

**Department of Computer Science**

**Bahria University**

**GSC-122: Probability & Statistics**

**Semester03 (Spring 2024)**

**ASSIGNMENT 02**

Marks: 05

Abdullah

# NAME:

BS (CS) 3A

# CLASS: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

02-131222-099

# REG #: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Marks Obtained:**

**CLO 1, PLO1 & BT level C2 (applicable to all questions of this assignment)**

Q1 (2.15)The sample space S={copper, sodium, nitrogen, potassium, uranium, oxygen, zinc}, and the events

*A =* {copper, sodium, zinc},

*B* = {sodium, nitrogen, potassium},

*C* = {oxygen}.

**Express** the list of elements of the sets corresponding to the following events:

(a) *A'*

(b) *AUC*

(c) *(A n* *B')* U *C*

(d) *B'* n C’

(e) *A* n *B* n *C*

(f) *(A'uB') n (A'nC).*

Q2 (2.22) In a medical study patients are classified in 8 ways according to whether they have blood type *AB+, AB~, A+, A~, B+, B~, 0+,* or *0~,* and also according to whether their blood pressure is low, normal, or high. **Explain and express** the number of ways in which a patient can be classified.

Q3 (2.30) **Explain** that in how many different ways can a true-false test consisting of 9 questions be answered?

Q4 (2.36) **Explain and express** possible number of ways required**:**

(a) How many three-digit numbers can be formed from the digits 0, 1, 2, 3, 4, 5, and 6, if each digit can be used only once?

(b) How many of these are odd numbers?

(c) How many are greater than 330?

Q5 (2.57)If a letter is chosen at random from the English alphabet, **explain and express** the probability that the letter

(a) is a vowel exclusive of *y;*

(b) is listed somewhere ahead of the letter *j \*

(c) is listed somewhere after the letter *g.*

Q6 (2.60) A pair of fair dice is tossed. **Explain** the probability of getting

(a) a total of 8;

(b) at most a total of 5.

Q7 (2.61)Two cards are drawn in succession from a deck without replacement. **Explain** the probability that both cards are greater than 2 and less than 8?

Q8 (2.65)In a high school graduating class of 100 students, 54 studied mathematics, 69 studied history, and 35 studied both mathematics and history. If one of these students is selected at random, **express** the probability that

(a) the student took mathematics or history;

(b) the student did not take either of these subjects;

(c) the student took history but not mathematics.

Q9 (2.70)Factory workers are constantly encouraged to practice zero tolerance when it comes to accidents in factories. Accidents can occur because the working environment or conditions themselves are unsafe. On the other hand, accidents can occur due to carelessness or so-called human error. In addition, the worker's shift 7:00 A.M.-3:00 P.M. (day shift), 3:00 P.M.-11:00 P.M. (evening shift), and 11:00 P.M.-7:00 A.M. (graveyard shift) may be a factor. During the last year, 300 accidents have occurred. The percentages of the accidents for the condition combinations are as follows:

Shift Unsafe Conditions Human Error

Day 5% 32%

Evening 6% 25%

Graveyard 2% 30%

If an accident report is selected randomly from the 300reports, **explain** the probabilities:

(a) that the accident occurred on the graveyard shift?

(b) that the accident occurred due to human error?

(c) that the accident occurred due to unsafe conditions?

(d) that the accident occurred on either the evening or graveyard shift?