

**Quiz 2 (Group) for Statistics 213**  
**Probability and Decision Theory - Spring 1999**  
**Material Covered: Sections 2.4,2.5,2.6 and 2.7 of text and notes**  
**For: 12th February**

This is a 15 minute quiz, worth 6% and marked out of 6 points. The total possible points awarded for each question is given in square brackets at the beginning of each question. Anything that can fit on one side of an  $8\frac{1}{2}$  by 11 inch piece of paper may be used as a reference during this quiz. A calculator and appropriate statistical tables may also be used. No other aids are permitted.

Name 1 (please print): \_\_\_\_\_  
last first

Name 2 (please print): \_\_\_\_\_  
last first

Name 3 (please print): \_\_\_\_\_  
last first

Name 4 (please print): \_\_\_\_\_  
last first

1. Consider the following system of equations.

$$\begin{array}{rclcl} -x & + & 3y & - & 2z & = & 1 \\ 2x & - & 5y & + & 2z & = & 0 \\ 2x & - & y & - & 6z & = & 8 \end{array}$$

(a) [1] If this system of equations was written in matrix form,  $AX = B$ ,

$A =$  \_\_\_\_\_

(b) [1] This system of equations does not a solution because matrix  $A$  is (circle one) **nonsingular** / **singular** / **homogeneous** / **nonhomogeneous** / **transposable**.

(c) [2] Determine

$(AB - B) \times B^T =$  \_\_\_\_\_

(d) [2] Carry out the following Gauss–Jordan operations,  $R_2 + 2R_1$ ,  $R_3 - 3R_1$ , on the following augmented matrix

$$\left[ \begin{array}{ccc|c} -1 & 3 & -2 & 1 \\ 2 & -5 & 2 & 0 \\ 2 & -1 & 6 & 8 \end{array} \right] \xrightarrow{R_2+2R_1, R_3-3R_1}$$

(a) [1] If this system of equations was written in matrix form,  $AX = B$ ,  $A =$

$$\begin{bmatrix} -1 & 3 & -2 \\ 2 & -5 & 2 \\ 2 & -1 & 6 \end{bmatrix}$$

(b) [1] This system of equations does not a solution because matrix  $A$  is **singular**.

(c) [2] Determine  $(AB - B) \times B^T =$

$$\begin{bmatrix} -18 & 0 & -144 \\ 18 & 0 & 144 \\ -54 & 0 & -432 \end{bmatrix}$$

(d) [2] Carry out the following Gauss–Jordan operations,  $R_2 + 2R_1$ ,  $R_3 - 3R_1$ , on the following augmented matrix

$$\left[ \begin{array}{ccc|c} -1 & 3 & -2 & 1 \\ 2 & -5 & 2 & 0 \\ 2 & -1 & 6 & 8 \end{array} \right] \xrightarrow{R_2+2R_1, R_3-3R_1} \left[ \begin{array}{ccc|c} -1 & 3 & -2 & 1 \\ 0 & 1 & -2 & 2 \\ 5 & -10 & 0 & 5 \end{array} \right]$$