Math 3200

Unit 9 Test

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

1. The equation  has the solution:

a.  b.  c.  d. 

2. Twelve people at a party shake hands once with everyone else in the room. How many handshakes took place?

a. 66 b. 132 c. 12! ÷ 2 d. 12!

3. There are 5 different candies in a bowl. In how many ways can you choose one or more of the candies?

a. 16 b. 25 c. 31 d. 32

4. There are nine people participating in a raffle. Three $50 gift cards from the same store are given out as prizes. How many ways can the gift cards be awarded.

a. 84 b. 504 c. 720 d. 60 480

5. A crate of toy cars contains 10 working cars and 4 defective ones. How many ways can 5 cars be selected if only 3 work?

a. 6 b. 56 c. 720 d. 3003

6. Eight cars (3 red, 3 blue, and 2 yellow) are to be parked in a line. How many unique lines can be formed if you assume that cars of the same colour are identical?

a. 560 b. 1 120 c. 20 160 d. 40 320

7. There are 12 teams in a soccer league. If each team must play every other team *twice* how many games will be played in total?

a.  b.  c.  d. 

8. How many terms are in the expanded form of $(x+5y)^{6}$

 a. 6 b. 7 c. 8 d . 9

9. 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$x^{3}$

10. The number of distinguishable arrangements that can be made form the word **KITCHEN**, if the vowels must stay together, is

a.  b.  c.  d. 

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

*Use the following information to answer the next question.*

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1. a) If the games are arranged on a shelf with the **Action** games on the left, the **RPG** games next, then the **Sports** games and finally the **Classic** games on the right, how many ways can these games be arranged?

 b) How many different ways can a customer buy a bundle of games containing two of each type of games?

2. 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?

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

4. Solve for n: n + 1 C n – 1 = 6

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

Formulas

nPr = $\frac{n!}{\left(n-r\right)!}$

nCr = $\left(\begin{matrix}n\\r\end{matrix}\right)$ = $\frac{n!}{\left(n-r\right)!r!}$

Binomial Theorem:

