



SRM Institute of Science and Technology
Department of Mathematics
18MAB204T-Probability and Queueing Theory
Module I & II
Remedial Assignment-1

S. No.	Questions																		
1	<p>The following is the distribution function of a discrete random variable X:</p> <table border="1"><tr><td>x</td><td>-3</td><td>-1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>5</td><td>8</td></tr><tr><td>$F(x)$</td><td>0.10</td><td>0.30</td><td>0.45</td><td>0.65</td><td>0.75</td><td>0.90</td><td>0.95</td><td>1</td></tr></table> <p>Find (i) the probability distribution of X (ii) $E(X^2)$ (iii) $P(1 \leq X \leq 8)$ (iv) $P(X \leq 1)$ and (v) $P(X \geq 3 X > 0)$.</p>	x	-3	-1	0	1	2	3	5	8	$F(x)$	0.10	0.30	0.45	0.65	0.75	0.90	0.95	1
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2	<p>A random variable X has the pdf $f(x) = \begin{cases} 2x, & 0 < x < 1 \\ 0, & \text{otherwise} \end{cases}$ Find (i) $P(X < \frac{1}{2})$ (ii) $P(\frac{1}{4} < X < \frac{1}{2})$ (iii) $P(X > \frac{3}{4} X > \frac{1}{2})$, (iv) $P(X < \frac{1}{2})$ and (v) $E(X)$.</p>																		
3	<p>In a continuous distribution the relative frequency density is given by: $f(x) = y_0 \cdot (2 - x)$, $0 \leq x \leq 2$, find (i) y_0 (ii) the rth moment about the origin and hence find the mean, variance and μ_3.</p>																		
4	<p>Four coins were tossed on a table 100 times. The number of heads x fallen in each of the 100 times was noted. The results are:</p> <table border="1"><tr><td>x</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>f</td><td>5</td><td>29</td><td>36</td><td>25</td><td>5</td></tr></table> <p>Fit a Binomial distribution to the following data and find the expected frequencies.</p>	x	0	1	2	3	4	f	5	29	36	25	5						
x	0	1	2	3	4														
f	5	29	36	25	5														
5	<p>A manufacturer of medicine bottles finds that 0.1% of the bottles are defective. The bottles are packed in boxes containing 500 bottles. A drug manufacturer buys 100 boxes from the manufacturer of bottles. Using Poisson distribution, find how many boxes will contain (i) no defective? (ii) atleast 2 defectives? (iii) atmost 2 defectives?</p>																		