(1)

10

300k

0.0667

(2)

Elast PE of stretched string

KE of arrow

GPE of arrow

7.87

0.0944

(3)

(a)

External force needs to apply to stretch the solid.

And after the force is released, the attractive intermolecular forces return the solid to the original shape.

External force needs to apply to compress the solid.

And after the force is released, the repulsive intermolecular forces return the solid to the original shape.

(4)

0.57 ~ 0.6 %

2.84 e 10

7.68e-6

Bone is stiff / needs a large force to be compressed/stretched.

(5)

A – middle of dark region.

0.122m

0.061m

Path diff is half the wavelength

Hence, it is a node

8.01 e-17

1.25e-8

3.13e-3

(7)

A p.d. of 6V is applied across the lamp, it is operating under normal brightness and the current flows through it is 40mA.

150 ohms

It does not obey Ohm’s law bcos the resistance in these two cases are not constant. OR bcos p.d is directly proportional to current.

12V

(8)

(i) more 90 % of alpha particles pass through the foil straight or with little deflection.

Only very small portion is deflected.

(ii) small portion of alpha are deflected at large angles, which is due to the the strong repulsive force between nucleus and alpha.