CSE 173: Discrete Mathematics
Quiz 4: 10 Marks (SyR)

Name: _____ ID: _____

1. If you had eight pieces from a scrabble game where each piece has a different letter of the alphabet marked on it, what is the most number of different (not necessarily meaningful) strings you could make using five of those eight pieces? [2.5]

2. There are eight teams competing in a sports league. Each team must play each other once, so there must be one game involving each and every combination of two teams. How many games will be played as part of the league? [2.5]

3. Expand the term $(a+2b)^6$ using the binomial method. [5]

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    p(8,5) = 8!/(8-5)! = 8x7x6x5x4 = 6720 strings

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    n(8,2) = 8!/[2!x(8-2!)] = (8x7)/(1x2) = 28 games

3. Expand the term $(a+2b)^6$ using the binomial method. [5]

    $= n(6,0)a^6(2b)^0 + n(6,1)a^5(2b)^1 + n(6,2)a^4(2b)^2 + n(6,3)a^3(2b)^3 + n(6,4)a^2(2b)^4$
    $+ n(6,5)a^1(2b)^5 + n(6,6)a^0(2b)^6$
    $= a^6 + 6a^5 2b + 15a^4 4b^2 + 20a^3 8b^3 + 15a^2 16b^4 + 6a^1 32b^5 + 64b^6$
    $= a^6 + 12a^5 b + 60a^4 b^2 + 160a^3 b^3 + 240a^2 b^4 + 192a^1 b^5 + 64b^6$