Each problem is 10 points

Problem 1. Take a random arrangement of the word BANANA. What is the probability that B is followed by an A?

Problem 2. In how many ways can we divide 15 people into 3 basketball teams (each team has 5 players)?

Problem 3. How many arrangements of five 0’s, five 1’s and five 2’s are there with no pair of consecutive 0’s.

Problem 4. How many ways are there to distribute 20 different books among 4 students? (5p) How many ways can we distribute the books if 2 students get 4 books and the other two get 6 books? (5p) (Remark: It is prescribed which two students get 4 books.)

Problem 5. How many non negative integer solutions are there to the pair of equations: $x_1 + x_2 + \cdots + x_7 = 24$ and $x_1 + x_2 + x_3 = 10$?