Netaji Subhas University of Technology

East Campus

Course Title : Discrete Structures
Course Code : CIECP01
Assignment Number : 5
Semester : 2nd

Q.1 We have been given two urns; Urn 1 contains 3 Blue and 3 Black balls, Urn 2 contains 2 blue and 15 black balls. One ball is drawn and kept aside, then another ball is drawn. Find the probability that the second ball drawn is blue.

Q.2 A bag contains 8 white and 6 red balls. What is the probability of drawing 2 balls of same color?

Q.3 Box A contains 2 white and 4 blue balls; Box B contains 5 white and 7 blue balls. A ball is transferred from box A to B, then a ball is drawn from B. What is the probability that the drawn ball is white?

Q.4 Data for manufacturing of a product by different companies is given as follows:

Company	Faulty %	Production %
M_1	5	25
M_2	4	30
M_3	3	45

Find the Probability,

1. $P(Faulty)$
2. $P(M_3 \mid Faulty)$

Q.5 A factory manufactures bulbs with normal distribution. It is given that $\mu = 7.5$ and $\sigma = 0.16$. Find the percentage bulbs having length less than (a) 7.66 (b) 7.18

Q.6 A class consists of two sections A and B taught by C and D respectively. It is given that, for class A $\mu_a = 70$ and $\sigma_a = 15$; for class B $\mu_b = 70$ and $\sigma_b = 15$.
The class teacher normalizes the marks of the students of section B. What is the normalized marks of these students who got,

1. 80 marks
2. 90 marks
3. 75 marks

Q.7 Mr. X speaks over the phone with the following distribution;

$$f(x) = \begin{cases} ke^{-\frac{x}{6}} & x > 0 \\ 0 & x \leq 0 \end{cases}$$

1. Find the probability that Mr. X will speak less than 6 minutes
2. Mr. X will speak between 6 and 8 minutes.
3. Mean time on the phone
4. Variance of the time Mr. X talks

Q.8 Probability of an item being defective is 0.01. Find the probability that a sample of 250 items randomly selected will contain more than one defective item. Assume Poisson's distribution

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