MAT2371

Oct 14, 1999

Time: 75 minutes

Calculators are permitted. Test is open book.

Question type=A

Identify the correct answers on your answer sheet in page 4. Choose the closest answer. Fill in the space that corresponds to the letter of the answer you have chosen. All questions have 5 marks. There is no penalty for wrong answers. Only page 4 will be graded!

Total Marks=40.

Make sure you have all 8 questions.

Name: Student Number:

1. Let A, B and C be three independent events with $P(A) = 0.5$, $P(B) = 0.2$ and $P(C) = 0.3$. Find the probability that at least one of the A, B and C occurs.

(a) 0.03 (b) 1 (c) 0 (d) 0.72 (e) None of the previous answers is correct.

2. An urn contains 60 balls. Ten of the balls are red. Five balls to be drawn successively at random and without replacement. What is the probability that the fifth ball is red ?

(a) $\frac{\binom{50}{4}\binom{10}{1}}{\binom{60}{5}}$ (b) $\frac{10}{60}$ (c)$(\frac{10}{60})(\frac{50}{60})$ (d) $\frac{1}{10}$ (e) None of the previous answers is correct.

3. What is the probability of having 5 hearts in a poker hand (5 cards) ?

(a) $\frac{\binom{13}{5}}{\binom{52}{5}}$ (b) $\frac{(13)(12)(11)(10)(9)}{\binom{52}{5}}$ (c)$\frac{(13)(12)(11)(10)(9)}{(52)(51)(50)(49)(48)}$ (d) $\frac{13}{52}$ (e) Both (a) and (c) are correct.

4. A student picks at random a restaurant randomly from the two restaurants A and B. The chance to eat well in the restaurants A and B are 30% and 60% respectively. If a student eats well in one of these restaurants what is the probability that he picked the restaurant A ?

(a) 0.3 (b) 0.15 (c) 0.6 (d)1/3 (e) 0.5.

5. If A and B are two disjoint events where $P(A) = 0.6$ and $P(B) = 0.15$ calculate $P(A' \cap B')$.

(a) (0.4)(0.8) (b) 0.25 (c) 1-(0.4)(0.85) (d) 0.75 (e) None of the previous answers is correct.

6. In this test there are 8 multiple choice questions. What is the probability that you answer these questions at random and pass the test

(a) 1/5 (b) 0.9437 (c) $\binom{8}{4}(0.2)^4(0.8)^4$ (d) 1/8 (e) 0.0563

7. There are 75 instructors in a faculty in which 15 are professors, 35 are associate professors and 25 are assistant professors. We form a committee of 6 faculty members who are being picked at random. What is the probability that this committee includes 2 professors, 3 associate professors and 1 assistant professor ?

(a) $(1/5)^2(7/15)^3(1/3)$ (b) $\dfrac{\binom{15}{2}\binom{35}{3}\binom{25}{1}}{(75)(74)(73)(72)(71)(70)}$ (c) $\dfrac{(15)(14)(35)(34)(33)(15)}{\binom{75}{6}}$

(d) $\dfrac{\binom{15}{2}\binom{35}{3}\binom{25}{1}}{\binom{75}{6}}$ (e) None of the previous answers are correct.

8. An urn contains 3 red balls, two white balls and one green ball. Two balls are drawn at random and without replacement. What is the probability density function for the random variable X, the number of the red balls ?

(a) $f(x) = 1/5$ if $x = 0$; $3/5$ if $x = 1$; $1/5$ if $x = 2$

(b) $f(x) = 6/15$ if $x = 0$; $8/15$ if $x = 1$; $1/15$ if $x = 2$

(c) $f(x) = 1/4$ if $x = 0$; $1/2$ if $x = 1$; $1/4$ if $x = 2$

(d) $f(x) = 2/3$ if $x = 0$; $1/3$ if $x = 1$; 0 if $x = 2$

(e) None of the above answers are correct

questionnaire type A

Family Name:

First Name:

Student Number:

Question	a	b	c	d	e
1					
2					
3					
4					
5					
6					
7					
8					
Total Mark					