19 Which expression is equal to the stress on a wire?

A $\frac{\text{extension}}{\text{original length}}$

B $\frac{\text{force}}{\text{cross-sectional area}}$

C $\frac{\text{force}}{\text{extension}}$

D $\frac{\text{Young modulus}}{\text{original length}}$

20 A wire is stretched by applying increasing values of force F. For each value of force applied, the extension x is recorded. A force–extension graph is plotted from the data obtained.

Which statement about the area under the graph **must** be correct?

A It can be calculated as $\frac{1}{2}Fx$.

B It is the elastic potential energy stored in the stretched sample.

C It is the work done in stretching the sample.

D It would be the same for any wire of the same material.

21 A progressive radio wave in a vacuum has a frequency of 75 MHz.

What is the phase difference between two points on the wave that are 50 cm apart from each other?

A 23° **B** 45° **C** 90° **D** 180°

22 Which statement is correct for longitudinal waves but **not** correct for transverse waves?

A They can form stationary waves.

B They can only travel through a medium.

C They can transfer energy in the direction of travel.

D They consist of peaks and troughs.