***Iqra national university Peshawar***

***SUBJECT : MECHANICS OF MATERIAL***

***B,TECH SECOND SEMESTER***

***INSTRUCTOR < ENGR MARWAN RAZA***

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 **QNO ( 1)**

**EXAMPLE OF SHEAR STRESS,**

**\*) All**  type of cutting hair ,paper etc. opening any screwed cap of bottle ,container.

\*) painting ,brushing teeth ,applying face creams soap. ointments, solution on bodies on other object .while walking and running

\*) while grinding food material ,in mouth are in vessel.

\*)while counting paper and currency notes.

\*) while a bus starts or stops seats are in shear stress …river beds are always and shear stress.

\*) washing hands with tissue papers are with both hands.

\*) using emery paper for polishing .cleaning eye glasses with piece of cloth or paper .

**NORTMAL STRESS,**

 A normal stress will occur when a member is place in tension or compression .

\*) examples of member experiencing pure normal force would include in columns collar ties etc.

\*) when a member is being loaded similer to that in figure one bending stress .

\*) winning a race or election as just as stressful as ,,metabolism to return to normal when the response is over,.

\*) the cost of dialy living ,bills ,kids,,,,,

**Q****No 2( B)**

P= 2000lb

A= 1.5” $in^{2}$

E = $10 x 10^{6}$ PSI

change in length = ?

SOLUTION;

p1= 4p =4(2000) =8000 lb

P2 =3P +5p =8P

P2 =8P =8(2000) = 16000 lb

P3 = 6p = 6(2000) = 12000 lb

P1 = 8000 lb(Tension) +

P2 = 16000lb (compression) –

p3 = 12000lb (Tension) +

 QNO.3)

 P=640KN

 P=640 X 1000N

 P=640000N

 =135mn/ m2

A= -

A =

thus 640000 = 135 [1/4

640000 =

6400000 + 1350000 =

1990000 =

7960000 =

D =

D = 2821.34mm Ans

 Q no 2(a)

S0LUTION;

**For Bronze**

110(200)=2p

22000 = 2p

22000/2 = 2p/2

P = 11000 N

**For Steel**

150(500) = 5P

75000 = 5P

P = 15000 N

**For Aluminum**

100(400)=p

P= 40000 N

for safe value of P, use smallest Above . Thus P = 11000 Safe Value