

UNIVERSITY OF PETROLEUM & ENERGY STUDIES, DEHRADUN

Program	MCA	Semester	I
Course	Introduction to Data Science	Course Code	CSDS 7001
Session	July - Dec 2023	Topic	Unit I

Attempt all the questions.

SN	Questions	Cos	Marks																		
1.	Describe data science. List the data science applications that are used in the real world.	CO1	5																		
2.	List the data science challenges.	CO1	5																		
3.	<p>A random variable X has the following probability distribution.</p> <table><tr><td>$X = x$</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>$P(X = x)$</td><td>0.1</td><td>0.2</td><td>0.3</td><td>0.4</td></tr></table> <p>Determine the mean and the standard deviation.</p>	$X = x$	1	2	3	4	$P(X = x)$	0.1	0.2	0.3	0.4	CO1	5								
$X = x$	1	2	3	4																	
$P(X = x)$	0.1	0.2	0.3	0.4																	
4.	<p>A random variable X has the following probability distribution:</p> <table><tr><td>$X = x$</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td></tr><tr><td>$P(X = x)$</td><td>0</td><td>k</td><td>$2k$</td><td>$2k$</td><td>$3k$</td><td>k^2</td><td>$2k^2$</td><td>$7k^2 + k$</td></tr></table> <p>Determine the value of (i) k, (ii) mean, and (iii) standard deviation.</p>	$X = x$	0	1	2	3	4	5	6	7	$P(X = x)$	0	k	$2k$	$2k$	$3k$	k^2	$2k^2$	$7k^2 + k$	CO1	10
$X = x$	0	1	2	3	4	5	6	7													
$P(X = x)$	0	k	$2k$	$2k$	$3k$	k^2	$2k^2$	$7k^2 + k$													
5.	<p>Eight coins were tossed together and the number of heads (X) resulting was noted. The operation was repeated 256 times and the frequency distribution of the number of heads is given below:</p> <p>No. of heads (X): 0 1 2 3 4 5 6 7 8</p> <p>Frequency (f): 1 9 26 59 72 52 29 7 1</p> <p>Calculate median.</p>	CO1	10																		