

King Saud University

College of Science - Dept Of Stat & Or
STAT 106 Second Mid term Exam
First Semester 1427-1428

الزمن ساعة ونصف فقط

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الرقم الجامعي للطالب:

رقم الشعبة:

رقم التحضير:

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ضع في المربع المخصص حرف الإجابة الصحيحة:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25					

If X has the binomial distribution with parameters $n=4$, $p=0.7$, then

1. the set of all possible values of X is
(A) 0,1,2,3 (B) 4 (C) 5 (D) 0,1,2,3,4
2. $P(X \geq 1) =$
(A) 0.0081 (B) 0.0837 (C) 0.9919 (D) 0.9163
3. The variance of $X =$
(A) 0.7 (B) 4 (C) 2.8 (D) 0.84

If $f(x) = P(X = x) = kx$; $x = 1,2,3$ is the probability distribution function of X , then

4. the value of $k =$
(A) 1.0 (B) 1/6 (C) 6 (D) 2
5. $P(2 \leq X \leq 4) =$
(A) 1/6 (B) 5/6 (C) 1 (D) 3/6

Suppose that the mean (average) number of patients which leave a given hospital every day is 4 patients, then:

6. The probability that two patients will leave the hospital this day is:
(A) 0.5 (B) 0.564 (C) 0.1465 (D) 0.3
7. The probability that at least one patient will leave the hospital this day is:
(A) 0.9817 (B) 0.0183 (C) 0.0733 (D) 0.9267
8. The probability that 6 patients will leave the hospital in the next two days is:
(A) 0.67 (B) 0.1042 (C) 0.1221 (D) 0.333
9. The mean number of patients which will leave the hospital in the next two days is:
(A) 4 (B) 3 (C) 2 (D) 8
10. The variance number of patients which will leave the hospital in the next two days is
(A) 64 (B) 8 (C) 16 (D) 4

In a large population, the probability is 0.6 that an individual is infected by a certain disease. 5 persons are selected at random from this population. Then, for the 5 persons, find:

11. The probability that at most 1 person is infected by the disease
 (A) 0.98976 (B) 0.08704 (C) 0.0768 (D) 0.91296
12. The mean number of infected individuals is
 (A) 2.5 (B) 5 (C) 0.6 (D) 3
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Let X be the number of car accidents per year in a certain city. Suppose X has the following probability distribution:

X	0	1	2	3
$P(X = x)$	0.5	0.3	0.15	0.05

13. The variable X is
 (A) continuous (B) qualitative (C) discrete (D) Non of them
14. $P(X \leq 1.5) =$
 (A) 0.8 (B) 0.3 (C) 0.5 (D) 0
15. The mean of X
 (A) 1.5 (B) 0.75 (C) 1 (D) 0.25
16. The variance of X
 (A) 0.8874 (B) 1.35 (C) 1.1619 (D) 0.7875
17. The probability that at least two accidents will happen for a car on a given year is:
 (A) 0.2 (B) 0.1 (C) 0.8 (D) 0.3

In a study on the use of emergency services in some Riyadh Hospitals, 1316 patients were classified by their level of education and whether the doctor believed the case to be a true emergency or not:

Education level		Emergency (E1)	Not Emergency (E2)	Total
Low	(L)	28	68	96
Moderate	(M)	161	344	505
High	(H)	51	107	158
Below School age	(B)	152	405	557
	Total	392	924	1316

If we choose one person at random from this group, then

18. The event of moderate level or emergency is described by:

- (A) $M \cup E1$ (B) $M \cap E1$ (C) $(M - E1) \cup (E1 - M)$ (D) Φ

19. The event of not Low level given that it is not emergency:

- (A) $\bar{L} | E2$ (B) $\bar{L} | \bar{E}2$ (C) $E2 | \bar{L}$ (D) $\bar{E}2 | \bar{L}$

20. The probability $P(H \cup E2)$ is:

- (A) 975/1316 (B) 1082/1316 (C) 0.7379 (D) 107/1316

21. The probability $P(\bar{H} \cup E2)$ is:

- (A) 519/1316 (B) 341/1316 (C) 1265/1316 (D) 240/1316

22. The probability $P[(L \cup H) \cap E1]$ is:

- (A) 79/1316 (B) 254/1316 (C) 663/1316 (D) 212/1316

23. The probability $P(B | E1)$ is:

- (A) 152/557 (B) 392/1316 (C) 392/557 (D) 152/392

24. The probability $P(\bar{B} | E1)$ is:

- (A) 405/557 (B) 240/392 (C) 165/557 (D) 924/1316

25. The events $E1$ and B are:

- (A) Independent (B) Not Independent (C) $E1 = \bar{B}$ (D) Disjoint