Assignment 02

The due date for submitting this assignment has passed. As per our records you have not submitted this assignment. Due on 2019-03-13, 23:59 IST.

1) Which of the following is true about \( F \) in the assembly level equations, \( \mathbf{K}\mathbf{u} = \mathbf{f} + \mathbf{Q} = \mathbf{F} \)?

- \( F \) will represent external force for any type of governing differential equation.
- \( F \) represents the terms related to external load – both point and distributed loads.
- \( F \) represents the terms related to distributed load.
- \( F \) represents the terms related to point loads.

No, the answer is incorrect.
Score: 0
Accepted Answers:
\( F \) represents the terms related to external load – both point and distributed loads.

2) In parabolic time dependent problems, temporal approximation uses __________.

- Newmark family of approximations.
- Alpha family of approximations.
- Beta family of approximations.
- Gamma family of approximations.

No, the answer is incorrect.
Score: 0
Accepted Answers:
Alpha family of approximations.

3) Expression for a weighted residual method is given below:

\[ \int w.\text{Residue}=0. \]

Which of the following options are true?

- \( w \) represents user-defined functions.
- \( w \) represents the physical weight of the material.

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

4) Consider \( \Delta t \) is the difference of time step. What is the order of accuracy of Euler method in \( w \) family of approximation for parabolic time dependent problems?

- \( (\Delta t)^\sqrt{2} \)
- \( (2\Delta t)^2 \)
- \( (3\Delta t)^3 \)
- \( \Delta t \)

No, the answer is incorrect.
Score: 0
Accepted Answers: \( \Delta t \)

5) In context of a space-time PDE, what is the meaning of "spatial approximation"?

- Conversion of a space-time partial differential equation into a partial differential equation in time.
- Conversion of a space-time partial differential equation into a partial differential equation in space.
- Conversion of a space-time partial differential equation into an ordinary differential equation in time.
- Conversion of a space-time partial differential equation into an ordinary differential equation in space.

No, the answer is incorrect.
Score: 0
Accepted Answers: Conversion of a space-time partial differential equation into an ordinary differential equation in time.

6) Consider the mass matrix given below.
Which of the options represents a matrix which is obtained by diagonalizing the above matrix using row sum lumping method?

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

7) Which of the options are not true while solving a time-dependent partial differential equation given below?

- The equation cannot be solved without initial conditions.
- Given equation needs to be integrated four times with respect to \( x \).
- Given equation needs to be integrated twice with respect to time.
- None of the options are correct.

No, the answer is incorrect.
Score: 0
8) Consider a time-dependent problem. Which of the options is true?

- They must be linear in both time as well as the primary variable.
- They do not require boundary conditions to be solved.
- They require initial conditions along with boundary conditions knowledge.
- They cannot be ordinary differential equation.

No, the answer is incorrect.

Score: 0

Accepted Answers:

They require initial conditions along with boundary conditions knowledge.