Sequential counting of procedure for 1(a):

1.There are 10 identical books in shelf 5.

(There are 20 identical books left to be arranged.)

2.Each shelf except shelf 5 has 1 book.

(There are 16 identical books left to be arranged.)

3. For 16 identical books and left 4 shelfs, the number of 4-combinations with unlimited repetition of a set of 16 books is $C_{4\text{-}1}^{4+16-1} = \frac{(4+16-1)!}{k!(4-1)!}$.

($C(19,3)$ choices)

The number of arranging ways is $C(19,3)$=969.

Sequential counting of procedure for 1(b):

1.There are 15 identical books have been arranged.

(There are 15 identical books left to be arranged.)

2.For 15 identical books and 5 shelfs, the number of 5-combinations with unlimited repetition of a set of 15 books is $C_{5\text{-}1}^{5+15-1} = \frac{(5+15-1)!}{k!(5-1)!}$.

($C(19,4)$ choices)

The number of arranging ways is $C(19,4)$=3876.

Sequential counting of procedure for 2:

1.Considering the worst situation, the candies grabbed by children on average belongs to three types and all types have only 6.

(3*6 candies)

2.Just grab 1 more candy of any types of candies to meet the requirement.

(1 candies)

The least number of candies that the kid must grab to ensure that he will get at least 7 candies of the same type is 3*6+1=19.

Sequential counting of procedure for 3:

1. $(2a + b + 5)^{12} = (2a + b + 5) \ldots (2a + b + 5)$

(12 factors)

2.We obtain ab each time we multiply together a chosen from 2 of the 12 factors, b chosen from 8 of the 10 factors, and 5 chosen from 2 of the 2 factors. This can be done in $2^2 * \binom{12}{2} * \binom{10}{8} 5^2 * \binom{2}{2}$=297000.

The coefficient of term a^2b^8 when the expression $(2a + b + 5)^{12}$ is expanded is 297000.