UNIT- I

Q 1) Define Moment Generating Function. (m.g.f.) State and prove its properties.

Q 2) Define Cumulant Generating Function. (c.g.f.) State and prove its properties.

Q 3) Distinguish between moment generating function and characteristic function.

Q 4) Define moments and cumulants. Obtain the relations between first four central moments and cumulants

Q 5) The density function is given by

$f(x) = 4x\,e^{-2x}$ $x \geq 0$

$= 0$ otherwise

Obtain c.g.f. hence derive mean and variance.

Q 6) If i) $M(t) = ((1+2e^t)/3)^8$

ii) $M_x(t) = (2-e^t)^{-1}$

Recognize the distribution of X, Find mean and variance

Q 7) The density function is given by

$f(x) = 1/2$ $0 < x < 2$,

$= 0$ otherwise

Obtain m.g.f. hence derive mean and variance

Q 8) If X is discrete uniform variate taking the values 0, 1, 2,....................24 . Obtain its moment generating function and hence mean and variance.

Q 9) If $Kx(t) = -10 \log(1-2t)$, obtain mean and variance.

Q 10) If r.v. X has p.d.f.

$f(x) = 1/(b-a)$ $a < x < b$

$= 0$ otherwise

Obtain m.g. f hence evaluate mean and variance.

Q 11) If $Kx(t) = -15 \log(1-t/2)$, obtain mean and variance

Q 12) The density function is given by

$f(x) = (1/3)(2/3)^X$ $x = 0, 1, 2, 3, 4$.....................

$= 0$ otherwise

Find Obtain c.g.f. hence derive mean and variance

Q 13) With usual notations

i) If $K_X(t) = m(e^t - 1)$, obtain its first four moments hence β_1 and β_2

ii) If $M_x(t) = (1-2t)^{-1}$, obtain expression for μ_r'.

Q 14) With usual notations

i) If Kr= m (m= constant) , obtain its moment generating function.

ii) If $\mu_r' = r!$ find corresponding moment generating function.

Q 15) Define characteristic function . State its properties.