**Summer 2023 Set Theory Question**

**Q3. (a)** Given U = {1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16}

A = {1, 2, 3, 6, 8, 10, 12}

B = {3, 6, 9, 12, 15}

C = {10, 11, 12, 13, 14, 15, 16}

Evaluate **(i)** A B **(3 marks)**

**(ii)** |B - C| **(3 marks)**

**(iii)** C **(3 marks)**

**(iv)** U – (A C) **(4 marks)**

**(b)**

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 **(8 marks)**

and use the Venn diagram to answer the following

**(i)** how many studied all three **(3 marks)**

**(ii)** how many studied programming but not design **(3 marks)**

**(iii)** how many studied exactly one of the modules **(3 marks)**

**(Total 30 Marks)**