Unit 4 PYQs

7. Answer any one of the following:-

7-a. In 800 families with 5 children each, how many families would be expected to have- (CO4) 10

I. 3 boys and 2 girls
II. 2 boys and 3 girls
III. No girl
IV. At most 2 girls. (Assume probabilities for boys and girls to be equal)

7-b. Fit a Poisson distribution to the set of observations:(CO4) 10

x	0	1	2	3	4
f(x)	122	60	15	2	1

7. Answer any one of the following:-

7-a. Prove that Poisson distribution is limiting case of Binomial distribution. (CO4) 10

7-b. In a distribution exactly Normal, 31% of the items are under 45 and 8% are over 64. What are the mean and Standard deviation of this Distribution? It is given that if 10

$$f(t)=\frac{1}{\sqrt{2\pi}}\int_0^t e^{\frac{-x^2}{2}}dx, f(0.5)=0.19, f(1.4)=0.42.$$

(CO4)

7. Answer any one of the following:-

7-a. Find the mean and variance of the Normal Probability distribution. (CO4) 10

7-b. The weekly wage of 2000 workmen is normally distribution with mean wage of Rs 70 and wage standard deviation of Rs 5. Estimate the number of workers whose weekly wages are: 10

(i) between Rs 70 and Rs 71
(ii) between Rs 69 and Rs 73
(iii) more than Rs 72
(iv) less than Rs 65 (CO4)

7. Answer any one of the following:-

7-a. State the Poisson Probability distribution. Prove that Poisson distribution is limiting case of Binomial distribution. (CO4) 10

7-b. Define the mathematical expectations and write the laws of expectations. Prove that mathematical expectation 10
of the sum of two discrete variables is equal to the sum of their mathematical expectations. (CO4)

6 Markers-

3.f. Net profit of 400 companies is normally distributed with a mean profit of Rs. 150 lakhs and a standard deviation of Rs. 20 lakhs. Find the number of companies whose profits(Rs. Lakhs) are between 100 and 138.Also find the minimum profit of top 15% companies. (Area for Z=2.5 ,1.04 and 0.6 are 0.4938, 0.35 and 0.2251). (CO4)

3.f. Fit a Poisson distribution to the following data and theoretical frequencies. (CO4) 6

x	0	1	2	3	4
f	122	60	15	2	1

3.f. Define exponential distribution. Find the moment generating function for exponential distributions. (CO4) 6

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