Assignment 09

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment.

Due on 2019-04-03, 23:59 IST.

1) How many independent elastic constants are necessary to define an isotropic material?  
   - 21
   - 9
   - 5
   - 2

   No, the answer is incorrect.
   Score: 0
   Accepted Answers: 2

2) Select the correct option for a balanced lamina.
   - $E_L = E_T$ or $v_{LT} = v_{TL}$
   - $E_L = E_T$ and $v_{LT} = v_{TL}$
   - $E_L \neq E_T$ and $v_{LT} = v_{TL}$
   - $E_L = E_T$ and $v_{LT} \neq v_{TL}$

   No, the answer is incorrect.
   Score: 0
   Accepted Answers: $E_L = E_T$ and $v_{LT} = v_{TL}$

3) Calculate $E_x$ at $60^\circ$ for a balanced lamina with following properties:
   $E_L = 15\text{GPa}$, $E_T = 15\text{GPa}$, $G_{LT} = 2.5\text{GPa}$, $v_{LT} = v_{TL} = 0.20$
   - 7.89
   - 8.01

   No, the answer is incorrect.
   Score: 0
   Accepted Answers: 7.89

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1.4) Calculate $G_{xy}$ at 45° for a balanced lamina with following properties: 1 point

$E_L=15\text{GPa}, E_T=15\text{GPa}, G_{LT}=2.5\text{GPa}, \nu_{LT}=\nu_{TL}=0.20$

- 6.25
- 5.98
- 4.55
- 3.32

No, the answer is incorrect.
Score: 0
Accepted Answers:
6.25

1.5) Calculate $\nu_{xy}$ at 30° for a balanced lamina with following properties: 1 point

$E_L=15\text{GPa}, E_T=15\text{GPa}, G_{LT}=2.5\text{GPa}, \nu_{LT}=\nu_{TL}=0.20$

- 0.573
- 0.579
- 0.417
- 0.523

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.523

1.6) Calculate $m_x$ at 70° for a balanced lamina with following properties: 1 point

$E_L=15\text{GPa}, E_T=15\text{GPa}, G_{LT}=2.5\text{GPa}, \nu_{LT}=\nu_{TL}=0.20$

- 0.579
- 0.886
- 0.900
- 0.779

No, the answer is incorrect.
Score: 0
Accepted Answers:
0.886

7) What is the direction of loading relative to the direction of fiber in a unidirectional lamina if $E_x$ equals transverse modulus ($E_T$)? 1 point

- 90°
- 60°
- 30°
- 0°

No, the answer is incorrect.
Score: 0
Accepted Answers:
90°
8) What is the direction of loading relative to the direction of fiber in a unidirectional lamina for maximum shear modulus?

- 0°
- 30°
- 45°
- 60°

No, the answer is incorrect.
Score: 0
Accepted Answers:
45°

9) Select the correct option, when \((E_\text{c})_{\text{max}}\) is greater than \(E_L\) and \(E_T\).

- \(G_{LT} > E_i / (1 + \nu_{LT})\)
- \(G_{LT} > E_i / (1 + \nu_{LT})\)
- \(G_{LT} < E_i / (1 + \nu_{LT})\)
- \(G_{LT} < E_i / (1 + \nu_{LT})\)

No, the answer is incorrect.
Score: 0
Accepted Answers:
\(G_{LT} > E_i / (1 + \nu_{LT})\)

10) Determine the elements of stiffness matrix in GPa for a specially orthotropic unidirectional graphite-epoxy lamina under plane stress with the following engineering constants.

- \(E_L = 148.0\) GPa, \(E_T = 10.5\) GPa, \(G_{LT} = 5.61\) GPa, \(\nu_{LT} = 0.3\)
- \(Q_{11} = 3.17, Q_{12} = 148.95, Q_{22} = 10.56, Q_{66} = 3.17\)
- \(Q_{11} = 148.95, Q_{12} = 3.17, Q_{22} = 10.57, Q_{66} = 5.61\)
- \(Q_{11} = 138.27, Q_{12} = 8.95, Q_{22} = 15.56, Q_{66} = 5.17\)
- \(Q_{11} = 152.17, Q_{12} = 6.95, Q_{22} = 10.56, Q_{66} = 7.17\)

No, the answer is incorrect.
Score: 0
Accepted Answers:
\(Q_{11} = 148.95, Q_{12} = 3.17, Q_{22} = 10.57, Q_{66} = 5.61\)