Assignment 05

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment. Due on 2018-09-12, 23:59 IST.

1) The following governing equations for force resultants (N) and moment resultants (M) are valid ______.

\[
\begin{bmatrix}
N \\
M
\end{bmatrix} = \begin{bmatrix} A & B \\ E & D \end{bmatrix} \begin{bmatrix} \epsilon_x \\
\kappa \end{bmatrix}
\]

- only for composite plates.
- only for composite shells.
- for composite plates as well as shells.
- for neither composite shells nor plates.

No, the answer is incorrect.
Score: 0
Accepted Answers: only for composite plates.

2) Force and moment resultant act on the_________________.

- Surface of the composite plate.
- Any individual layer of the composite plate.
- Mid plane of the plate.
- None of these are true.

No, the answer is incorrect.
Score: 0
Accepted Answers: Mid plane of the plate.

3) There are three equilibrium equations related to composite plates as shown below. Which ______.

- Equilibrium equations for composite plates.
- Equilibrium equations for composite plates and shells.
- Equilibrium equations for composite shells.
- None of these are true.

No, the answer is incorrect.
Score: 0
Accepted Answers: Equilibrium equations for composite plates.
Lecture 30: Boundary conditions associated with different edges of composite plate (Part-2)

Quiz: Assignment 05

WEEK 5 - FEEDBACK - Advanced Composites

Assignment 5 Solution

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No, the answer is incorrect.
Score: 0
Accepted Answers:
Equations (1) and (2).

4) Which of the following statement is/are true about the normality assumption related to composite plates?

Statement 1: The vertical edge of the plate remains normal to the midplane after bending of the composite plate.

Statement 2: \( \gamma_{xx} = \gamma_{xy} = 0 \)

No, the answer is incorrect.
Score: 0
Accepted Answers:
Both statement 1 and statement 2.

5) "The thickness of a composite plate in z-direction remains the same". This statement is related to _____________.

- Kirchhoff's normality assumption.
- Kirchhoff's extensibility assumption.
- Is not related to Kirchhoff's plate theory.
- Kirchhoff's normality and extensibility assumptions.

No, the answer is incorrect.
Score: 0
Accepted Answers:
Kirchhoff's extensibility assumption.

6) How many boundary conditions related to each edge of composite plates are needed to solve the equilibrium equation?

- 5
- 4
- 3
- 8

No, the answer is incorrect.
Score: 0
Accepted Answers:
4

7) How many independent first order partial differential equations are needed to ensure the equilibrium of a composite plates?

- 5
8) Kirchhoff shear is a term related to which of the following boundary conditions ________.  

- $(N_x - N_x^+) \delta u^0 = 0$
- $(N_{xy} - N_{xy}^+) \delta v^0 = 0$
- $(M_x - M_x^+) \delta \left( \frac{\partial w^0}{\partial x} \right) = 0$
- $\left[ \left( \frac{\partial M_x}{\partial x} + 2 \frac{\partial M_{xy}}{\partial y} \right) - \left( Q_x^+ + \frac{\partial M_{xy}^+}{\partial y} \right) \right] \delta w^0 = 0$

No, the answer is incorrect.
Score: 0
Accepted Answers: 5

Derive the following second order partial differential equation.  

$\frac{\partial^2 M_x}{\partial x^2} + 2 \frac{\partial^2 M_{xy}}{\partial x \partial y} + \frac{\partial^2 M_y}{\partial y^2} + q = 0$

In this process, which of the following first under PDE's were used to derive it?
1. Sum of forces in X-direction equal to zero.
2. Sum of forces in Y-direction equal to zero.
3. Sum of forces in Z-direction equal to zero.
4. Sum of moments about X-axis equal to zero.
5. Sum of moments about Y-axis equal to zero.

- First two force equilibrium equations, and first moment equilibrium equation.
- Third force equilibrium equation and first two moment equilibrium equations.
- First two force equilibrium equations and last moment equilibrium equation.
- First force equilibrium equation and all of the moment equilibrium equations.

No, the answer is incorrect.
Score: 0
Accepted Answers:
Third force equilibrium equation and first two moment equilibrium equations.

10) A composite plate is shown below in the figure. Select the correct boundary condition associated with edge ’AB’.
\[(M_x - M_x^+) \delta u^0 = 0\]
\[(N_{xy} - N_{xy}^+) \delta u^0 = 0\]
\[(M_x - M_x^+) \delta \left( \frac{\partial w^0}{\partial x} \right) = 0\]
\[\left[ \left( \frac{\partial M_x}{\partial x} + 2 \frac{\partial M_{xy}}{\partial x} \right) - \left( Q_y^+ + \frac{\partial M_{xy}^+}{\partial y} \right) \right] \delta w^0 = 0\]

No, the answer is incorrect.
Score: 0
Accepted Answers:
\[(M_x - M_x^+) \delta \left( \frac{\partial w^0}{\partial x} \right) = 0\]