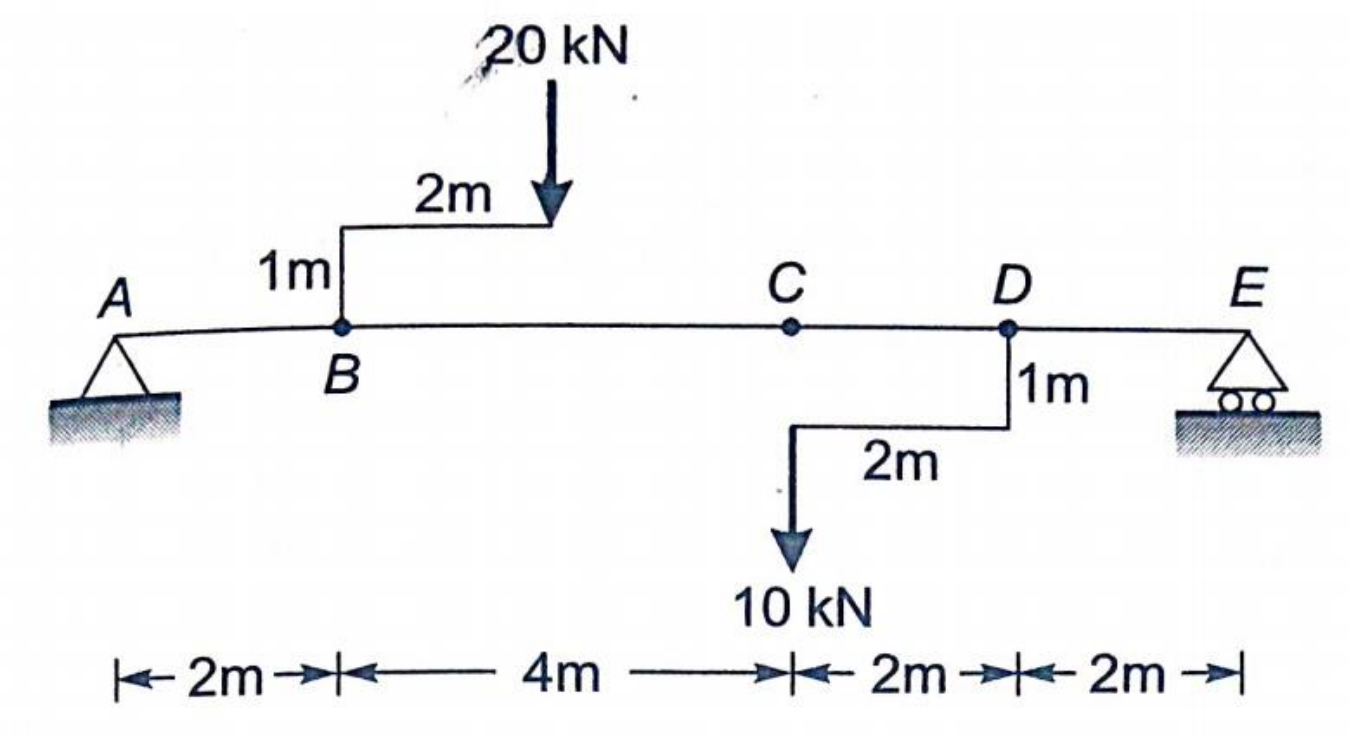
A : Parabolic

B : Circular

C : Triangular

D : Funicular polygon

Q:) The reaction at support A for the beam shown below is



A : 15 kN

B : 16 kN

C : 17 kN

D : 18 kN

Q:) The point of contra flexure is the point where

A : Bending moment changes sign

B : Bending moment is maximum

C : Bending moment is minimum

D : Shear force is zero

Q:) A two hinged arch is statically indeterminate by

A : 0 degree

B : 1 degree

C : 2 degree

D : 3 degree

Q:) In three hinged arch, maximum hogging moment occurs when, the point load is at

A : Springing

B : Crown

C : Quarter span

D : The section itself

Q:) Deflections in a truss depends upon

A : Axial rigidity

B : Flexural rigidity

C : Axial and flexural rigidity

D : None of these

Q:) Influence line diagram for bending moment in a simply supported beam is a

A : Straight line

B : Parabola

C : Triangle

D : None of these

Q:) Deflections in a truss depends upon

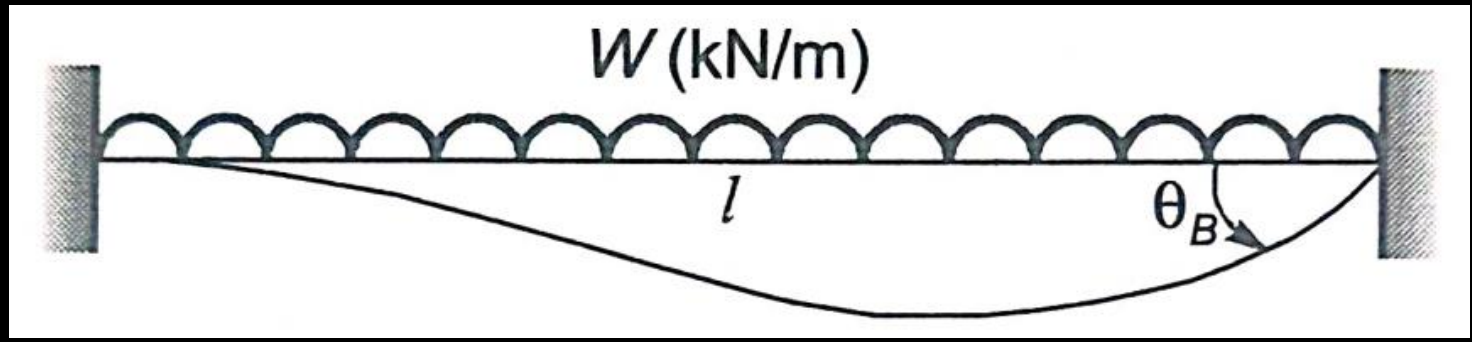
A : Axial rigidity

B : Flexural rigidity

C : Axial and flexural rigidity

D : None of these

Q:) For a fixed beam loaded as shown below, if the support, B rotates +θB radian anticlockwise, the fixed end moment at B is



A : $-\frac{Wl^2}{12}\frac{2EI\theta_B}{l}$

B : $-\frac{Wl^2}{12}\frac{4EI\theta_B}{l}$

C : $+\frac{Wl^2}{12}\frac{2EI\theta_B}{l}$

D : $+\frac{Wl^2}{12}\frac{4EI\theta_B}{l}$

Q:) The plastic theory is generally used for

A : Column

B : Beams

C : Rigid frame structures

D : Roofs

Q:) The reversible nature of loads are

A : Earthquake loads

B : Wind loads

C : Both (a) and (b)

D : None of these

Q:) An under reinforced section means

A : Reinforcing steel reaches its yield stress first

B : Concrete reaches its maximum stress first

C : Reinforement provided is equal to maximum

D : None of the above

Q:) The live load to be considered for an inaccessible roof is

A : 0

B : 75 kg/m^2

C : 150 kg/m^2

D : 250 kg/m^2

Q:) Spacing of shear stirrups in a rectangular RC simply supported beam is

A : Kept constant thought the span.

B : Decreased towards the centre of beam.

C : Increased towards the ends of beam.

D : Increased towards the ends of beam.

Q:) The minimum grade of concrete that can be used for pre-tensioned beam system is

A : M20

B : M25

C : M30

D : M40

Q:) The strength of compression member with helical reinforcement shall be taken as the number of times the strength of similar member with lateral ties

A : 1.03

B : 1.05

C : 1.1

D : 1.15

Q:) In case of cantilever beam, the vertical deflection limits may generally be assumed to be satisfied provided that the span to depth ratio are not greater than

A : 7

B : 20

C : 26

D : 30

Q:) The diameter of longitudinal bears of an RC column should not be less than

A : 6 mm

B : 8 mm

C : 10 mm

D : 12 mm

Q:) Enlarged head of a supporting column of an RC flat slab is called

A : Capital

B : Drop panel

C : Column head

D : None of these

Q:) An RC column is reported as long column if the ratio of its effective length and least lateral dimension exceeds

A : 10

B : 12

C : 15

D : 20

Q:) Distribution reinforcement in a simply supported RC slab provided to distribute

A : Load

B : Temperature stresses

C : Shrinkage stresses

D : All of these

Q:) As per IS 456:2000, the tensile of concrete can be obtained from

A : $0.67\sqrt{f_{ck}}$

B : $0.7\sqrt{f_{ck}}$

C : $0.75\sqrt{f_{ck}}$

D : $0.87\sqrt{f_{ck}}$

Q:) Four vertical columns of the same material, height and weight have the same end conditions. The buckling load will be the largest for column having the cross-section of

A : Solid square

B : Thin hollow circle

C : Solid circle

D : H-Section

Q:) Effective length of steel column effectively held at both ends in position but not restrained in direction is 'x' times its length between two ends, where 'x' is equal to

A : 0.65

B : 0.85

C : 1

D : 2

Q:) Effective length of a column is the length between the points of

A : Support

B : Maximum moment

C : Zero moment

D : Zero shear

Q:) A steel plate is 300 mm wide and 10 mm thick. It has one rivet of nominal diameter 18 mm. The net sectional area of plate is

A : 1800 mm^2

B : 2805 mm^2

C : 2820 mm^2

D : 3242 mm^2

Q:) Vertical web stiffness are used in plate girder to

A : Avoid buckling of web plate.

B : Improve the aesthetic of girder.

C : Increase the moment capacity of girder.

D : None of the above

Q:) In case of I-section steel beam

A : Shear capacity of flanges in neglected.

B : Shear capacity of web is neglected.

C : Shear capacity of both flange and web is neglected

D : None of the above

Q:) The weakest plane is a filled web is

A : A side parallel to the force

B : A side normal to the force

C : Along the throat

D : Normal to the throat

Q:) The strength at which steel fails under repeated load applications is known as

A : Impact strength

B : Tensile strength

C : Yield strength

D : Fatigue strength

Q:) If the angle between fusion faces of a fillet weld is 60^0 - 90^0, the effective throat thickness as per indian standard is equal to

A : 1√2size of weld

B : 1√3size of weld

C : √2 size of weld

D : √3 size of weld

Q:) The junction between flange and web of an I-section is called

A : Lap joint

B : Butt joint

C : Fillet joint

D : Shear joint

Q:) Which one of the following method does not fall under the category of force method?

A : Method of consistent deformation

B : Column analogy method

C : Equilibrium method

D : Three moment equation

Q:) In a triangular section placed with its base horizontal, ratio of maximum shear stress to average shear stress is

A : 1.25

B : 1.33

C : 1.43

D : 1.53

Q:) The effective slenderness ratio of a cantilever column is

A : 0.5L/R

B : LRL/R

C : √2L/r

D : 2L/r

Q:) A horizontal semi-circular beam of radius 'R' is fixed at the ends and carries a uniformly distributed load 'W' over the entire length. The bending moment at the foxed supports is

A : $WR^2/4$

B : $WR^2/3$

C : $WR^2/2$

D : WR^2

Q:) The deflection is ′δ′′δ′, strain energy 'U' and load 'W' on a truss. These are related by

A : $\delta = \frac{\partial U}{\partial W}$

B : $\delta = \frac{\partial^2 U}{\partial W^2}$

C : $\delta = \frac{\partial^3 U}{\partial W^3}$

D : $\delta = \left(\frac{\partial U}{\partial W} \right)^2$

Q:) Eccentricity of connections introduces

A : Primary stresses

B : Vibrating stresses

C : Secondary stresses

D : None of the above

Q:) A point load 'W' is acting at a distance 'a' from the left support of a three hinged arch of span 2l and rise 'h' hinged at the crown. The horizontal reaction at the support is

A : Wa/h

B : Wa/2h

C : 2W/ha

D : 2h/Wa

Q:) As per IS Code, the reinforcement in a column should not be less than

A : 0.5% and not more than 5% of gross section area.

B : 0.6% and not more than 7% of gross sectional area.

C : 0.8% and not more than 8% of gross sectional area.

D : None of these

Q:) As per IS 456: 2000, the development length is given by

A : $\frac{\phi\sigma_s}{8\tau bd}$

B : $\frac{\phi\sigma_s}{4\tau bd}$

C : $\frac{8\tau bd}{\phi\sigma_s}$

D : $\frac{4\tau bd}{\phi\sigma_s}$

Q:) The target mean strength of concrete mix should be

A : The characteristic strength + 1.65 times standard deviation.

B : The characteristic length + 1.45 times standard deviation.

C : The ultimate strength + 1.65 times standard deviation

D : The ultimate strength + 1.45 times standard deviation.

Q:) A stationary hydraulic jump occurs in a rectangular channel with the initial and sequent depths being to 0.20 m and 1.20 m respectively. The energy loss will be equal to

A : 1.042 m

B : 0.521 m

C : 1.563 m

D : 0.265 m

Q:) In a rectangular channel, the depth of flow is 1.6 m and the specific energy at that section is 2.7 m, the flow is

A : Sub critical

B : Super critical

C : Critical

D : Not possible

Q:) For a triangular channel having side slope of a 2 horizontal to 1 vertical, the froude number, F is given by

A : $V/\sqrt{gy}$

B : $2V/\sqrt{gy}$

C : $V/\sqrt{2gy}$

D : $V/\sqrt{g(y/s)}$

Q:) If $\psi=2xy$, the magnitude of velocity vector at (2, -1) is

A : $4\sqrt{2}$

B : 4

C : -8

D : $\sqrt{2}$

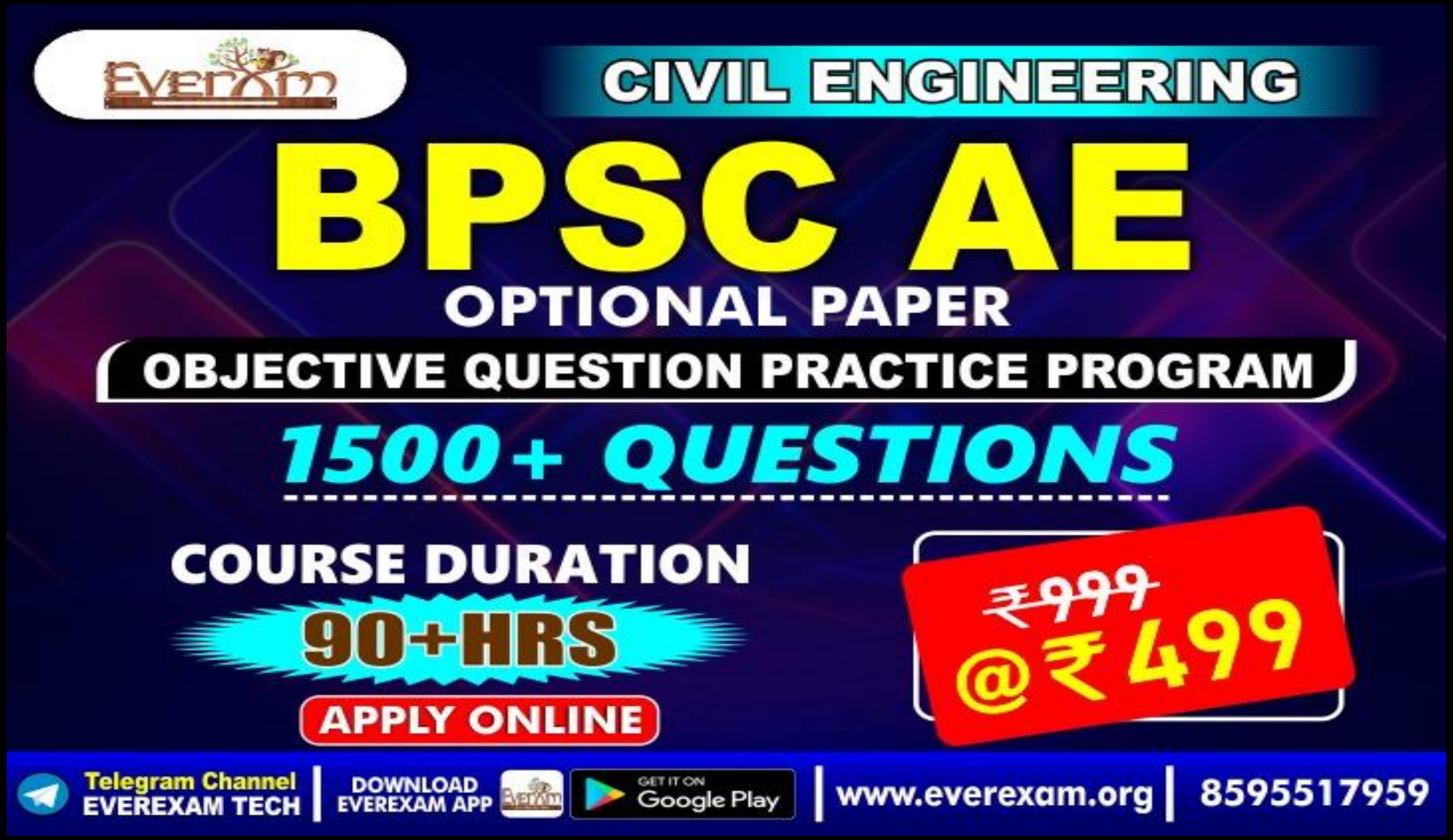
Q:) The velocity potential function for a line source varies with radial distance, r as

A : $1/r$

B : $1/r^2$

C : r

D : ln r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