**Mathematical Methods Set Theory Tutorial Sheet 7**

Q1. Given the universal set U = {1,2,3,4,5,6,7,8,9,10,11,12,13}

A = {1,3,5,6,10}

B = {4,6,8,10,12}

evaluate;

(i) A B, (ii) A B, (iii) A – B, (iv) B – A, (v) A, (vi) B, (vii) (A B)', (viii) (A B)', (ix) |A| and (x) | A B|

Q2. Represent the sets U = {1,2,3,4,5,6,7,8,9,10,11,12,13}, A = {1,3,5,6,10} and

B = {4,6,8,10,12} on a Venn diagram

Q3. Evaluate A x B, the Cartesian product of sets A and B, for each part below;

(a) A = {1,3,7,9} B = {x,y,z}

(b) A = {2,6} B= {1,2,3,4}

Q4. On separate Venn diagrams shade the area to represent the following:

(a) A (B C) (b) A – ( B C) (c) (A B) – C

Q5. Out of 40 students, 14 study English and 29 study Chemistry. If five students study neither,

(i) How many students study both English and Chemistry?

(ii) How many study Chemistry only?

Q6. In a survey of 100 families, the number that read the previous day’s issues of various newspapers was found to be:

The Irish Times 28

The Irish Independent 30

The Irish Examiner 42

The Irish Times and The Irish Independent 8

The Irish Times and The Irish Examiner 10

The Irish Independent and The Irish Examiner 5

All three 3

Draw a Venn diagram and answer the following questions:

(a) How many read none of the three papers?

(b) How many read The Irish Examiner as their only newspaper?

(c) How many read The Irish Examiner and The Irish Independent but not

The Irish Times?