

X

NPTEL

reviewer3@nptel.iitm.ac.in ▼

Courses » Computational Fluid Dynamics

Announcements

Course

Ask a Question

Progress

FAQ



Unit 7 - Week 6

Course outline

How to access the portal

Week 1

Week 2

Week 3

Week 4

Week 5

Week 6

- Lecture 26 : CTCS scheme (Leap frog scheme) & Dufort-Frankel scheme
- Lecture 27 : Part 1: FV Discretization of 2-D Unsteady State Diffusion Type problems; Part 2: Solution to linear algebraic equations
- Lecture 28 : Solution to linear algebraic equations (contd.)
- Lecture 29 : Elimination methods
- Lecture 30 : Gaussian elimination and LU Decomposition methods
- Quiz : Week 6 Assignment 6

Week 7

Week 8

Week 9

Week 10

Week 11

Week 12

Download Videos

Assignment Solution

Live Session - Sep 13,2018

Week 6 Assignment 6

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)

1 point

Consider the following statements regarding CTCS(central time central space) scheme.

- (i) CTCS scheme is unconditionally stable
 - (ii) CTCS scheme is conditionally stable
 - (iii) CTCS scheme is unconditionally unstable
 - (iv) CTCS scheme is more accurate than FTCS (forward time central space) scheme.
- Which of the above statements are correct?

- (a) (i) and (iv) only
- (b) (ii) and (iv) only
- (c) (iii) and (iv) only
- (d) (i) only

- (a)
- (b)
- (c)
- (d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

(c)

2)

1 point

Consider the following statements regarding Dufort-Frankel scheme.

- (i) Dufort-Frankel scheme is unconditionally stable and inconsistent
- (ii) Dufort-Frankel scheme is conditionally stable and inconsistent
- (iii) Dufort-Frankel scheme is unconditionally unstable and inconsistent
- (iv) Dufort-Frankel scheme is unconditionally unstable and consistent

Which of the above statements are correct?

- (a) (i) only
- (b) (ii) only
- (c) (iii) only
- (d) (iv) only

- (a)
- (b)
- (c)
- (d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

(a)

3)

1 point

- (a)
- (b)
- (c)
- (d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

(d)

4)

1 point

Consider the following statements pertaining to the solution for a system of linear algebraic homogeneous equations.

- (i) Solution is trivial when the determinant of the coefficient matrix is not equal to zero
- (ii) Solution is trivial when the determinant of the coefficient matrix is equal to zero
- (iii) Infinite number of solutions exist when the determinant of the coefficient matrix is equal to zero
- (iv) Infinite number of solutions exist when the determinant of the coefficient matrix is not equal to zero

Which of the above statements are correct?

- (a) (i) only
- (b) (ii) only
- (c) (i) and (iii)
- (d) (ii) and (iv)

- (a)
- (b)
- (c)
- (d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

(c)

5)

A system of linear algebraic equations is given below

1 point

$$5x + 3y + 7z = 4$$

$$3x + 26y + 2z = 9$$

$$7x + 2y + 10z = 5$$

Which one of the following is correct?

- (a) The equations are consistent and infinite number of solutions exist
- (b) The equations are consistent and there is unique solution
- (c) The equations are inconsistent
- (d) Only trivial solution exists

- (a)
- (b)
- (c)
- (d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

(a)

6)

1 point

A system of linear algebraic equations is given below

$$2x + 3y + 5z = 9$$

$$7x + 3y - 2z = 8$$

$$2x + 3y + \lambda z = \mu$$

where λ and μ are two unknowns. If the above equations will have unique solution when

- (a) $\lambda=5$ and $\mu=9$
 (b) $\lambda=5$ and $\mu \neq 9$
 (c) $\lambda \neq 5$ and μ is any value
 (d) λ is any value and $\mu \neq 9$

- (a)
 (b)
 (c)
 (d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

(c)

7)

A system of linear algebraic equations is given below

$$(3k - 8)x + 3y + 3z = 0$$

$$3x + (3k - 8)y + 3z = 0$$

$$3x + 3y + (3k - 8)z = 0$$

The values of k for which the system of equations has a non-trivial solution are

- (a) $k = 1/3, 10/3$
 (b) $k = 2/3, 11/3$
 (c) $k = 4/3, 16/3$
 (d) $k = 5/3, 20/3$

- (a)
 (b)
 (c)
 (d)

No, the answer is incorrect.

Score: 0

Accepted Answers:

(b)

8)

For Gaussian elimination method, what is the order of number of operation for forward elimination and backward substitution; if the size of coefficient matrix is n

- (a) n^3 and n^2
 (b) n^2 and n^2
 (c) n^3 and n^3
 (d) n and n^2

- (a)
 (b)
 (c)
 (d)

No, the answer is incorrect.

Score: 0



1 point

1 point

Accepted Answers:

(a)

9)

1 point

The goal of forward elimination steps in the Gaussian elimination method is to reduce the coefficient matrix to

- (a) a diagonal matrix
- (b) an identity matrix
- (c) a lower triangular matrix
- (d) an upper triangular matrix

- (a)
- (b)
- (c)
- (d)

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

(d)

10)

1 point

Division by zero during forward elimination steps in Gaussian elimination of the set of equations $Ax=b$ implies the coefficient matrix A

- (a) is invertible
- (b) is nonsingular
- (c) may be singular or nonsingular
- (d) is singular

- (a)
- (b)
- (c)
- (d)

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

(c)

[Previous Page](#)[End](#)

© 2014 NPTEL - Privacy & Terms - Honor Code - FAQs -

A project of



In association with



Funded by



Powered by

