Indira Gandhi Delhi Technical University For Women

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PROBABILITY AND STATISTICS (BAS 103)

TUTORIAL SHEET -2

(UNIT-1)

Q1. Two cards are drawn simultaneously from a well shuffled 52 cards. Compute the variance for the no of aces.

Q2. (i) In a certain distribution the first four moments about the point x=4 are -1.5, 17, -30 and 308, Calculate β_1 and β_2 .
(ii) Define Skewness, Kurtosis.

Q3. An urn contains 4 white and 3 red balls. Three balls are drawn, with replacement, from this urn. Find mean , variance and standard deviation. For the number of red balls drawn.

Q4. Calculate the first four central moments about mean of the following data:

Class interval	0-10	10-20	20-30	30-40	40-50
Frequency	10	20	40	20	10

Q5.Let x be the continuous random variable with p.d.f given by
$$f(x) = \begin{cases} kx, & 0 \le x < 1 \\ k, & 1 \le x < 2 \\ -kx, +3k & 2 \le x < 3 \\ 0, & elsewhere \end{cases}$$
(i)Find k, (ii) Find c.d.f

Q6. For a distribution mean is 10, variance 16, is β_2 is 4 and γ_1 is 1. Find first four moments about origin.

Q7. A variable X is distributed at random between 0 and 4 and its p.d.f is f(x)= $kx^2(1-x^3)$. Find the value of k , mean and s.d.

Q8. Two unbiased dice are thrown. Find the expected values of the sum of number of points on it.

Q9. Karl Pearson's coefficient of Skewness of a distribution is 0.32, its s.d is 6.5, and mean is 29.6. Find the mode of the distribution.

Q10. Find standard deviation from the given distribution

x	8	12	16	20	24
P(x)	1/8	1/6	3/8	¼	1/12

Answer Key:

Ans1. 400/2873

Ans2. .(i) β_1 =0.492377and β_2=1.5733

Ans3. 9/7, 36/49, 6/7.

Ans4. 0,120,0,36000

Ans5. k= ½ and $F(x) = \begin{cases} 0, & -\infty \le x < 0 \\ \frac{x^2}{4}, & 0 \le x < 1 \\ (2x-1)/4, & 1 \le x < 2 \\ -\frac{x^2}{4} + \frac{3x}{2} - \frac{5}{4} & 2 \le x < 3 \\ 1, & 3 \le x < \infty \end{cases}$

Ans6. 10,116, 1544, 23184

Ans7. $k = 15/1024, \text{mean} = 16/7, \text{s.d} = 2\sqrt{6}/7$

Ans8. 7

Ans9. 27.52

Ans10. $2(5)^{1/2}$