THU 31 *Jan* 2019 *Quiz*1 *Section* : **52435**

Name* : *Solution ***Student ID* :**

***Question* 1** (**1 + 1 marks : 1 Decision , 1 verfication**)

Determine whether the following matrix is in row echelon form, reduced row echelon form or neither (verify):

$$\begin{pmatrix} 1 & 2 & 3 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{pmatrix}$$

In any two successive rows that do not consist entirely of zeros, the leading 1 *in the lower row occurs farther to the right than the leading* 1 *in the higher row* **1 *mark***

Neither **1 *mark***

***Question* 2** (**2 marks**)

Solve the follwing system by reducing the corresponding agumented matrix :

$$\begin{aligned} x_1 + 3x_2 - x_3 &= 0 \\ x_2 - 8x_3 &= 0 \\ 4x_3 &= 0 \end{aligned}$$

$$\left(\begin{array}{ccc|c} 1 & 3 & -1 & 0 \\ 0 & 1 & -8 & 0 \\ 0 & 0 & 4 & 0 \end{array}\right)$$

$\frac{1}{4}R_3 \to R_3$

$-3R_2 + R_1 \to R_1$

$$\left(\begin{array}{ccc|c} 1 & 0 & 23 & 0 \\ 0 & 1 & -8 & 0 \\ 0 & 0 & 1 & 0 \end{array}\right)$$

$8R_3 + R_2 \to R_2$

$$\left(\begin{array}{ccc|c} 1 & 0 & 23 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{array}\right)$$

$-23R_3 + R_1 \to R_1$

$$\left(\begin{array}{ccc|c} 1 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 0 \end{array}\right)$$

$$\begin{aligned} x_1 &= 0 \\ x_2 &= 0 \\ x_3 &= 0 \end{aligned}$$

2 *marks*

***Question* 3** (**1 mark : 0.5 Decision , 0.5 verfication**)

Determine if the following statement are true or false (verify):

a) If a system have more equations than variabls then it has infintely many solutions .

False , **0.5 *mark*** *For Example the system :* $2x - y = 0$, $3x - y = 1$, $x + y = 3$ *has a unique solution of* $x = 1$ *and* $= 2$ **0.5 *mark***

Or (Alternatively)

If a system have more variables than equations then it has infintely many solutions.