

# نماذج الاختبارات الشهرية

تجميع :

نور الجفري & فاطمة عاشور

HADHRAMOUT UNIVERSITY  
COLLEGE OF COMPUTERS & INFORMATION TECHNOLOGY  
FINAL EXAMINATION



Academic year: 2019/2020  
Day and Date: Sunday, 24/11/2019  
Examiner: Mr. Awad Bin Jobah  
Time Allowed: 1 Hour

Test: second  
Level: Second  
Department: IT  
Subject: Introduction to Statistics & Probability

**Question 1:** Find the value of  $(r)$ :  $2C_{r+1}^{14} = C_r^{14} + C_{r+2}^{14}$  (7Marks)

$$2C_{r+1}^{14} = C_r^{14} + C_{r+2}^{14} \quad \div C_{r+1}^{14}$$

$$2 = \frac{C_r^{14}}{C_{r+1}^{14}} + \frac{C_{r+2}^{14}}{C_{r+1}^{14}} = \frac{14!}{r!(14-r)!} \cdot \frac{r!(14-r)!}{(r+1)!(14-r-1)!} + \frac{14!}{(r+2)!(14-r-2)!} \cdot \frac{(r+1)!(14-r-1)!}{(r+1)!(14-r-1)!}$$

$$2 = \frac{14-r}{r+1} + \frac{14-r-1}{r+2}$$

$$2 = \frac{14-r}{r+1} + \frac{13-r}{r+2}$$

$$2(r+1)(r+2) = (14-r)(r+2) + (13-r)(r+1)$$

$$2(r^2+3r+2) = 14r+28-r^2-2r + 13r+13-r^2-r$$

$$2r^2+6r+4 = 24r-r^2+41$$

$$3r^2-18r-37 = 0$$

$$r = 7$$

**Question 2:** How many ways that (4) boys and (4) girls can sit in a row if the boys and girls alternatively? (6Marks)

num. of ways =  $2 \times 4! \times 4! = 2 \times 24 \times 24 = 1152$  ways

$$2 \times 4 \times 4 = 32$$

$$\frac{14!}{r!(14-r)!}$$

$$14-r-1$$

$$\frac{14-(r+1)+1}{r+1}$$

**Question 3:**

Find the value of  $(n)$ :

$$P_r^n = 60480 \quad \text{if} \quad r! = 720$$

(6Marks)

$$\therefore r! = 1 \times 2 \times 3 \times 4 \times 5 \times 6! = 720 \Rightarrow r = 6$$

$$\therefore P_6^n = 60480$$

$$\therefore 60480 = 9 \times 8 \times 7 \times 6 \times 5 \times 4 \Rightarrow n = 9$$

$${}^nP_6 = 9 \times 8 \times 7 \times 6 \times 5 \times 4 = 60480$$

$$\therefore \text{Value of } n = 9$$

**Question 4:**

How many functions are there from a set with (4) elements to a set with (6) elements? (6Marks)

$$\text{Num. of } f = 6 \times 6 \times 6 \times 6 = 1296$$

End of Questions



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COLLEGE OF COMPUTERS & INFORMATION TECHNOLOGY



Academic year: 2020/2021

Day and Date: Sunday, 13/12/2020

Examiner: Mr. Awad Bin Jobah

Time Allowed: 1:30 Hours

Test : First

Level: Second

Department: IT

Subject: Introduction to Statistics & Probability

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**Question 1: (5+5=10Marks)**

Given the following table:

Class	82 - 86	87 - 91	92 - 96	97 - 101	102 - 106	107 - 111	112 - 116	117 - 121	122 - 126
Frequency	1	2	4	7	9	10	7	6	4
Asc	1	3	7	14	23	33	40	46	50

(a) Draw the frequency polygon

(b) percentile 75

**Question 2: (5Marks)**

Consider the following data set integers 8, 9, 7, 12, and 10 find the variance

**Question 3 (5Marks)**

The table displays the overtime pays of 10 workers in a factory for 2 months (Jan. & Feb.)

Overtime pays for January 85 60 73 40 90 73 56 81 45 92

Overtime pays for February 93 75 65 50 80 75 48 80 56 86 Find the spearman's ranks correlation coefficient between Y and X

$$r = \frac{n \sum X_i Y_i - \sum X_i \sum Y_i}{\sqrt{[n \sum X_i^2 - (\sum X_i)^2][n \sum Y_i^2 - (\sum Y_i)^2]}}$$

$$\sqrt{[n \sum X_i^2 - (\sum X_i)^2][n \sum Y_i^2 - (\sum Y_i)^2]}$$

**Question 4 (5+3+2=10Marks)**

(a) Find the value of each n and r if  $C_{n-r}^n = 20$ ,  $P_r^n = 120$

(b) How many ways can student choose (4) of (6) questions in exam if:

(1) They must choose at least (2) from the first three questions.

(2) The first question is compulsory

$$C_1^1 \cdot C_3^5$$

$$C_2^3 \cdot C_2^3 + C_3^3 \cdot C_1^3$$



Academic year: 2021/2022  
Day and Date: Sunday, 31/1/2022  
Examiner: Mr. Awad Hle Joban  
Time Allowed: 1 Hour

Question 1:

Choose the correct answer: (12 Marks)

- (i) The arithmetic mean of these numbers 3, 7, 8 and 2 is (4, 5, 6, 7)
- (ii) The mode of these numbers 3, 3, 3, 3 and 3 is (3, 4, 5, 6)
- (iii) If  $r > 0$  then the correlation coefficient is (linear, inverse, non-linear, none)
- (iv) The median of these numbers 1, 3, 5, 2 and 4 is (5, 3, 3.5, 4)

Question 2: (8 Marks)

Given the following table:

X 20 20 30 30 40 40 40 40 50 50

Y 5 6 8 6 9 8 7 9 11 10

Find the Spearman's ranks correlation coefficient.

Question 3: (5 Marks)

How many ways that 3 Indians, 4 Pakistanis, and 5 Americans can be selected for a committee of 12 nationality?

Question 4: (5 Marks)

How many 3-digit numbers are there?



Academic year: 2021/2022  
Day and Date: Wednesday, 9/2/2022  
Examiner: Mr. Awad Bin Jobah  
Time Allowed: 1 Hour

Test: First  
Level: Second  
Department: CS  
Subject: Introduction to Statistics & Probability

### Question 1:

Choose the correct answer: (12 Marks)

- (i) The arithmetic mean of these numbers 3, 7, 8 and 2 is (4, 10, 5)  
(ii) The mode of these numbers 3, 3, 3 and 3 is (0, 3, 4)  
(iii) If  $r < 0$  then the correlation coefficient is (linear, invers, direct)  
(iv) The median of these numbers 1, 3, 5, 2 and 4 is (5, 3, 3.5)

$$\frac{1+2+3+4+5}{5+1} = \frac{15}{6} = 2.5$$

$$n = \text{odd} = 5$$

$$1, 2, \underline{3}, 4, 5$$

$$\frac{5+1}{2} = 3$$

12

### Question 2: (8 Marks)

Given the following table:

X 20 20 30 30 40 40 40 40 50 50

Y 5 6 8 6 9 8 7 9 11 10

5	4	1	4	4	1
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$$5 \times 4 \times 1 + 4 \times 4 \times 1 = 20 + 16 = 36$$

Find the Spearman's ranks correlation coefficient.

### Question 3 (5 Marks)

How many 3-digit numbers can be formed from 0, 5, 6, 9, 7 and 8 if repetition is not allowed and the numbers formed are divisible by 5?

$$\frac{5}{5} \quad \frac{5}{4} \quad \frac{5}{3} \quad \frac{5}{2} \quad \frac{5}{1} \quad \frac{5}{0}$$

$$\frac{5}{5} \quad \frac{5}{4} \quad \frac{5}{1} + \frac{5}{4} \quad \frac{5}{3} \quad \frac{5}{2} \quad \frac{5}{1} \Rightarrow 5 \times 4 \times 1 + 4 \times 3 \times 1 = 32$$

### Question 4 (2+3=5 Marks)

Suppose that A, B, C, D, E are people in how many ways can they sit in a row in each of the following cases:

(i) There are no sitting conditions

$$1! \times 1! \times 1! \times 1! \times 1! = 1 \text{ way}$$

$$= 5!$$

(ii) If A and B are sitting adjacent

$$2(4!) = 48 \text{ way}$$

$$(2!) \times 4! = 48 \text{ way}$$

RA → A, B, C, D, E

Question 1:

Choose the correct answer: (12Marks)

- (i) Person's correlation coefficient  $r \in ([-1, 1], [-1, 1], [-1, 1])$
- (ii) The regression equation of  $y$  on  $x$  is  $(y = ax + b, y = ax^2 + b, X = ay + b)$
- (iii) The arithmetic mean of the numbers 2, 8, 2 and 3 is  $(3.57, 3.75, 3)$
- (iv) The median of these numbers 11, 13, 15, 12 and 14 is  $(15, 13, 12.5)$

Question 2: (8Marks)

Given the following table:

X	20	20	30	30	40	40	40	40	50	50
Y	5	6	8	6	9	8	7	9	11	10

Find the Spearman's ranks correlation coefficient.

Question 3 (5 Marks)

How many ways that 3 Indians, 4 Pakistanis, and 5 Americans can sit in a row if they are from the same nationality?

$$\begin{aligned} \text{No. of ways} &= 3! * 4! * 5! * 3! = 3 * 2 * 1 * 4 * 3 * 2 * 1 \\ &= 6 * 24 * 120 * 6 = 103680 \text{ way} \end{aligned}$$

Question 4 (2+3=5Marks)

Suppose that A, B, C, D, E are people in how many ways can they sit in a row in each of the following cases:

(i) If A and B are sitting adjacent

$$\begin{aligned} \text{No. of ways} &= 2! * 4! = \\ &= 2 * 24 = 48 \text{ way} \end{aligned}$$

(ii) If A and B are not sitting adjacent

$$\begin{aligned} \text{No. of ways} &= 5! - 4! * 2! \\ &= 120 - 48 = 72 \text{ way} \end{aligned}$$

# نماذج الامتحانات النهائية

تجميع :

نور الجفري & فاطمة عاشور



COLLEGE OF COMPUTERS & INFORMATION TECHNOLOGY  
FINAL EXAMINATION



Academic year: 2021/2022  
Day and Date: Tuesday, 29/3/2022  
Examiner: Mr. Awad Bin Jobah  
Time Allowed: 2 Hours

Test : First  
Level: Second  
Department: IT+CS  
Subject: Introduction to Statistics & Probability

**Question 1:** (12+10+8=30Marks)

(1) Choose the correct answer :

- (a)  $\text{Var}(2x) = \{4\text{Var}(2x), 2\text{Var}(x), 4\text{Var}(x)\}$
- (b) Mean deviation of these numbers 8, 3, 7 and 2 is  $\{3, 2.5, 3.5\}$
- (c) If  $r = 1$  then the correlation coefficient is  $\{\text{linear}, \text{inverse}, \text{direct}\}$
- (2) Prove that  $P(A \cup B) = P(A) + P(B) - P(AB)$  where  $A$  and  $B$  are events in sample space
- (3) Given that  $P(B^c) = 4X$ ,  $P(A) = X$ ,  $P(A \cup B) = 6X - 0.4$  Find the value of  $X$  if:
- (a)  $A$  and  $B$  mutually exclusive (b)  $A$  is a subset of  $B$

**Question 2:** (12+10+20 = 40Marks)

(1) Put true or false :

(a) Mean of discrete random variable is  $E(x) = \sum_{i=1}^n x_i^2 P(X = x_i)$  ( )

(b) Variance of these numbers 7, 5, 10, 12 and 6 is 8.5 ( )

(c) The solution of the equation  $C_{2n-21}^n = C_3^n$  is  $\{12, 18\}$  ( )

(2) If you have the following frequency distribution table. Find the value of (F) if you know that  $\bar{X} = 3$

Class	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49
Frequency	7	19	F	7	3

(3) Let  $E$  be the random experiment consisting of two dice are thrown. If we may define the random variable  $X$  which denotes the sum of two numbers on the two faces

(a) What is the range of  $X$ ?

(b) Write the distribution function of  $X$ ?

(c) Evaluate:  $E(3X + 2)$  and  $\text{Var}(3X + 2)$



Question 3: (10+10+10=30 Marks)

(1)  $P_r^n = 8P_{r-1}^n$  and  $3C_r^n = 8C_{r-1}^n$  Find the value of  $n$  and  $r$

(2) Two boxes the first box contain (15) balls red and white and the second box contain (5) red balls and (3) white balls, if we select one box and then select from it two balls if the probability to select two red balls from the first box  $\frac{1}{14}$  find the number of white balls.

(3) Two digits are selected at random from the digit 1 to 9 if the sum is odd what is the probability that 2 is one of the numbers are selected?



Academic year: 2020/2021  
Day and Date: Monday, 25 /1/2021  
Examiner: Mr. Awad Bin Jobah  
Time Allowed: 2: Hours

FINAL EXAMINATION

Level: Second  
Department: IT +CS  
Subject: Introduction to Statistics & Probability

Question 1: (9+8+8=25Marks)

(π) Given the following table:

Class	80 - 89	90 - 99	100 - 109	110 - 119	120 - 129	130 - 139
Frequency	4	7	11	18	25	15

(2) median

Find : (1) Standard deviation

(b) Prove that :  $C_{r-1}^n + 2C_r^n + C_{r+1}^n = C_{r+2}^{n+2}$

(c) How many 3-digit numbers can be formed by using a set elements 2, 3, 5, 6, 7, and 9 are divisible by 5 if (1) repeated is allowed (2) repeated is not allowed

Question 2: (8+9+8=25Marks)

(a) Given that :  $P(A \cup B) = \frac{7}{8}$ ,  $P(B) = \frac{1}{2}$  Compute  $P(AB^c)$

(b) We selected randomly three light bulbs from (15) bulb of which (5) are defective find the probability P if (1) non is defective (2) exactly one is defective (3) at least one is defective

(c) The arithmetic mean of the numbers 8, 3, 5, x, and 10 is 7.6 find the value of x

Question 3 (9+8+8=25Marks)

(a) Family has 6 children find the probability that are : (1) 4 boys and 2 girls (2) fewer boys than girls

(b) The mean and standard deviation of a binomial distribution are 6 and 2 respectively write function distribution and then compute  $P(X \geq 2)$

(c) Find the constant C such that the function  $f(x) = \begin{cases} cx^2 & , 0 \leq x \leq 3 \\ 0 & , 0 < x \end{cases}$  is a density function a then find  $P(1 \leq X \leq 2)$

Question 4 (9+8+8=25Marks)

(a) The joint distribution of two random variables X and Y is as follows:

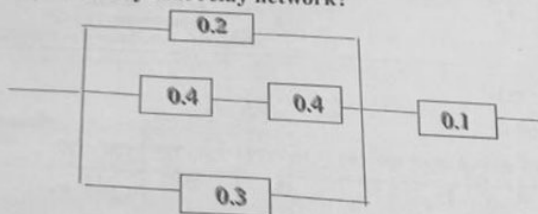
Compute : (1)  $E(X, Y)$

(2)  $COV(X, Y)$

(3)  $P(X, Y)$

Y	-3	2	4	Sum
X				
1	0.1	0.2	0.2	0.5
3	0.3	0.1	0.1	0.5
Sum	0.4	0.3	0.3	1

(b) The relay network shown in the following figure operates if and only if there is a closed path of relay from left to right assume that relays fail independence and that the probability of failure of each relay is as shown. What is the probability that relay network?



(c) Two digits are selected at random from the digit 1 to 9 :

- (1) If the sum is even what is the probability that 2 is one of the numbers are selected ?
- (2) If 2 is one the numbers are selected what is the probability that the sum is odd?



HADHRAMOUT UNIVERSITY  
COLLEGE OF COMPUTERS & INFORMATION TECHNOLOGY  
FINAL EXAMINATION



Academic year: 2019/2020  
Day and Date: Sunday, 29/12/2019  
Examiner: Mr. Awad bin Jobah  
Time Allowed: 2-30 Hours

Exam: Final  
Level: Second  
Department: IT  
Subject: Introduction to Statistics & Probability

**Question 1:** (a) given the following table :

class	25 - 29	30 - 34	35 - 39	40 - 44	45 - 49
Frequency	7	19	14	7	3

Find : (a) arithmetic mean (b) median (c) mode (d) semi-Inter quartile range (e) standard deviation

(b) Proof that :  $C_r^n + C_{r-1}^n = C_{r+1}^n$   $\times$   $\frac{n!}{r!(n-r)!} + \frac{n!}{(r-1)!(n-r+1)!} = \frac{n!}{(r+1)!(n-r-1)!}$

**Question 2:**

(a) The following table shows the respective heights X and Y of a sample of (8) fathers and their oldest sons

	64	62	62	70	67	71	64	68
X	64	62	62	70	67	71	64	68
Y	66	67	65	69	67	70	65	69

Find : (1) Spearman's rank correlation coefficient (2) Regression equation of Y on X

(2) Find the value of  $P_r^n$  if  $\frac{r!}{r!(n-r)!} = 8$  and  $\frac{r!}{r!(n-r)!} = \frac{8}{3}$   $\times$   $\frac{6!}{3!3!} = 20$

**Question 3:**

(a) Let E be the random experiment consisting of three tosses of a coin.  
If we may define the discrete random variable X which denotes absolute value of the difference between the number of heads and the number of tail.

(i) What is the range of X ?  
(ii) Write the distribution function of X ? (iii) Find : (1) E(X) (2) Var(X) (3)  $\sigma_x$

(b) Find the value of (n) if :  $(2n-1)!(n) = 360$   $\times$   $2(12)$

Question 4:

(a) A random variable  $X$  has the probability distribution function  $f(x)$  given by :

$$f(x) = \begin{cases} cx^2, & 0 < x < 3 \\ 0, & \text{otherwise} \end{cases}$$

(i) show that  $f(x)$  is probability density function .

(ii) Evaluate the value of  $P(1 \leq x \leq 2)$  ✓

(b) We are given three boxes as follows box I contains (3) red balls and (5) white balls , box II contains (2) red balls and (1) white ball and box III contains (2) red balls and (3) white balls if a box is selected randomly and then a ball is selected from it

(i) What is the probability that the selected ball is red ? ✓

(ii) If it is red , what is the probability that it is selected from I .