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DDA JE 2023

ENGINEERS

Civil Engineering

MAHA – MARATHON

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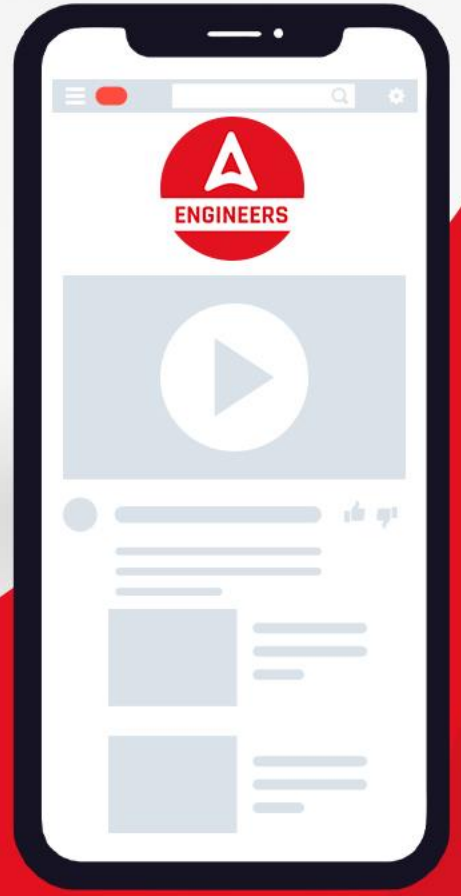

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QUASISTATIC PROCESS

Q. When temp of gases change then viscosity will be

(a) Increase
(b) Decrease
(c) Constant
(d) All of the above possible

Q In the stability of Submeged body bodies, the stable equilibrium is attained if the Centre of buoyancy and point_the centre of gravity (G).

(a) lies above
(b) coincides with
(c) is parallel to
(d) lies below

Q The deflection of the centre of the simply supported beam carrying Uniformaly varying load over the length of beam is given by:

(a) $-WL^3/48EI$ (b) $-5WL^2/384EI$

(c) $-WL^2/24EI$ (d) None

What is value of shear stress at center of rectangular beam when force per unit area is 200Kn if area is 2m2

(a) 150Kpa
(b) 300Kpa
(c) 200Kpa
(d) None

Q Mean diameter required to replace taper bar when it is subjected Axial Load on bar of diameter d1 and d2

(a) d1+d2/2

(b) D1d2

(c) (d1+d2)/2

(d) None

Q What is the Polar moment of inertia for a rectangle beam of size 200 mm x 350 mm?

(a) $4.34\times10^{6}mm^{3}$ (b)$4.08\times10^{6}mm^{3}$

(c) $5.6\times10^{6}mm^{3}$ (d) None

Q Strain produced when bar is connected in series is

(a) Equal in each bar
(b) sum of each bar
(c) Mean of strain in each bar
(d) None

Q For the clamped _Hinged at both end , the effective length is equal to:

(a) twice the actual length
(b) 0.5 times the actual length
(C) the actual length
(d) 0.7 times the actual length

Q Area under the loading diagram represent

(a) Shear force

(b) bending moment

(c) Slope of S.F.D

(d) Slope of B.M.D

Q In a simple stress-strain test, Sudden change of yield point represent

(a) Due strain hardening

(b) Elastic recovery

(c) due to fracture

(d) Due to corban atom slip

Q If the capillary rise in a soil A with an effective size of 0.02 mm was 60 cm, then what would be the capillary rise in the similar soil B with an effective size of 0.04 mm?

(a) 30cm
(b)20cm
(c) 40cm
(d) 35 cm

Q For open channel flow, the flow is laminar when the Reynold number is:

(a) greater than 2000
(b) Less than 2500
(c) greater than 500
(d) less than 500

Q Which is correct regarding rheopectic fluid

(a) Viscosity index more than one

(b) It is time independent fluid

(c) Viscosity decrease with rate of deformation

(d) All of the above

Q A beam is subjected to triaxial loading of 200Mpa,150Mpa,-100Mpa in three mutual
Perpendicular direction then find out abs max shear stress

(a) 50Mpa
(b) 25mpa
(c) 150Mpa
(d) None

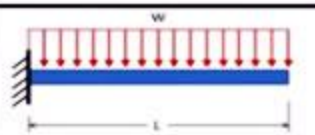
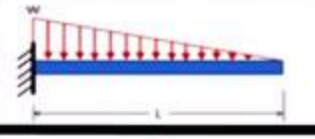
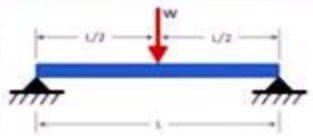
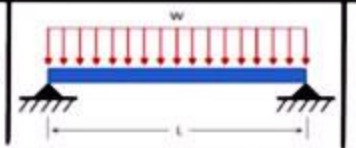
What is maximum deflection in case of cantilever beam subjected point load at mid span of beam

(a) $PL^3/3EI$

(b) $PL^3/8EI$

(c) $PL^3/48EI$

(d) None

SR. NO.	TYPE OF BEAM	MAX. BM	SLOPE	DEFLECTON
1		M	$\theta = \frac{ML}{EI} = \frac{ML}{EI}$	$\delta = \theta \times \frac{L}{2} = \frac{ML^2}{2EI}$
2		WL	$\theta = \frac{ML}{2EI} = \frac{WL^2}{2EI}$	$\delta = \theta \times \frac{2L}{3} = \frac{WL^3}{3EI}$
3		$\frac{WL^2}{2}$	$\theta = \frac{ML}{3EI} = \frac{WL^3}{6EI}$	$\delta = \theta \times \frac{3L}{4} = \frac{WL^4}{8EI}$
4		$\frac{WL^2}{6}$	$\theta = \frac{ML}{4EI} = \frac{WL^3}{24EI}$	$\delta = \theta \times \frac{4L}{5} = \frac{WL^4}{30EI}$
5		$\frac{WL}{4}$	$\theta = \frac{ML}{4EI} = \frac{WL^2}{16EI}$	$\delta = \theta \times \frac{L}{3} = \frac{WL^3}{48EI}$
6		$\frac{WL^2}{8}$	$\theta = \frac{ML}{3EI} = \frac{WL^3}{24EI}$	$\delta = \theta \times \frac{5L}{16} = \frac{5WL^4}{384EI}$

A turbulent flow take place in pipe with velocity of 100m/s then find out maximum velocity when shear velocity is 20m/s

(a) 200m/s
(b) 170m/s
(c) 150m/s
(d) 250m/s

Q Which is not Assumption of Given Continuity equation

(a) 3D
(b) Steady
(c) Incompressible
(d) Uniform flow

Complimentary stress are

(a) Equal in magnitude
(b) Acting perpendicular to each other
(c) Opposite in nature
(d) All of the above

A hooks law is holds up to

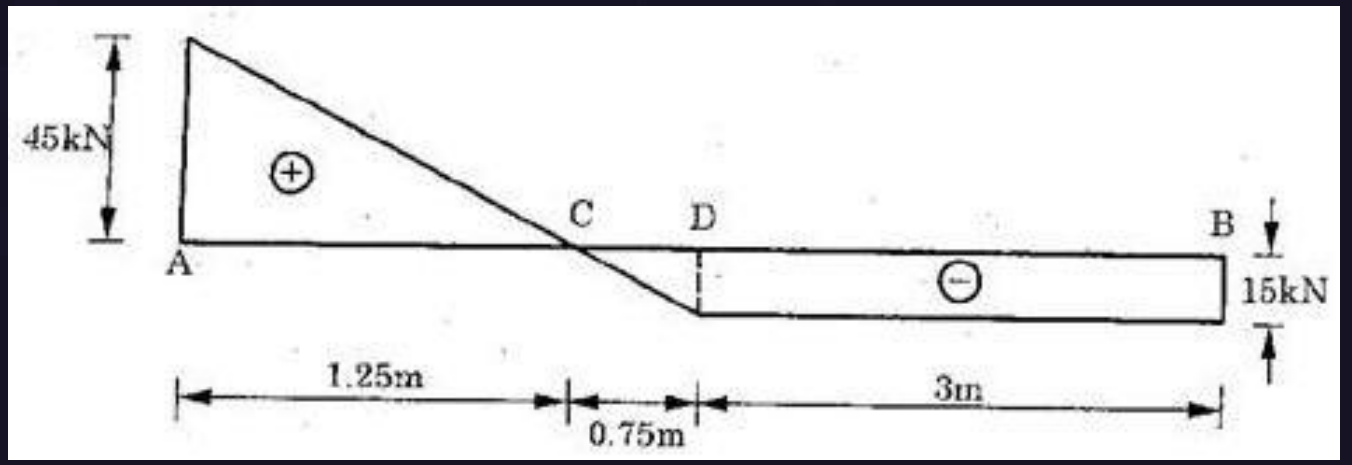
(a) Proportional limit
(b) Elastic limit
(c) Ultimate point
(d) Yield point

what is effect on young's modulus when of % carbon atom increase in n steel

(a) Increase
(b) Decrease
(c) Constant
(d) All of the above

Fig. find out bending moment at point C

(A) 90Knm
(B) 28.125Knm
(C) 56.25Knm
(D) 45knm



The term $EI\frac{d^2y}{dx^2} \rightarrow$ is represent

(a) Shear force

(b) Moment

(c) Load

(d) deflection

For the given diagram Between point B & A Which kind of loss in hydropower plant

(a) Overall loss
(b) Mechanical Loss
(c) Hydraulic loss
(d) Pumping loss

Unit of viscosity in MKS System is

(a) Gramm/cm-s
(b) Pa-s
(c) Kg/m-s
(d) None

For a beam carrying a uniformly distributed load, the strain energy will be maximum in case the beam is :

(a) Propped cantilever
(b) Fixed at both ends
(c) Cantilever
(d) Simply supported

Strain energy due to sudden axial load is given by : (σ : Resultant stress, P : Axial load, Δ : Deformation, $\in$: Strain, E : Modulus of elasticity)

(a) $\frac{1}{2}P\Delta$

(b) $\sigma.\varepsilon$

(c) $P\Delta$

(d) $\frac{\sigma^2}{2E}$

In a simply supported beam Of span, 'L' subjected to Uniformly Distributed Load (UUL) of intensity W kN/m over its entire length the maximum bending is given by the expression :-

(a) $\frac{wL^2}{8}$

(b) $\frac{wL}{2}$

(c) $\frac{wL^2}{2}$

(d) wL

The ratio of flexural rigidity of a beam (b × d) to another one (b × 2d) of similar material will be :-

(a) $\frac{1}{2}$

(b) $\frac{1}{4}$

(c) $\frac{1}{8}$

(d) $\frac{1}{16}$

Pressure in terms of meters of oil (specific gravity = 0.9) equivalent to 4.5 m of water is:

(a) 4.05
(b) 5.0
(c) 3.6
(d) 0.298

Manometer is a device used for measuring :-

(a) Velocity
(b) Pressure
(c) Density
(d) Discharge

Q Flow between parallel plates of Infinite extreme is considered as :

(a) One dimensional.
(b) Two dimensional.
(c) Three dimensional.
(d) None of the above

For a flow, the velocity components are given by u = (λ,xy^2 - x^3y^2) and v = (x^2y^3 - $3y^3$). What is the value of λ for the possible flow field which includes steady incompressible flow?

(a) 3
(b) 5
(c) 7
(d) 9

In river and harbour models, the most suitable is____.

(a) Froude number

(b) Euler number

(c) Cauchy number

(d) Weber number

Q The hydraulic radius is given by :

(a) Wetted perimeter divided by area

(b) Area divided by square of wetted perimeter

(c) Area divided by wetted perimeter

(d) Square root of area