SRM INSTITUTE OF SCIENCE & TECHNOLOGY (Deemed to be University u/s 3 of UGC Act, 1956)	**SRM Institute of Science and Technology** **Department of Mathematics** **18MAB204T-Probability and Queueing Theory** **Module – I** **Tutorial Sheet - 2**

S.No.	**Questions**
	Part – A
1	The probability distribution of a R.V variable X is given below: <table><tr><td>x</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>p_x</td><td>1/16</td><td>4/16</td><td>6/16</td><td>4/16</td><td>1/16</td></tr></table> Find (i) the mgf of X (ii) the mean and variance of X
2	The rth moment of a R.V X is given as $\mu_r' = (r+1)!\,2^r$. Find (i) the mean (ii) the variance (iii) the mgf.
3	If the mgf of a R.V X is $\frac{3}{3-t}$ find the first four central moments.
4	If X is uniformly distributed in (1, 2) find the probability density function of $Y = e^x$
	Part - B
5	The first four moments of a distribution about $X = 4$ are 1, 4, 10, 45 find the first four central moments.
6	A continuous R.V X has pdf $f(x) = \begin{cases} k(1-x), 0 < x < 1 \\ 0, otherwise \end{cases}$. Find(i) k (ii) the rth moment about the origin. Hence find the first four central moments.
7	Find the moment generating function of the continuous R.V X whose density function is $f(x) = \begin{cases} 2e^{-2x}, x \geq 0 \\ 0, otherwise \end{cases}$
8	Let X be a continuous R.V with pdf $f(x) = \begin{cases} \frac{1}{2}, -1 < x < 1 \\ 0, otherwise \end{cases}$ find the distribution function and pdf of $Y = X^2$