Department of Statistics and Operations Research

College of Science

King Saud University

STAT 145

H. W. 3

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Student Name	
Student Number	
Section	
Attendance_Number	

1	2	3	4	5	6	7	8	9	10

11	12	13	14	15	16	17	18	19	20

Question No. 1

The following table shows 100 people classified by income level and the number of cigarettes smoked daily:

Income level	No. of cigarettes smoked daily			Total
	No Cigarettes (A)	From one to five (B)	More than five (C)	
Low (L)	15	12	3	30
Middle (M)	5	25	20	50
Upper (U)	5	13	2	20
Total	25	50	25	100

The experiment is to select one of these people at random, then:

(1) The probability P(B) equals:

(A) 0.50	(B) 0.25	(C) 0.75	(D) 0.30

(2) The probability $P(A \cap L)$ equals:

(A) 0.25	(B) 0.15	(C) 0.50	(D) 0.60

(3) The probability $P(C \mid U)$ equals:

(A) 0.10	(B) 0.20	(C) 0.30	(D) 0.40

(4) The probability $P(A \cup M)$ equals to:

(A) 0.75	(B) 0.10	(C) 0.20	(D) 0.70

Question No. 2

If A, B are two events defined on the same sample space such that $P(A) = 0.6$, $P(B) = 0.3$ and $P(A \cup B) = 0.7$, then :

(5) The probability $P(A^c)$ equals to:

(A) 0.3	(B) 0.6	(C) 0.7	(D) 0.4

(6) The probability $P(A \cap B)$ equals to:

(A) 0.6	(B) 0.7	(C) 0.2	(D) 0.5

(7) The probability $P(A \cup B)^c$ equals to:

(A) 0.8	(B) 0.3	(C) 0.7	(D) 0.2

(8) The probability $P(A^c \cup B)$ equals to:

(A) 0.1	(B) 0.3	(C) 0.2	(D) 0.9

Question No. 2

Suppose that we have two events A and B such that:
$P(A) = 0.4$, $P(B) = 0.5$, $P(A \cap B) = 0.2$.

(9) The probability $P(A \cup B)$ equals to:

(A) 0.1
(B) 0.9
(C) 0.7
(D) 0.8

(10) The probability $P(A \cap B^C)$ equals to:

(A) 0.5
(B) 0.4
(C) 0.2
(D) 0.1

(11) The probability $P(A^C \cap B)$ equals to:

(A) 0.5
(B) 0.3
(C) 0.2
(D) 0.7

(12) The probability $P(A^C \cap B^C)$ equals to:

(A) 0.1
(B) 0.7
(C) 0.3
(D) 0.6

(13) The probability $P(A^C)$ equals to:

(A) 0.6
(B) 0.4
(C) 0.2
(D) 0.5

(14) The probability $P(A \mid B)$ equals to:

(A) 0.1
(B) 0.4
(C) 0.9
(D) 0.5

(15) The probability $P(B \mid A)$ equals to:

(A) 0.4
(B) 0.1
(C) 0.9
(D) 0.5

(16) The events A and B are:

(A) Exhaustive events
(B) Disjoint (mutually exclusive)
(C) Not independent
(D) Independent

Question No. 3

In a random experiment:

$\Omega = \{1, 2, 3, 4, 5, 6\}$

$F = \{2, 4, 6\}, \quad G = \{1, 3, 5\}$

$K = \{2, 3, 4, 5\}, \quad E = \{4, 5, 6\}$

Then

(17) $P(F^c) =$

(A) 0.5 (B) 0.6 (C) 0 (D) 0.33

(18) $P(F \cap G) =$

A) 0.5 (B) 0.6 (C) 0 (D) 0.33

(19) $P(K \cap E)^c =$ P((K∩E)^C)

(A) 0.67 (B) 0.33 (C) 0.8 (D) 0.9

(20) $P(K^c \cap E) =$

(A) 0.167 (B) 0.67 (C) 0 (D) 1