

Home Work (Ungraded)

COSC-2107-Stochastic Processes

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Important Instructions

- This problem set is ungraded.
- Try to solve each of the problems. It is OK if you cannot solve some of the problems but giving them a try is worth it.
- No submission of the solution is required. Just try to understand them and solve them.

Question 1

Four students out of a total of 10 students need to be selected for the positions of President, Vice President, General Secretary and Finance Secretary. Two persons X and Y are already selected for the positions of President and Vice President (Either X president and Y Vice President OR Y president and X Vice President). In how many ways can this committee of four officers be formed?

Question 2

A fair coin is tossed. Answer the following questions.

- a) What is the sample space of this experiment?
- b) Find the probability of obtaining a head.

Question 3

Three fair coins are tossed. Write down the sample space of this experiment. And write down the event (in the set form) and calculate the probability for each of the following:

- a) Event of obtaining exactly two heads?
- b) Event of obtaining at least two tails.
- c) Event of obtaining at most one tail.
- d) Event of obtaining no head.
- e) Event of obtaining at least one head.

Question 4

Three six-sided fair dices are thrown. Find the following:

- a) Number of elements in the sample space.
- b) Probability that first dice shows 3, second dice shows 4 and third dice shows 6.
- c) Probability of obtain a 3, 4 and 6. (Try to find the difference between this event and the previous event)
- d) Probability that the sum of the faces of the three dice is divisible by 4.
- e) Probability that no dice shows 6.
- f) Probability that there is at least one dice showing 6.

Question 5

A card is drawn from a deck of 52 cards. Find probabilities for the following events.

- a) The card is a diamond card.
- b) The card is a King.
- c) The card is black color queen.

Question 6

A bag contains 8 red balls and 7 green balls. Three balls are drawn at random from the bag. Find probabilities of the following events:

- a) All the three balls are red balls.
- b) All the three balls are green balls.
- c) One green ball and two red balls.
- d) Two green balls and one red balls.
- e) The three balls contain at least one green ball.