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Graded Quiz # 8

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8/10 points (graded)

Please write below your BracU ID and Sectoion number. After submission these may shows WRONG answers. Please IGNORE these messeges. Your score will be based on the questions belwo these two inputs:

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Your BracU ID#:

19101239



Your theory class section#

1

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2



☐☐ 3☐ 4☐ 5☒ 6

MCQs start from below. Answer the questions correctly:

=====

Q#1: A linear system is defined by the matrix equation $Ax = b$
This system

☐ may have a solution if A is a square matrix.

☐ has a unique solution if and only if A is non-singular.

☐ has a unique solution if $\exists x \in \mathbb{R}^n$ for every $b \in \mathbb{R}^n$.

☒ All of the above.



Q#2: The transformation matrix A of the linear system described by $Ax = b$ is of order $n \times n$. This matrix A is transformed into a lower triangular form by the Gaussian elimination method. How many matrix elements of A are changed to zero?

☒ $\frac{1}{2}n(n-1)$

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☐ $\frac{1}{2}n(n+1)$

☐ $\frac{1}{2}n$

☐ $n+1$



Q#3: Which of the following statement(s) is(are) NOT true about the Gaussian elimination method?

☐ $\det(A)$ does not change.☐ The lower triangular and upper triangular form gives the same solution.☐ $\det L = \det U$ where L and U are the lower and upper triangular forms of A ☒ The row operation changes all matrix elements of the matrix A 

Q#4: Suppose you have a linear system where A is 10×10 square matrix. How many row operations are need to obtain a lower traingular matrix?

☒ 9.☐ 10.☐ It cannot be determined. Need more information.

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☐ 11.



Q#5: A 8×8 square matrix, A , is changed to an upper triangular form by the row operation in the Gaussian elimination method. After the completion of the 3rd row operation, how many matrix elements of A has been changed to zero by the row operations?

☐ 22.

☐ 12.

☒ 18.

☐ 13.



Q#6: In the video lecture 15, Part-II, we showed an example. What we can say about the solution of the example?

☐ Back substitution method is used to solve the problem.

☐ There was a typo in the typed lecture slide which was corrected during the video lecture. That typo did not occur in the example part of the lecture.

☐ The problem could also been solved by transforming the matrix A into lower triangular form.

☒ All of the above.

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Q#7: In the LU -decomposition method, the matrix A is transformed into

☒ upper triangular form.

☐ lower triangular form.

☐ singular form.

☐ None of them above.



>>Q#8: The lower triangular matrix L is defined as

$$L \equiv \left(F^{(1)}\right)^{-1} \left(F^{(2)}\right)^{-1} \dots \left(F^{(n-1)}\right)^{-1},$$

where the matrix $F^{(k)}$ are constructed out of the row multipliers and 1's as shown in the lecture. If $n = 15$ how many matrix elements of $F^{(5)}$ will be non-zero?

☐ 15.

☐ 20.

☒ 25.

☐ 16.



Submit

You have used 1 of 1 attempt

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Problem: The augmented matrix of a linear system is given by



{\rm Aug} (A) \equiv \left(\begin{matrix} 1 & 2 & 1 \\ 1 & -2 & 2 \\ 2 & 12 & -2 \end{matrix} \right) \left(\begin{matrix} 0 \\ 4 \\ 4 \end{matrix} \right) \ .

Q#9: [1 Mark] Find the matrix $F^{\{1\}}$. Show calculations.

Q#10: [1 Mark] Find the matrix $F^{\{2\}}$. Show calculations.

GRADED QUIZ # 8 SUBMISSION

Status

You have completed this assignment. Your final grade will be available when the assessments of your response are complete.

▶ Your Response due Sep 9, 2021 21:00 +06 (in 0 minutes) ✓ COMPLETE

Staff Grade NOT AVAILABLE

Waiting for a Staff Grade

Check back later to see if a course staff member has assessed your response. You will receive your grade after the assessment is complete.

▼ Your Grade: Waiting for Assessments

You have completed your steps in the assignment, but some assessments still need to be done on your response. When the assessments of your response are complete, you will see feedback from everyone who assessed your response, and you will receive your final grade.



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