**Department of Mathematics**

**College of Sciences**

**King Saud University**

**Math 246**

**First Mid exam**

**second semester, 1435-1436H**

**Time: 90 min.**

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| **Name:** |
| **Student No.** |

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| --- | --- | --- | --- | --- | --- |
| **Question number** | I  | II | III | IV | total |
| **Answer** |  |  |  |  |  |

### . **Choose the correct answer and fill the table:**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Question number** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| **Answer** |  |  |  |  |  |  |  |  |

**1)** (AB)-1(AC-1)(D-1C-1)-1 D-1

a) B-1 b) C c) D-1 d) None of the previous.

**2)** If A = and B=then the first row of AB is

a) [63 67 57 ] b) [67 41 41] c) [5 20 40] d) None of the previous.

**3)** The following homogeneous linear system

x1+4x2+3x3 = 1

2 x2+x3 = 1

 x2+x3 = 1

a) No solution. b) exactly one solution. c) exactly two solutions.

d) infinitely many solutions.

**4)** If A and B are of the same size then (A+B) 2=

a) A2+B2 b) A2+B2+2AB c) A2-B2+BA +AB d) None of the previous

**5)** If D = and E=then tr(D ET) is

a) 0 b) 44 c) 54 d) None of the previous.

**6)** **(A-1 )5** =  then **A5=**

a)  **b)**  c)  d) None of the previous.

**7)** The matrixis in

a) row echelon form. b) reduced row echelon form. c) both a and b.

d) None of the previous.

**8)** If is the matrix of a system of linear equations, them for what values of***h*** the system inconsistent?

1. h=-1 b) h=0 c) h=1 d) h=2

 **II.** Solve the following linear system

x1-2x2+x3-4x4 = 1

2x1+6x2+14x3+4x4 = 4

x1-12x2-11x3-16x4 = -3

**III**. Find A-1 if possible, where A=

1. If A is an  matrix, then prove that the following are equivalent:
2. A is invertible.
3. Ax=0 has only the trivial solution.
4. A is expressible as a product of elementary matrices.