Sri Lanka Institute of Information Technology
B. Sc Degree in IT/IS/CSN, Diploma in Information Technology
Year 01 – Semester I – 2017
Mathematics for Computing (IT1030)
Tutorial 07

1. Compute the each of the following.

a. $\binom{5}{0}$ b. $\binom{5}{1}$ c. $\binom{5}{2}$ d. $\binom{5}{3}$ e. $\binom{5}{4}$ f. $\binom{5}{5}$

2. A coin is tossed ten times. In each case the outcome *H* or *T* is recorded.

a. What is the total number of possible outcomes of the coin-tossing experiment?

b. In how many of the possible outcomes are exactly five heads obtained?

c. In how many of the possible outcomes are at least nine heads obtained?

d. In how many of the possible outcomes is at least one head obtained?

e. In how many of the possible outcomes is at most one head obtained?

3. There are 32 microcomputers in a computer center. Each microcomputer has 24 ports. How many different ports to a microcomputer in the center are there?

4. How many different bit strings are there of length seven?

5. A student can choose a computer project from one of three lists. The 3 lists contain 23, 15, and 19 possible projects respectively. How many possible projects are there to choose from?

3.5 Further exercises

1. Simplify

(a). $\frac{n!}{(n-1)!}$ (b). $\frac{(n+2)!}{n!}$

2. Prove the theorem $\binom{n+1}{r} = \binom{n}{r-1} + \binom{n}{r}$

3. A farmer buys 3 cows, 2 pigs and 4 hens from a man who has 6 cows, 5 pigs and 8 hens. Find the number of choices of the farmer.

4. There are 18 Mathematics majors and 325 Computer majors at college.

(a). How many ways are there to pick two representatives, so that one is a Mathematics major and the other is a Computer Science major?

(b). How many ways are there to pick one representative who is either a Mathematics major or a Computer Science major?

5. Let *n* be a positive integer. Show that in any set of n consecutive integers there is exactly one divisible by *n.*

6. List all the permutations of {a,b,c}.

7. There are six different candidates for governor of a state. In how many different orders can the names of the candidates be printed on a ballot?