Assignment 04

Due on 2019-03-27, 23:59 IST

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

1) What is not true about weighted residual methods?
   - Equations need to be in their strong form.
   - Weight functions need not be the same as approximation functions.
   - Weighted residual integral is equated to zero.
   - We have more flexibility in choosing approximation functions as compared to Rayleigh Ritz method.

No, the answer is incorrect.
Score: 0
Accepted Answers:
- We have more flexibility in choosing approximation functions as compared to Rayleigh Ritz method.

2) Which of the following is true about approximation functions in weighted residual methods?
   - \( \phi_1 = 1, \phi_2 = x, \phi_3 = x^2 \) is a valid set of functions
   - \( \phi_i \) must be linearly independent
   - \( \phi_i \) should only satisfy Essential Boundary Condition.
   - \( \phi_0 \) is always zero.

No, the answer is incorrect.
Score: 0
Accepted Answers:
- \( \phi_i \) must be linearly independent

3) In the following expression for primary variable, which of the following statement is true?
   \[ u = \sum c_j \phi_j(x) + \phi_0(x) \]
   - \( c_j \)'s are known.
   - \( \phi_j \) and \( \phi_0 \) are unknown.
   - \( \phi_j \) must satisfy the boundary conditions in its homogeneous form.
   - \( \phi_0 \) must satisfy the boundary conditions in its homogeneous form.

No, the answer is incorrect.
Score: 0
Accepted Answers:
- \( \phi_j \)'s must satisfy the boundary conditions in its homogeneous form.

4) Which of the following statements is not true about approximation functions (\( \Phi_i \))?
   - Approximation functions must be a complete set.
   - Approximation functions should be linearly independent.
   - Approximation functions must be polynomial functions.
   - Approximation functions should be sufficiently differentiable.

No, the answer is incorrect.
6) If $R$ is the residue for a differential equation, then which of the following quantities is minimized in the Least Square method?

- $\int R^2 d\Omega$
- $\int 2R^2 d\Omega$
- $\int R d\Omega$
- $\int 2R d\Omega$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\int R^2 d\Omega$

7) The choice of weight function ($\Psi$) in the collocation method is:

- $\Psi = x - x_i$
- $\Psi = \delta (x - x_i)$
- $\Psi = 0$
- $\Psi = 1 - x_i$

Where $x = \text{independent variable}$ & $i$ represents the locations where the residue is equated to zero.

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\Psi = \delta (x - x_i)$

8) In the equation $[K']([u']) = \{f'\} + \{Q'\}$, where symbols have their general meanings, which term is obtained at element $1$?

- $[Q']$
- $\{Q\}$
- $\{Q\}$
- $\{Q\}$

No, the answer is incorrect.
Score: 0
Accepted Answers:
$\{Q\}$