Q : Ductility depends on: [PWD AE 2017]

i. Temperature of the structure

ii. Size of the structure

iii. Applied loading time

Which of the above is/are true?

A : i and iii

B : i and ii

C : i only

D : All of these

Q : For a beam having cross-section as T, which is a correct statement? [PWD AE 2017]

A : Shear stress variation is parabolic below Neutral axis and normal stress in linear below neutral axis.

B : Shear stress variation in linear and normal stress is parabolic below neutral axis.

C : Both shear and normal stresses are linear along the cross-section.

D : Both shear and normal stresses are parabolic along the cross-section

Q : The ratio of modulus of rigidity and modulus of elasticity (G/E) for any elastic isotropic material is:

[PWD AE 2017]

A : Less than 1/2

B : Less than 1/3

C : More than 1/3

D : Both A and C

Q : If E, G, K and μ represent the elastic modulus, bulk modulus and Poisson's ratio respectively of a linear elastic isotropic and homogenous material and if you need to express the stress strain relationship completely for this material at least:

[PWD AE 2017]

A : All the four must be known

B : E,G and μ must be known

C : E,K and μ must be known

D : Any two of the four must be known

Q : A deformable body is under the action of external forces (fi) The external forces satisfy the following conditions with respect to an inertial frame: [PWD AE 2017]

i. $\Sigma F_i = 0$

ii. $\Sigma r_i \times F_i = 0$

These conditions are:

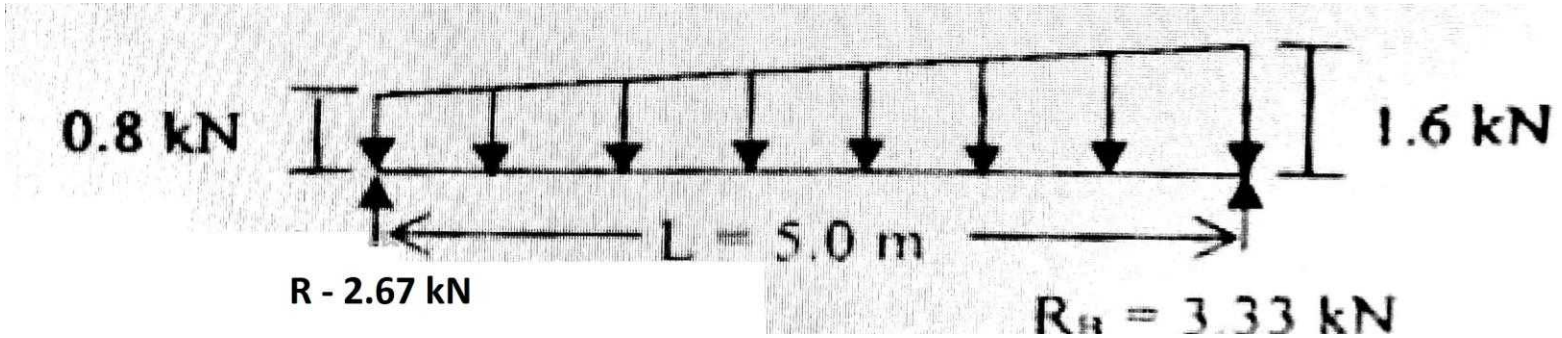
A : Necessary and not sufficient for equlibrium

B : Sufficient for equilibrium

C : Necessary and sufficient for equilibrium

D : None of these

Q : The position and magnitude of maximum bending moment (from suppory with reaction RA) for the beam in figure is: [PWD AE 2016]



A : 2.5m, 3.65 kN-m

B : 2.63m, 3.79 kN-m

C : 2.97m, 2.75 kN-m

D : 2.44 m, 3.56 kN-m

Q : In a simply supported rectangular beam loaded transversely, the maximum tensile bending stress occurs at: [PWD AE 2016]

A : Top fiber

B : Bottom fibre

C : Neutral axis

D : Between top fiber and neutral axis

Q : A thin plate having stress components as $\sigma x = 40$ MPa, $\sigma y = -20$ MPa., and $\tau xy = 10$ MPa. What will be the yield strength in simple tension as per Mises criterion? [PWD AE 2016]

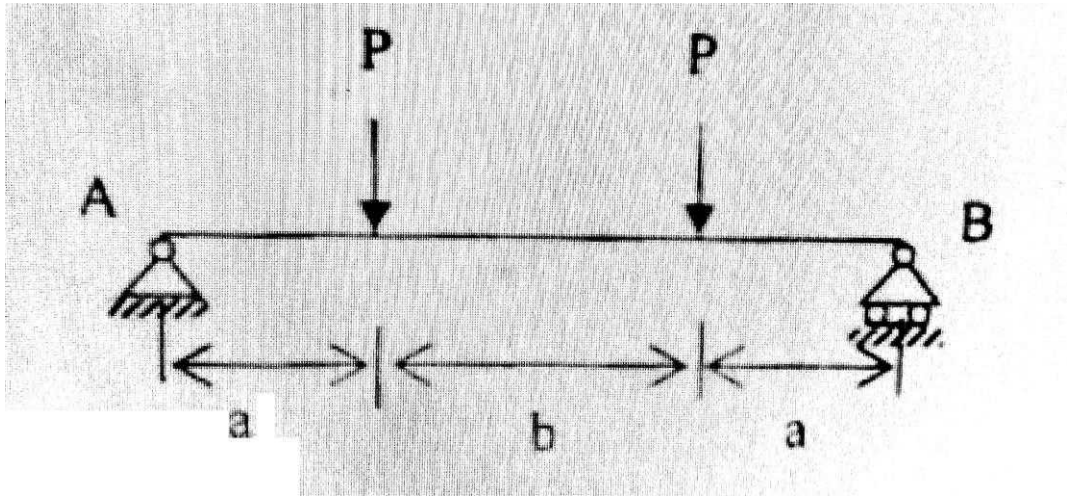
A : Y = 3100 MPa

B : Y = 55.67 MPa

C : Y = 54.3 MPa

D : Y = 1500 MPa

Q : For a recangular beam with cross-section having width b and depth d, and loaded as shown in figure, choose the ratio of maximum shear stress to maximum bending stress: [PWD AE 2016]



A : d4a

B : d2a

C : b4a

D : b2a

Q : Yield strength is: [PWD AE 2016]

A : Stress required to produce certain arbitary plastic deformation

B : Stress required to produce certain arbitary elastic deformation

C : Stress required to cause fracture

D : Stress required to cause fatigue

Q : Pure torsion of a shaft produce [PWD AE 2016]

A : Longitudinal normal stress in shaft

B : Only direct shear in the transverse section of the shaft

C : Circumferential share stress on a surface element of shaft

D : A longitudinal shear stress and a circumferential shear stress on a surface element of shaft.

Q: Select the correct assumption ofbernoulli's equation. [DMRC JE 2020]

A: Steady, uniform, irrotational, incompressible flow along streamlines

B: Steady, non-uniform, rotational, incompressible flow along streamlines

C: Un-steady, uniform, rotational, compressible flow

D: Steady, uniform, irrotational, compressible flow along streamlines

Q: If the shear stress is not to exceeds 400N/cm2 then the torque transmitted by a solid shaft of diameter 40 mm would be: [DMRC JE 2020]

A: 0.6 x π N-m

B: 1.3 x π N-m

C: 0.8 x π N-m

D: 16 x π N-m

Q: A cube has a side of length equal to 'a' and is subjected to a ddirect stress in all three side. Then the volumetric strain is [DMRC JE 2020]

A: 3 Times the linear strain

B: 2 Times the linear stress

C: 2 Times the linear strain

D: 3 Times the linear stress