Quiz 2 Results for Ali Asad

Question 1	1.5 / 1.5 pts

Consider an experiment consisting of 3 tosses of a fair coin. Consider the following events:

A = {1st toss results in Head}

B = {2nd toss results in Head}

C = {3rd toss results in Head}

Is the following statement true or false:

B and C are conditionally independent events with respect to A.

Correct!

- ⦿ True

- ○ False

Question 2	0 / 1.5 pts

Consider an experiment consisting of 3 tosses of a fair coin. Consider the following events:

A = {1st toss results in Head}

B = {2nd toss results in Head}

What is the conditional probability, $P(B/A)$?

ɔrrect Answer

- ○ 0.5

○ 0

○ 1

◉ 0.25

Question 3

Consider events A and B. Assume that

$P(A) > 0$

$P(B) > 0$

$P(A^C) > 0$

$P(B^C) > 0$

Which of the following statements are true?

1) A and A^C are independent events.

2) If A^C and B are independent events, then A and B are also independent events.

3) If A and B are independent events, then A and B^C are also independent events.
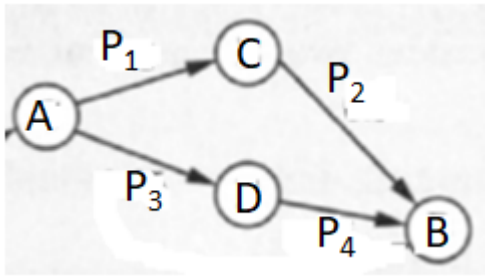
○ Only 2

○ 1 and 3

◉ 2 and 3

○ 1, 2 and 3

Question 4

For the network shown above, assume that link failures are independent of each other. Each link has been labeled with the probability of that link being up. What is the probability that there is **no** path connecting A and B in which all links are up.

Choose the correct answer from the following options.

1) $1 - (1 - P_1 P_2)(1 - P_3 P_4)$

2) $(1 - P_1 P_2)(1 - P_3 P_4)$

3) $1 - (1 - P_3 P_2)(1 - P_1 P_4)$

4) $P_1 P_2 + P_3 P_4$

○ 2

○ 4

◉ 1

○ 3

Question 5   2 / 2 pts

The incidence rate of a certain disease is 25/100000. There is a test for the disease which is 99% accurate(i.e. If a person has the disease, the test comes back positive with probability 0.99. If a person does not have the disease, it comes back negative with probability 0.99).

Let's assume the following naming convention for various events:

A = {person has the disease}

A^c = {person does not have the disease}

B = {person tests positive}

B^c = {person tests negative}

Given that a person tested negative, what is the probability they do not have the disease?

Choose the correct answer from the following 4 options:

1. $P\left(B^c \mid A\right) = \dfrac{P(B^c)P(A|B^c)}{P(A)}$

2. $P\left(A^c \mid B^c\right) = \dfrac{P(B^c)P(B^c|A)}{P(A^c)}$

3. $P\left(A^c \mid B^c\right) = \dfrac{P(A^c)P(B^c|A^c)}{P(A)P(B^c|A)+P(A^c)P(B^c|A^c)}$

4. $P\left(A^c \mid B^c\right) = \dfrac{P(A^c)P(B^c|A^c)}{P(A)P(B|A)+P(A^c)P(B|A^c)}$

○ 2

Correct!   ◉ 3

○ 1

○ 4

Question 6

1.5 / 1.5 pts

Shaheen Afridi is the star fast bowler for Lahore Qalandars. His knee is bothering him and there is only a 40% chance that he plays in the next PSL game. If he plays, the probability that Lahore Qalandars win is 0.75. If he does not play, the probability that Lahore Qalandars win is 0.35 only.

Let's assume the following naming convention for various events:

A$_1$ = {Shaheen Afridi plays the next game}

A$_2$ = {Shaheen Afridi does not play the next game}

B = {Lahore Qalandars win the game}

B^c = {Lahore Qalandars lose the game}

What is the probability that Lahore Qalandars will lose the next PSL game?

Choose the correct answer from the following 4 options:

1. $P(B^c) = \frac{(0.75+0.35)}{2}$

2. $P(B^c) = P(A_2 \cap B) + P(A_1 \cap B^c)$

3. $P(B^c) = P(A_1) P(B^c \mid A_1) + P(A_2) P(B^c \mid A_2)$

4. $P(B^c) = P(A_2) P(B^c \mid A_2) + P(A_2) P(B \mid A_2)$

○ 4

○ 1

◉ 3

○ 2

Correct!

Quiz Score: **6.5** out of 10