**Mathematical Methods Set Theory Tutorial Sheet 8**

**Q1.** A, B and C are subsets of a universe U where

U = {1,2,3,4,5,6,7,8} A = {1,2,3,4} B = {3,4,5} C = {6,7,8}

Are the following statements correct or incorrect?

1. B A (b) (B A) C

(c) B (A C) (d) C (A B)'

**Q2.** From a group of 191 students surveyed we obtain the following:

36 study French and business

20 study French and music

18 study business and music

65 study French

76 study business

63 study music

51 study none of the three

Using the formula |A = |A| + |B| + |C| - |A B| - |A C| - |B C| + |A B C| calculate how many are studying all three subjects. Draw the Venn diagram and answer the following:

(a) How many study one subject only?

(b) How many study French and music but not business?

(c) How many study business but not music?

**Q3.** From a group of 80 computer science students

42 studied networking

38 studied programming

41 studied design

25 studied networking and programming

20 studied programming and design

20 studied networking and design

9 studied none of the three modules

Draw a Venn diagram and use the Venn diagram to answer the following

(i) how many studied all three

(ii) how many studied programming but not design

(iii) how many studied exactly one of the modules