Subject: Mathematics for Engineer

Quiz number: 3

Number of question: 20

Structure:

* level 1(knowledge & comprehension): 4;
* level 2 (application & analysis): 12;
* level 3 (synthesis & evaluation): 4.

Time: 35’.

|  |  |
| --- | --- |
| QN=1 | (Level 2) Solve the system equations  and  Evaluate |
| a. | (1,2,2,-2) and 10 |
| b. | (3,1,-3,2) and 15 |
| c. | (0,5,1,-6) and 29 |
| d. | (2,-1,3,2) and -9 |
| e. | (1,1,3,1) and 0 |
| f. |  |
| ANS: | D |
| PTS: |  |
| CHAPTER: | 1 |
| MIX CHOICES: | Yes |

|  |  |
| --- | --- |
| QN=2 | (Level 2) Solve the system of equations for x4 |
| a. | -1 |
| b. | 1 |
| c. | 2 |
| d. | -2 |
| e. | None of these |
| f. |  |
| ANS: | A |
| PTS: |  |
| CHAPTER: | 1 |
| MIX CHOICES: | Yes |

|  |  |
| --- | --- |
| QN=3 | (Level 2) Which of the following statements is true for the system of equations |
| a. | It has no solutions |
| b. | It has the trivial solution |
| c. | It has the unique solution (4,1,1,1) |
| d. | It has infinitely many solutions with 1 free parameter |
| e. | It has infinitely many solutions with 2 free parameter |
| f. |  |
| ANS: | E |
| PTS: |  |
| CHAPTER: | 1 |
| MIX CHOICES: | Yes |

|  |  |
| --- | --- |
| QN=4 | (Level 1) The coefficient matrix A in a homogeneous system of 15 equations in 19 unknowns is known to have rank 8. How many free parameters are there in the solution? |
| a. | 4 |
| b. | 11 |
| c. | 7 |
| d. | 0 |
| e. | 19 |
| f. |  |
| ANS: | B |
| PTS: |  |
| CHAPTER: | 1 |
| MIX CHOICES: | Yes |

|  |  |
| --- | --- |
| QN=5 | (Level 1) |
| a. | -4 |
| b. | -2 |
| c. | -8 |
| d. | -10 |
| e. | None of the others |
| f. |  |
| ANS: | A |
| PTS: |  |
| CHAPTER: | 1 |
| MIX CHOICES: | Yes |

|  |  |
| --- | --- |
| QN=6 | (Level 1) |
| a. | 3 |
| b. | -1 |
| c. | 2 |
| d. | 0 |
| e. | 1 |
| f. |  |
| ANS: | B |
| PTS: |  |
| CHAPTER: | 2 |
| MIX CHOICES: | Yes |

|  |  |
| --- | --- |
| QN=7 | (Level 3) If then the main diagonal of A-1 is: |
| a. | (7,-2,1) |
| b. | (7,-2,-1) |
| c. | (7,2,1) |
| d. | (-7,-2,1) |
| e. | (-7,2,-1) |
| f. |  |
| ANS: | A |
| PTS: |  |
| CHAPTER: | 2 |
| MIX CHOICES: | Yes |

|  |  |
| --- | --- |
| QN=8 | (Level 2) Suppose that. Which the following statements is true about A-1? |
| a. | It does not exist |
| b. | The second row is [4 -3 2] |
| c. | The first column is [9 4 3]T |
| d. | The main diagonal of A-1 is (9,-3,1) |
| e. |  |
| f. |  |
| ANS: | B |
| PTS: |  |
| CHAPTER: | 2 |

|  |  |
| --- | --- |
| QN=9 | (Level 2) Suppose that. Which the following statement is true? |
| a. |  |
| b. |  |
| c. |  |
| d. |  |
| e. |  |
| f. |  |
| ANS: | B |
| PTS: |  |
| CHAPTER: | 2 |
| MIX CHOICES: | Yes |

|  |  |
| --- | --- |
| QN=10 | (Level 3) Let  be linear map and T(1,1,1)=(5,1), T(-1, 1, 0)=(2, 0). Then T(-2, 4, 1) is… |
| a. | None of the others. |
| b. | (4,2) |
| c. | (2,4) |
| d. | (3,2(-2,3)) |
| e. |  |
| f. |  |
| ANS: | A |
| PTS: |  |
| CHAPTER: | 2 |
| MIX CHOICES: | Yes |

|  |  |
| --- | --- |
| QN=11 | (Level 2) A is a 4×4 matrix with det A = 3. If adj(A) denotes the transpose of the matrix of cofactors of A, find det(adj(A)). |
| a. | 3 |
| b. | 9 |
| c. | 27 |
| d. | 81 |
| e. | None of above |
| f. |  |
| ANS: | C |
| PTS: |  |
| CHAPTER: | 3 |
| MIX CHOICES: | Yes |



|  |  |
| --- | --- |
| QN=12 | (Level 1) Find the first row of the adjugate matrix of |
| a. | [1 -10 3] |
| b. | [1 10 3] |
| c. | [-1 10 -3] |
| d. | [2 -10 3] |
| e. | [-2 -10 3] |
| f. |  |
| ANS: | A |
| PTS: |  |
| CHAPTER: | 3 |
| MIX CHOICES: | Yes |

|  |  |
| --- | --- |
| QN=13 | (Level 3) Given the matrices , indicate which the following statements is true? |
| a. | detA=0 |
| b. | Exist A-1 |
| c. | Only B is not invertible |
| d. | C is invertible matrix |
| e. | B and C are both invertible |
| f. |  |
| ANS: | A |
| PTS: |  |
| CHAPTER: | 3 |
| MIX CHOICES: | Yes |

|  |  |
| --- | --- |
| QN=14 | (Level 2)  equals: |
| a. | 12 |
| b. | 24 |
| c. | 36 |
| d. | 81 |
| e. | 48 |
| f. |  |
| ANS: | E |
| PTS: |  |
| CHAPTER: | 3 |
| MIX CHOICES: | Yes |



|  |  |
| --- | --- |
| QN=15 | (Level 2) Find the eigenvalues of |
| a. | 4 |
| b. | -4 |
| c. | ±4 |
| d. | 0 |
| e. | None of these |
| f. |  |
| ANS: | A |
| PTS: |  |
| CHAPTER: | 3 |
| MIX CHOICES: | Yes |

|  |  |
| --- | --- |
| QN=16 | (Level 2) Find the value(s) of t for which (1,3,-2,2t) lies in the subspace spanned by (1,1,2,2), (1,3,2,2), and (1,4,3,3) |
| a. | 1 |
| b. | 1 or -1 |
| c. | -1 |
| d. | 2 |
| e. | -2 |
| f. |  |
| ANS: | C |
| PTS: |  |
| CHAPTER: | 5 |
| MIX CHOICES: | Yes |

|  |  |
| --- | --- |
| QN=17 | (Level 2) Let V=span{(1,2,3,4),(3,2,5,1),(2,1,0,1)}. Find all t such that (1,2,t,3)∈V. |
| a. | 1 |
| b. | -3 |
| c. | 5 |
| d. | 27/3 |
| e. | 27/5 |
| f. |  |
| ANS: | E |
| PTS: |  |
| CHAPTER: | 5 |
| MIX CHOICES: | Yes |

|  |  |
| --- | --- |
| QN=18 | (Level 2) Which of the following is not subspaces of R3?   1. {(x1,x2,x3):2x1-3x2+5x3=0}  1. {(x1,x2,x3):x1=2x2; 2x2=x3}  1. {(x1,x2,x3):} |
| a. | (i) |
| b. | (ii) |
| c. | (iii) |
| d. | (iv) |
| e. | (v) |
| f. |  |
| ANS: | C |
| PTS: |  |
| CHAPTER: | 5 |
| MIX CHOICES: | Yes |

|  |  |
| --- | --- |
| QN=19 | (Level 3) Find a basis for the solution space of the system: |
| a. | {(1,5,3,0)} |
| b. | {(1,5,3,0),(1,1,1,0)} |
| c. | {(1,-4,0,3),(1,2,2,1)} |
| d. | {(1,5,3,0), (1,-4,0,3)} |
| e. | None of these |
| f. |  |
| ANS: | D |
| PTS: |  |
| CHAPTER: | 5 |
| MIX CHOICES: | Yes |



|  |  |
| --- | --- |
| QN=20 | (Level 2) The matrix  has -1 as an eigenvalue. A basis for the corresponding eigenspace is: |
| a. | (i) |
| b. | (ii) |
| c. | (iii) |
| d. | (iv) |
| e. | None of above |
| f. |  |
| ANS: | B |
| PTS: |  |
| CHAPTER: | 5 |
| MIX CHOICES: | Yes |

