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|  | **BAHRIA UNIVERSITY,**  **(Karachi Campus)**  *Department of Software Engineering*  **ASSIGNMENT-2 – Fall 2023** |

COURSE TITLE: **Probability & Statistics**  COURSE CODE: **GSC 122**

Class: **BSE - 3** Shift: **Morning**

Course Instructor: **Dr. Muhammad Hussain** Date: **Oct 06, 2023**

Due Date: **Oct 27, 2023** Marks: **5.0 Marks**

**Application of probability and statistical techniques (Part-1) CLO-2**

Q.1 A manufacturer is studying the effects of cooking temperature, cooking time, and type of cooking oil for making potato chips. Three different temperatures, 4 different cooking times, and 3 different oils are to be used.

(a) What is the total number of combinations to be studied?

(b) How many combinations will be used for each type of oil?

(c) Discuss why permutations are not an issue in this exercise.

Q.2 In the field of quality control, the science of statistics is often used to determine if a process is “out of control.” Suppose the process is, indeed, out of control and 20% of items produced are defective.

(a) If three items arrive off the process line in succession, what is the probability that all three are defective?

(b) If four items arrive in succession, what is the probability that three are defective?

Q.3 Interest centers around the life of an electronic component. Suppose it is known that the probability that the component survives for more than 6000 hours is 0.42. Suppose also that the probability that the component survives no longer than 4000 hours is 0.04.

(a) What is the probability that the life of the component is less than or equal to 6000 hours?

(b) What is the probability that the life is greater than 4000 hours?

Q.4 From a box containing 6 black balls and 4 green balls, 3 balls are drawn in succession, each ball being replaced in the box before the next draw is made. What is the probability that?

(a) all 3 are the same color?

(b) each color is represented?

Q.5 A circuit system is given in Figure. Assume the components fail independently.

(a) What is the probability that the entire system works?

(b) Given that the system works, what is the probability that the component A is not working?

