Assignment 3

The due date for submitting this assignment has passed. Due on 2018-03-02, 23:59 IST.

Submitted assignment

1) If $A$ and $B$ are two independent events, $P(A) = 0.5$ and $P(AB) = 0.3$, then $P(A^cB^c) = ?$  

- 0.6
- 0.8
- 0.2
- 0.3

No, the answer is incorrect.

Score: 0

Accepted Answers:

- 0.2

2) Let $A$, $B$, and $C$ be three independent events. If $P(ABC) = 0.09$, $P(A) = 0.3$, $P(A^cC^c) = 0.12$, then $P(B)$, $P(C)$, are respectively

- 0.5, 0.3
- 0.4, 0.5
- 0.5, 0.4
- 0.5, 0.6

No, the answer is incorrect.

Score: 0

Accepted Answers:

- 0.5, 0.6

3) A coin with probability $p$ of coming heads is tossed repeatedly. The head-count and tail-count are set to zero before tossing. The probability that three heads show up before three tails is

- $p^3(1 - p)^3$
- $p^3(10 - 15p + 6p^2)$
- $p^3(1 - p)^2$
- $2p^3(3p - 5)(p - 1)$

No, the answer is incorrect.

Score: 0

Accepted Answers:

- $p^3(10 - 15p + 6p^2)$
4) Consider an experiment that consists of drawing a card from the pack of 52 cards and throwing a fair six-sided die simultaneously. Then the probability that we see a 4 on the card but not on the die is _______________. Write your answer correct to 3 decimal places.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 0.062, 0.066

5) Let A, B, C be three events such that A, B are conditionally independent given C. If \( P(ABC) = 0.06, P(A|C) = 0.5 \), then \( P(BC) \) is

- 0.15
- 0.03
- 0.12
- 0.04

No, the answer is incorrect.
Score: 0
Accepted Answers: 0.12

6) Let A, B, and C be three towns in a district. Say there are two roads between A, B and two roads between B, C. Each of these roads is blocked by snow with a probability \( p \), independently of others. Given that A and C are disconnected, what is the probability that A and B are connected?

- \( \frac{1-p^2}{2-p^2} \)
- \( \frac{1}{2-p^2} \)
- \( 1-p^2 \)
- \( 1-2p^2 \)
- \( 1-2p^2 \)
- \( 1-p^2 \)

No, the answer is incorrect.
Score: 0
Accepted Answers:
\( \frac{1-p^2}{2-p^2} \)

7) Say an experiment \( E \) has a success probability of 0.3. If the experiment is repeated independently 10 times, the probability that it succeeds at least 3 times is _______________. Write your answer correct to 3 decimal places.

No, the answer is incorrect.
Score: 0
Accepted Answers:
(Type: Range) 0.615, 0.619

8) An archer hits a target with a success probability \( p \). Given that the archer has missed the target in all of the past \( m \) trials, what is the probability that the archer gets the first success only in the fourth trial from now? Assume independence between trials.
(1 \cdot p)^{-3}p
(1 \cdot p)^{m}p
(1 \cdot p)^{m+3}p
(1 \cdot p)^{-3}p
(1 \cdot p)^{3}p

No, the answer is incorrect.
Score: 0
Accepted Answers:
(1 \cdot p)^{3}p

9) Let \( A \) and \( B \) be two independent events defined on some experiment \( E \) with probabilities \( p_{A}, p_{B} \), respectively. Say the experiment \( E \) is repeated independently until either \( A \) or \( B \) occurs. What is the probability that \( A \) occurs before \( B \), i.e. these repeated trials end with the occurrence of \( A \)?

\[
\frac{p_{A}}{(1 - p_{A})(1 - p_{B})}.
\]
\[
\frac{p_{A}}{1 - (1 - p_{A})(1 - p_{B})}.
\]
\[
\frac{p_{B}}{(1 - p_{A})(1 - p_{B})}.
\]
\[
\frac{p_{B}}{1 - (1 - p_{A})(1 - p_{B})}.
\]

No, the answer is incorrect.
Score: 0
Accepted Answers:
\[
\frac{p_{A}}{(1 - p_{A})(1 - p_{B})}.
\]

10) There are five persons in a room. The probability that at least two of them were born on the same day of the week (example: Friday) is ________________. Write your answer correct to 3 decimal places.

No, the answer is incorrect.
Score: 0
Accepted Answers:
\( Type: \ Range \) \( 0.848, 0.852 \)