



جمهورية العراق
وزارة التعليم العالي والبحث العلمي
جامعة البصرة
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سئلة الامتحان النهائي للعام الدراسي 2017-2018 - الدور ()

المادة : الاحتمالات المرحلة : الثانية التاريخ : 1 / 2018 الزمن : 2 ساعات

ملاحظة : الأسئلة صفحتان وتكون الإجابة عن خمسة أسئلة فقط

Q1) a) Prove that :

$$A \cup A^C = S \quad (5 \text{ degree})$$

b) A class contain 2 girls and 7 boys :

i) In how many way can the teacher choose a committee of 4 ? (2 degree)

ii) How many of them will contain exactly one girl ? (3 degree)

Q2) a) Given the digits 1,2,3,4,5 and 6 , find how many 4- digit numbers can be formed from them :

i) If no digit may be repeated ? (3 degree)

ii) If repetitions of a digit are allowed ? (3 degree)

b) Prove that If the two events (A) and (B) are independent then the events (A) and (B^C) are also independent ? (4 degree)

Q3) a) Suppose that the population of a certain city is (40%) male , suppose also that (50%) of the males and (10 %) of the females smoke , find the probability that a smoker is male ? (5 degree)

b) Three coins tossed once , Find the probability that

1 . We have one heads .

2 . We have at most two heads . (5 degree)

Q4) a) Let box contain (4) white , (6) red and (5) blue balls , three balls are drawn at random from the box without repeated what is the probability that :

i) Two of them are white ? (2 degree)

ii) All them are either red or blue ? (3 degree)

b) Two 4 's and Two 7 's are arranged at random to form 4 – digit numbers , we assume that all numbers are equally likely , if the 4 – digits number is odd , what is the probability that the two 4 's are together ? (5 degree)

Q5) Let X be a r.v with Probability density function f(x) given by :

$$f(x) = \begin{cases} \left(\frac{1}{20} e^{-\frac{x}{20}} \right) & , x \geq 0 \\ 0 & , O.W \end{cases}$$

Find :

1) $p_r (x < 12)$? (5 degree)

2) $p_r (18 < x < 24)$? (5 degree)

Q6) Let X be a discrete random Variable with the following distribution

X_i	-2	-1	0	2	3	5
$P(X_i)$	C	$\frac{1}{3} C$	$\frac{1}{2} C$	$\frac{3}{3} C$	$\frac{1}{3} C$	$\frac{4}{4} C$

Find the :

1. The value of C ? (5 degree)

2. The C.D.F and draw its graph ? (5 degree)

مع دعاتي لكم بالانجاح .

رئيس

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