Materials Science and Engineering

Evaluation Test

TOPIC 4. MECHANICAL PROPERTIES

Important: Mark the right answer with a X. The correct answers will mark + 1 points while the incorrect answers will mark as -0.33 points. Non answered questions will not mark nor positively nor negatively. The resulting mark will not be smaller than 0 in any case. There is only one correct answer per question. Good luck!

During a tensile test of a ductile metal, the stress at which plastic deformation occurs and dislocations begin to slip is called:	
X	Yield strength
	Tensile strength
	Modulus of elasticity
	Elongation

The stiffness of a material is:	
	The resistance of a body to plastic deformation.
X	Related to the modulus of elasticity.
	The maximum stress that a body can withstand.
	Related to the yield strength.

A tensile stress of 425MPa is applied to bar having a yield strength of 400 MPa and a tensile strength of 500 MPa. Which of the following statements is true:	
	The bar has a Young's modulus of 480 GPa.
	The bar will not deform plastically.
X	The bar will not experience necking.
	The bar will recover its initial length

A metallic wire 1000 mm long and with a cross-section of 1.5mm^2 deforms plastically when the force applied reaches 150N. The modulus of elasticity of the wire is 100 GPa. Which of the following statements is true:	
	The modulus of resilience is 100 MPa.
	The length of the wire after removing the load will be 1000mm.
	The yield strength is 1000 MPa.
X	The strain at the yield point is 0.1%.

Which of the following statements is true:	
	Strain hardening: increase in the strength and hardness when a material is elastically deformed.
	Toughness: energy absorbed by a material when it is deformed elastically.
X	Ductility: plastic deformation that can be supported by a material before fracture.
	Resilience: capacity of a material to absorb energy when it is deformed plastically.