Combinatorics HW 5-2

Student ID: Name: Score:

1. Integer composition: Integer 5 is partitioned into orderly partitions which are made up by numbers 1,2,3,4. Such as (1+1+3, or 1+3+1 or 2+3, 4+1,....) How many different ways are there?

2. Integer partition: How many ways to partition n into several numbers that the order between numbers is ignored. Please write the corresponding generating function.

3. Provide proof that the partition number of the summation of the partitioning of integer *n* into odd numbers, is equaled to the partition number of *n* being partitioned into the self-conjugated Ferrers Diagram. (1st row exchanged with 1st column, 2nd row exchanged with 2nd column, …, as image is rotated by following the dotted line as axis; is still Ferrers diagram. 2 Ferrers diagrams are known as a pair of conjugated Ferrers diagram. If both the conjugated Ferrers Diagram and it original diagram are the same, the diagram is called self-conjugated.)