WELCOME

TO Adda247


ENGINEERS
SSC JE | DDA JE 2023
Free 10 Days Practice Batch
SOM VS FM
काटे की टक्कर
Previous Year Paper & Self designed For CE | ME
DAY 1
Time-7 Pm
RK Sir
A

Join DDA JE & SSC JE 2023 Batch by Y201 Get 78% off

Adda247

Y201

78%

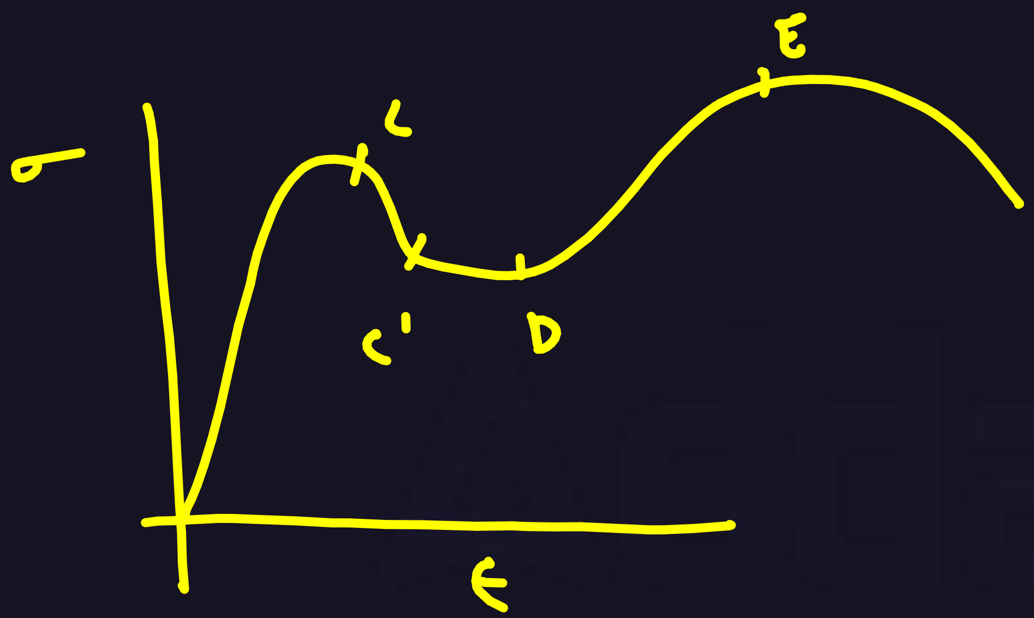
3800

3400

2023 →

Y201

78%



Q – Identify the erroneous statement, mild steel :

(a) Has two yield points.

(b) Is a ductile material.

(c) Has small percent elongation at failure.

(d) Shows strain hardening.

Ans c

Q – A perfect fluid is :-

(a) a real fluid

(b) the one which obeys perfect gas laws

(c) compressive and gaseous

(d) incompressible and frictionless ✓

Ideal fluid → $\mu = 0$, $\rho = c$, $\sigma = 0$, $\tau_s = 0$

Ans (b)

Q – The concept of continuum in fluid flow , assumes that the characteristics length of the flow is

(a) smaller than the mean free path of the molecules.

(b) larger than the mean free path of the molecules.

(c) larger than the dimensions of the suspended particles.

(d) larger than the wavelength of sound in the medium.

mean free path < L_s

L_s > mean path length

Q – The modulus of elasticity of steel is more than of concrete. It indicates that steel is:

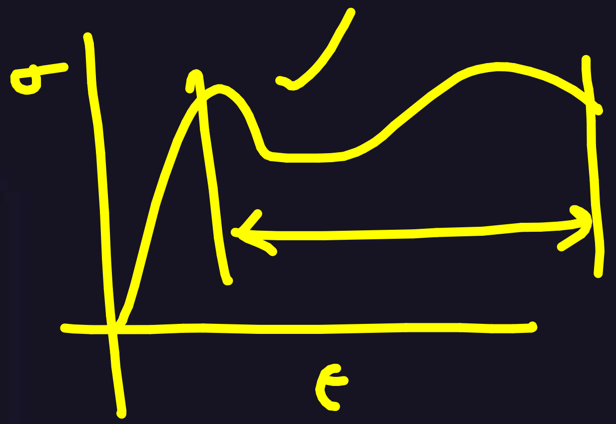
(a) Less elastic

(b) More elastic ✓

(c) More plastic

(d) Less plastic

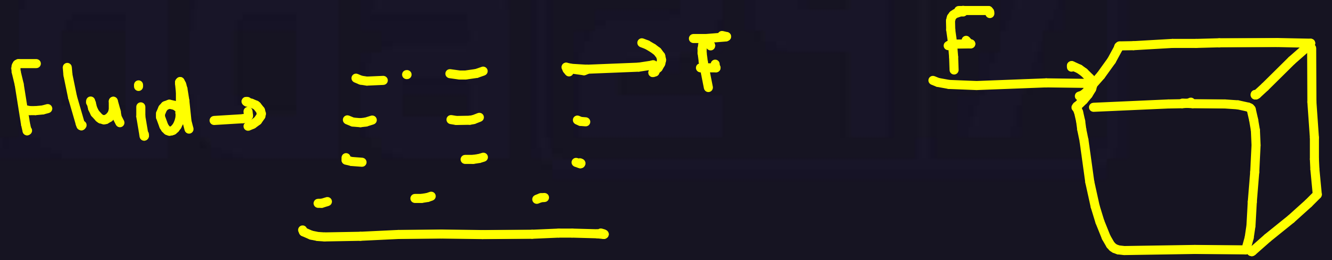
$E_{steel} > E_{cc}$



Q – When a shear stress is applied to a substance, it is found to resist it by static deformation, the substance is

(a) liquid (b) solid

(c) gas (d) fluid



Q – Hooke's law is valid up to :

(a) Limit of proportionality
(b) Ultimate point
(c) Elastic limit
(d) Yield point

Hooks law Hold upto • JKSSB | DDA | SSC-JE

↳ (c)

Q – The gap between a horizontal shaft and a concentric sleeve is filled with viscous oil. The sleeve moves with a constant velocity of 1.5 m/s when a force of 1500 N is applied parallel to the axis of the shaft. If it was required to move the sleeve at a velocity of 2 m/s, what should have been the force?

(a) 1250 N (b) 1500 N

(c) 1750N (d) 2000 N

$F_1 = 1500$

$v_1 = 1.5$

$v_2 = 2\,m/s$

$F_2 = ?$

$F_v = \tau \times A$

$F_v = \frac{\mu v}{y} A$

$F_v \propto v$

$\frac{F_1}{v_1} = \frac{F_2}{v_2} \Rightarrow F_2 = \frac{F_1 v_2}{v_1} = \frac{1500 \times 2}{1.5}$

Q – The property of a material by which it can be beaten or rolled into plates, is called :

(a) Malleability ✓
(b) Ductility
(c) Plasticity
(d) Elasticity

Q – The velocity distribution in a viscous flow over - a plate is given by

$u = 4y - y^2$ for $y \leq 2$ m (ESE)

where, u = velocity in m/s at a point distant y from the plate. If the coefficient of dynamic viscosity is 1.5 Pa-s, what is the shear stress at y = 1.2 m?

(a) 1.4 Pa (b) 1.8 Pa

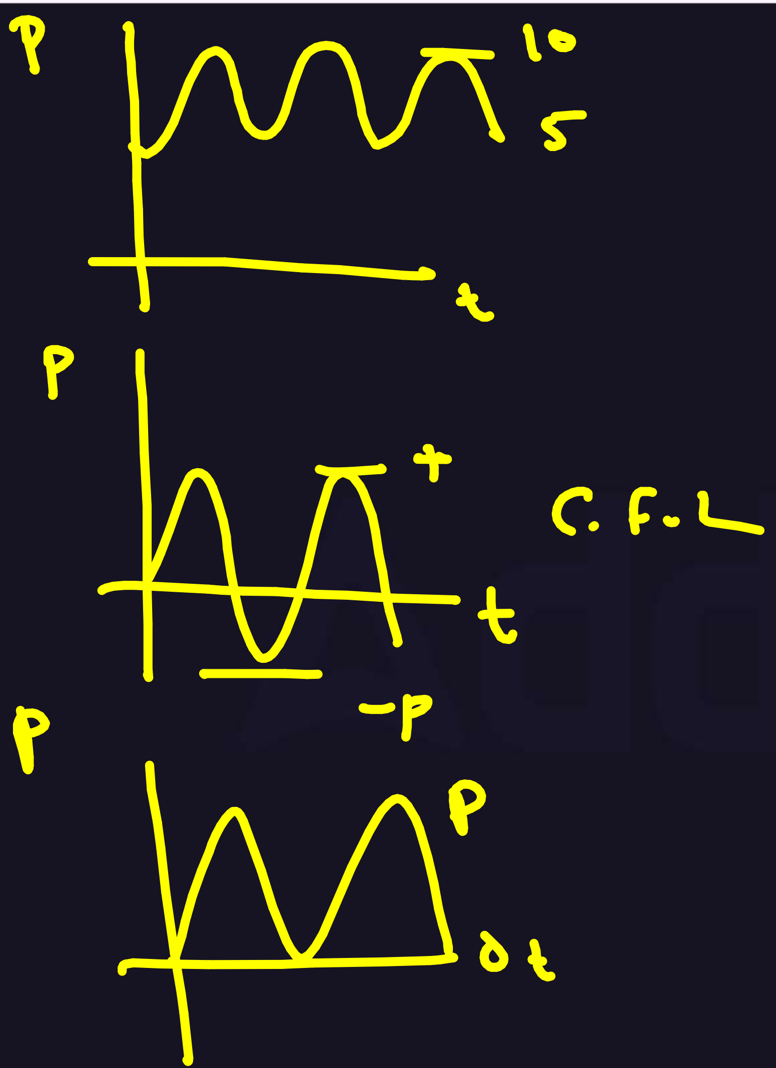
(c) 2 Pa (d) 2.4 Pa

$\tau = \mu \frac{du}{dy}$ $\frac{du}{dy} = 4 - 2y$

$\tau = 1.5 \times (4 - 2 \times 1.2)$

$1.5 \times (4 - 2.4)$

(1.5×1.6) Pa



Q – Consider the following factors :

A. Large number of loading cycles

B. Large variations in stress

C. Large stress concentrations

Those associated with fatigue failure would include.

(a) A and B (b) A and C

(c) B and C (d) A, B and C

Q – Newton's law of viscosity depends upon the

(a) stress and strain in the fluid

(b) shear stress, pressure and velocity

(c) shear stress and rate of strain

(d) viscosity and shear stress

$$\frac{du}{dy} = \frac{d\theta}{dt}$$

$$\tau \propto \left(\frac{du}{dy}\right) \sim \text{V.D}$$

Rate of strain

$$\left(\tau = \mu \frac{du}{dy}\right)$$

Q – Match List-1 with List-2

List-1

B 1. Young's Modulus

A 2. Poisson's ratio

D 3. Bulk Modulus

C 4. Rigidity Modulus

List-2

(A) Lateral strain to linear strain within elastic unit

(B) Stress/strain within elastic limit

(C) Shear stress to shear strain within elastic limit

(D) Direct stress to corresponding volumetric strain

(a) 1-B, 2-A, 3-D, 4-C ✓

(b) 1-C, 2-A, 3-D, 4-B

(c) 1 -C, 2-D, 3-A, 4-B

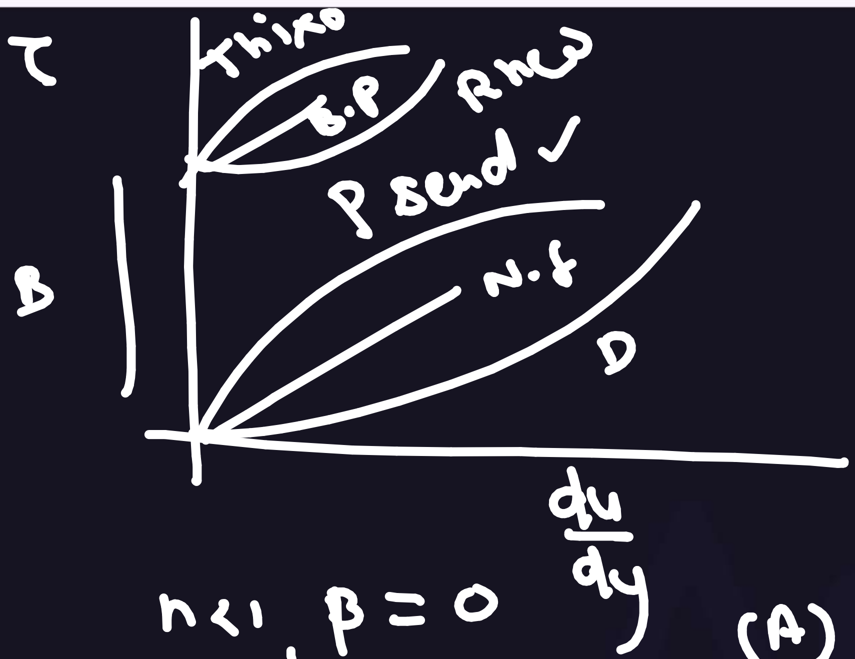
(d) 1-B, 2-D, 3-A, 4-C

$E = \frac{\sigma}{\epsilon}$

$\mu = -\frac{\epsilon_{later}}{\epsilon_{long}}$

$K = \frac{\sigma}{e_v}$

$(G = \frac{\tau}{\gamma})$



$n<1,\ B=0$

$n>1,\ B=0$

$n=1\ \ B\neq 0$

$n<1,\ B\neq 0$

Q →:

The General relationship between shear stress (τ) and velocity Gradient $\left(\frac{du}{dy}\right)$ for a fluid can be written as

$$\tau = A\left(\frac{du}{dy}\right)^n + B$$

If $n < 1$, $B = 0$

Then the fluid known as

(A) Pseud ✓

(B) Dilatent

(C) Bhingham

(d) Thixotropic

Rheo-pectic $n>1\ \ B\neq 0$

$I_f = 1 + \sqrt{1 + \frac{2h}{\delta_{static}}}$

$h = 0$

$I_f = 2$

($I_f \geq 2$) General value

$\sigma_{impact} \geq 2\,\sigma_{static} \Rightarrow \frac{\sigma_{impact}}{\sigma_{static}} \geq 2$

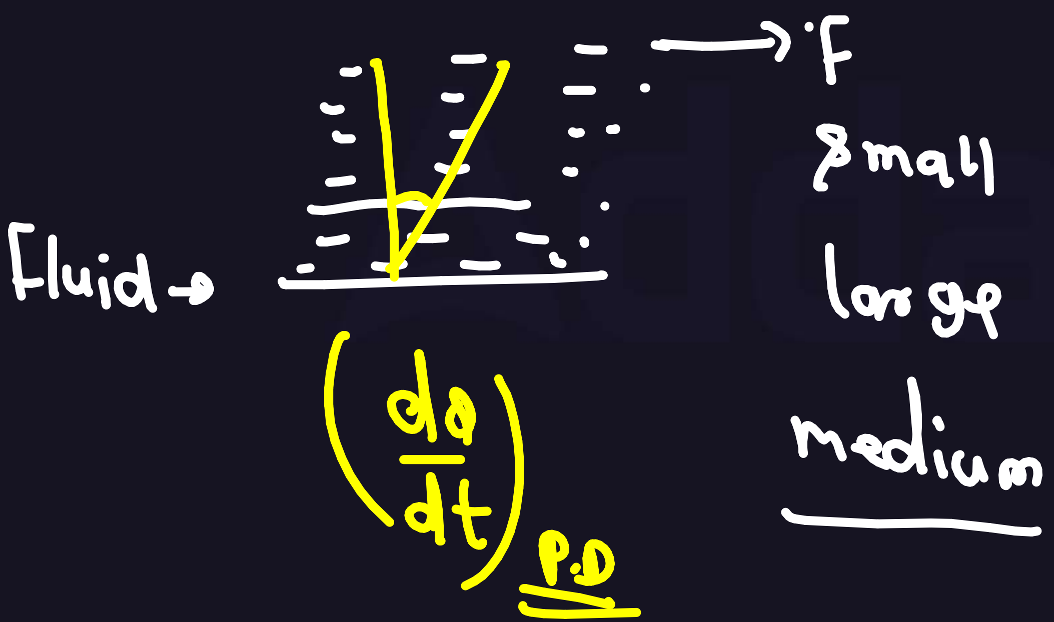
Q – The ratio of the stresses produced by suddenly applied and gradually applied loads on a bar is

A. 0.25

B. 0.5

C. 1

D. 2 ✓



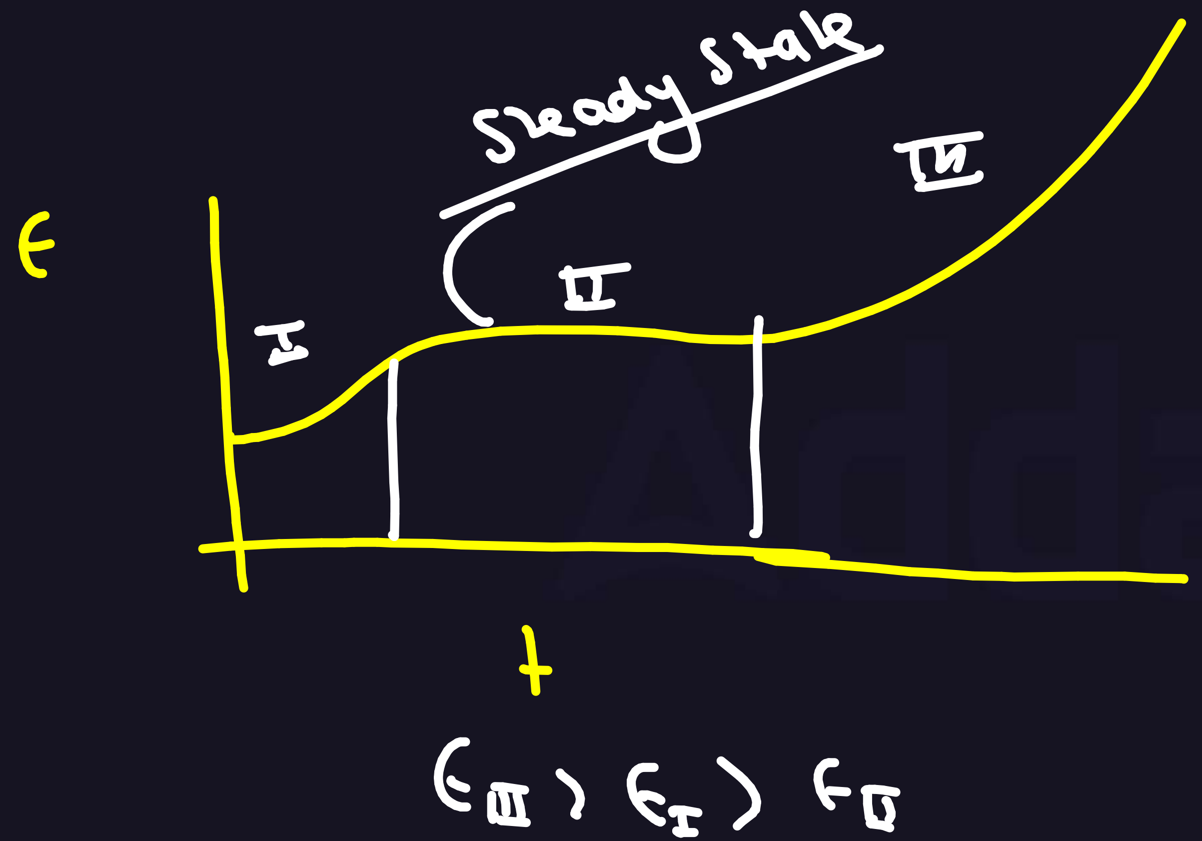
Q – When subjected to shear force, a fluid

(a) deforms continuously no matter how smaller the shear stress may be

(b) deforms continuously only for large shear forces

(c) undergoes static deformation

(d) deforms continuously only for small shear stresses



Q – The phenomenon of slow extension of materials, i.e. increasing with time having constant load, is called____ .

✓(a) Creeping (b) Breaking

(c) Yielding (d) None of these

(P=C) at elavated temp

P.D

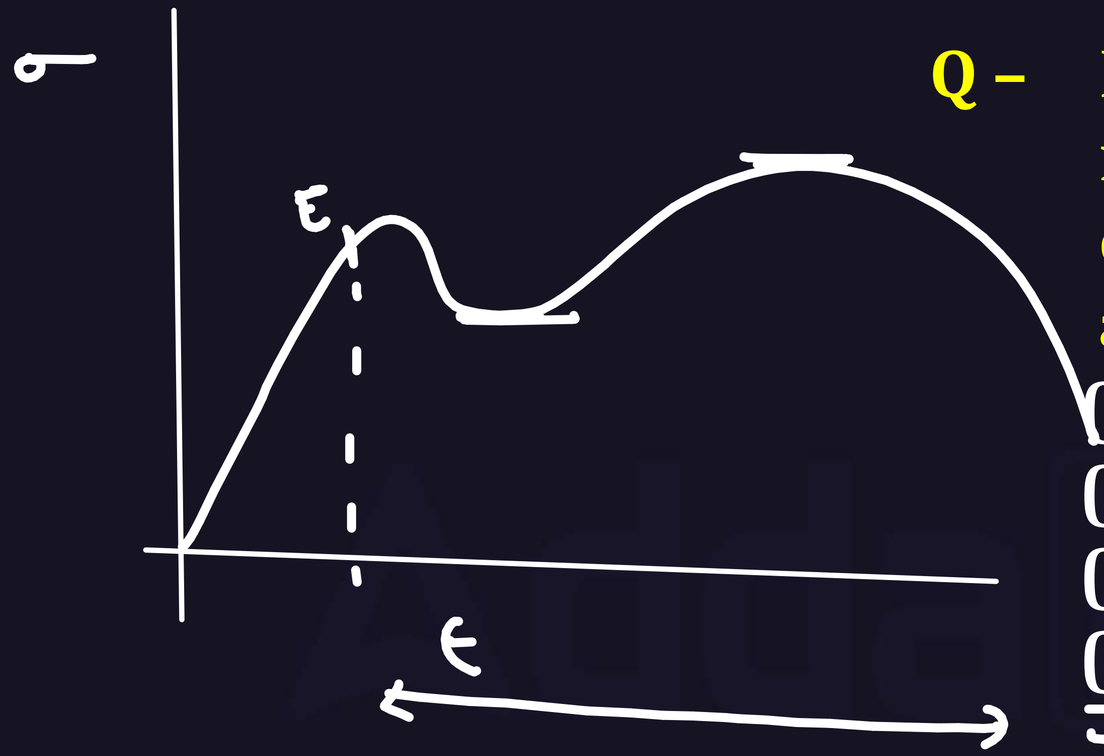
Q – Which one of the following is a typical example of non-newtonian fluid of Pseudo plastic variety

(a) Milk ✓ (b) Air

(c) Water (d) Printing ink

$\frac{d\theta}{dt}$ ↑, μ↓ n<1, β=0, Blood|milk

Shear thining



Q – In a tensile test, when the material is stressed beyond elastic limit, the tensile strain as compared to the stress.

(a) Decreases slowly

(b) Increases slowly

(c) Decreases more quickly

(d) Increases more quickly

$\left(FOS = \frac{\sigma_{yT}}{\sigma_w}\right)$ Ductile

Like > Live

FOS > 1

$\left(FOS = \frac{\sigma_{uT}}{\sigma_w}\right)$ Brittle

Q – Factor of safety is defined as the ratio of

(a) Ultimate stress to working stress

(b) Working stress to ultimate stress

(c) Breaking stress to ultimate stress

(d) Ultimate stress to breaking stress

Q – The relation between the stress x and the strain rate (du_x/dy) for the rapid flow of a granular material is given by

$$\tau = B\left(\frac{du_x}{dy}\right)^2$$

where B is a constant. If M, L and T are the mass, length and time dimension respectively, what is the dimension of the constant B?

(a) $ML^{-1}T^{-1}$
(b) $ML^{-1}T^{-2}$
(c) MT^{-1}
(d) ML^{-1}

Q – A material is said to be perfectly elastic

(a) It regains its original shape on removal of the load

(b) It regains its original shape partially on removal of the load

(c) It does not regain its original shape at all

(d) None of these

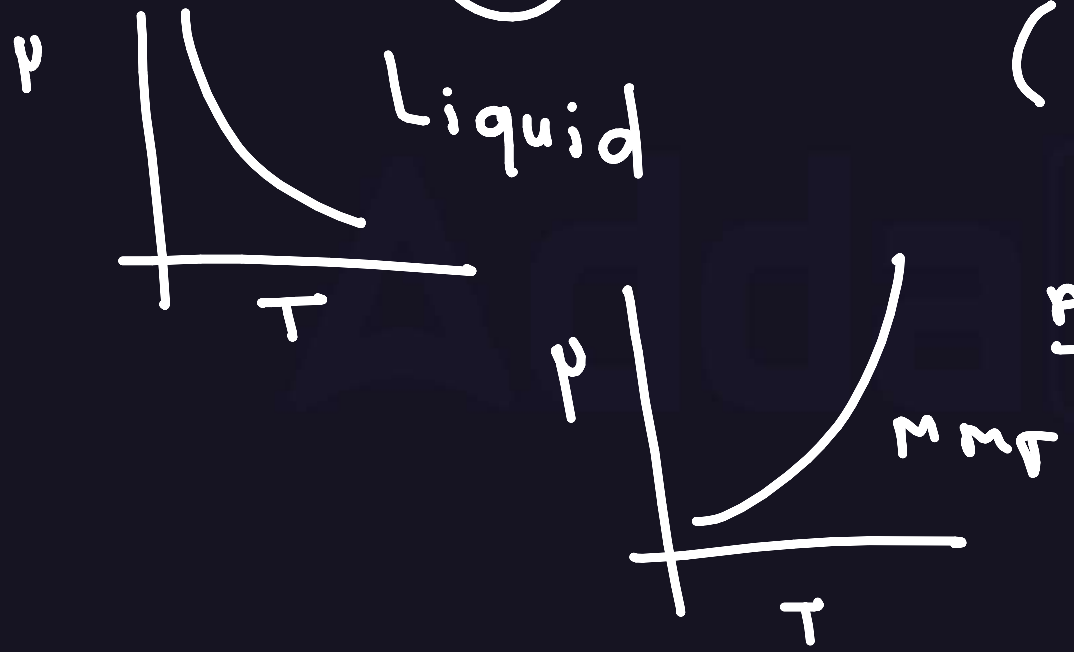
Q – Viscosity of fluid does not depend upon

A Temp

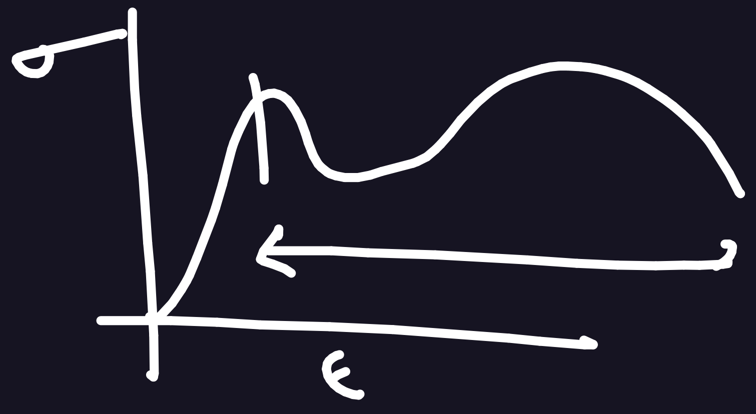
B Pressure

C volume

D Both b& c



Ans (d)



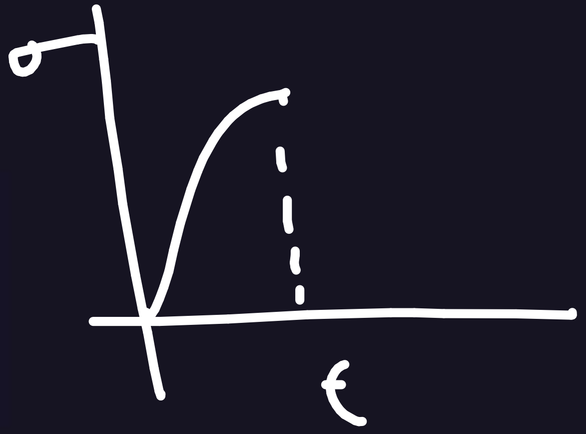
Q – A Ductile material must have

✓ A Sufficient strength

B High Degree of elasticity

x C Low strength

x D All of above



Ductility

High degree of Plasticity

Q – Specific weight of fluid depend upon

A Density

B Acceleration gravity

C Temp & Pressure

D All of the above ✓

$$w = \frac{W}{V} = \frac{mg}{V}$$

$$(w = \rho g) \Rightarrow$$

$w = \rho, g$

ρ: $P\uparrow \rightarrow \rho\uparrow, w\uparrow$

ρ: $T\uparrow, \rho\downarrow, w\downarrow$

Q – When a brittle material subjected to axial compressive load then failure will be

A Shear failure angle 45 degree

B Principal failure along 90°

C Crocodile fracture & failure along 90°

D None

H.W → within H.W