SIKSHA O ANUSANDHAN (DEEMED TO BE UNIVERSITY)
B Tech CSIT 3rd Semester 2021

Assignment 2

(Q1) Given a standard normal distribution, find the value of k such that
(a) $P(Z > k) = 0.2946$ (b) $P(-0.93 < Z < k) = 0.7235$

(Q2) If a set of observations is normally distributed, what percent of these differ from the mean by more than 1.3σ?

(Q3) A process yields 10% defective items. If 100 items are randomly selected from the process, what is the probability that the number of defectives exceeds 13?

(Q4) The life, in years, of a certain type of electrical switch has an exponential distribution with an average life $\beta = 2$. If 100 of these switches are installed in different systems, what is the probability that at most 30 fail during the first year?

(Q5) A dealer's profit, in units of \$5000, on a new automobile is given by $Y = X^2$, where X is a random variable having the density function

$$f(x) = \begin{cases} 2(1-x) & 0 < x < 1. \\ 0 & \text{elsewhere} \end{cases}$$

(a) Find the probability density function of the random variable Y .