Math 3200

Unit 9 Test

Part A: Multiple Choice. Circle the correct answer.(20%)

1. The expression $\frac{n!}{\left(n-2\right)!}$ is equivalent to:

a. 

b. 

c. 

d. 

2. A grade 12 student is writing five public exams in June (math, physics, chemistry, biology, and earth systems). How many possibilities are there for the order in which she must write the exam?

a. 24

b. 120

c. 240

d. 720

3. . A family is being arranged in a line for a group photograph. If the family consists of a mother, a father, a baby, and five children, the number of arrangements that begin and end with a parent is

a. 720

b. 1440

c. 5040

d. 40 320

4. There are ten people available for appointment to a committee consisting of six people. The number of committees that can be formed, if Kirsten and James must be on the committee, is

a. 

b. 

c. 

d. 

5. The number of teams consisting of 4 men and 5 women that can be formed from 10 men and 13 women is

a. 

b. 

c. 

d. 

6. The following items can be arranged in any order, avocado, pumpkin, eggplant, squash, and watermelon. The manager does not want the pumpkins and watermelons together. If this is the only restriction, the number of possible arrangements is

a. 5

b. 45

c. 72

d. 120

 *Use the following information to answer the next question*



7. In which step did the student make his first error?

a. Step 1

b. Step 2

c. Step 3

d. Step 4

8.  is equivalent to

a. 

b. 

c. 

d. 

9. How many ways can the letters of MISSISSIPPI be rearranged?

 a. 39916800

 b. 34650

 c. 11

 d. 4

10. Determine the 3rd term in the expansion of $(2x-4)^{5}$.

 a. 20480$x^{5}$

 b. -40960$x^{2}$

 c. -2560$x^{2}$

 d. 1280$x^{3}$

Part B: Constructed Response. Answer all questions. Show all workings for full marks.

1. a) How many ways can 3 chairs be arranged from a group of 7 chairs if the chairs are all different colours?

 b) How many ways can 7 chairs be arranged in a row if 2 of the chairs are blue, 3 are yellow, 1 is red and 1 is green?

2. Alice, Beatrice, Cory and Don are to be arranged in a line from left to right.

 a) How many ways can they be arranged?

 b) How many ways can they be arranged if Alice and Don have to sit together?

 c) How many ways can they be arranged if Alice and Don cannot sit together?

 d) How many ways can they be arranged if Alice must be at one end of the line?

3. A set of flash cards consists of 13 red, 13 blue, 13 black and 13 yellow cards. The cards of each color are numbered from 1 to 13.

 a) How many groups of 5 cards can be selected from the entire set?

 b) How many groups of 5 cards can be selected from the red cards?

 c) How many groups of 20 cards can be selected from the entire set if there must be five of each color?

4. A student council of 5 members is to be formed from a selection pool of 6 boys and 8 girls.

 a) How many councils can have 2 boys and 3 girls?

 b) How many councils can have **at least** 3 boys?

5. Solve for n: n+4 P 3 = 120

6. Solve for n: n + 1 C n – 1 = 6

7. Expand using the binomial theorem $(\frac{x}{2}+4)^{6}$