UNIT- II

Q 1) If a random variable X follows binomial distribution with parameters (n, p), obtain expression for its moment generating function . Hence evaluate its mean & variance

Q 2) If a random variable X follows binomial distribution with parameters (n, p), obtain expression for its cumulant generating function . Hence evaluate its mean & variance

Q 3) State and prove additive property of binomial distribution.

Q 4) Show that sum of i.i.d Bernoulli variates is a binomial variate

Q 5) If a random variable X follows binomial distribution with parameters (n, p), with usual notations show that

$$\mu_{r+1} = pq\,(d\mu_r / dp + n r \mu_{r-1})$$

hence evaluate β_1, β_2.

Q 6) If a random variable X follows binomial distribution with parameters (n, p), obtain expression for its characteristic function . Hence evaluate its mean & variance.

Q 7) If a random variable X follows Poisson distribution with parameter m, obtain expression for its cumulant generating function. Hence evaluate its mean & variance, β_1, β_2.

Q 8) If a random variable X follows Poisson distribution with parameter m, obtain expression for its moment generating function . Hence evaluate its mean & variance.

Q 9) If a random variable X follows Poisson distribution with parameter m, obtain expression for its characteristic function . Hence evaluate its mean & variance

Q 10) If a random variable X follows Poisson distribution with parameter m, with usual notations show that

$$\mu_{r+1} = m\,(d\mu_r / dm + r\,\mu_{r-1})$$

hence evaluate β_1, β_2

Q 11) State and prove additive property of Poisson variates.

Q 12) Define geometric variable obtain its p.m.f.

Q 13) If a random variable X follows geometric distribution with parameter p, Obtain its mean & variance.

Q 14) If a random variable X follows geometric distribution with parameter p, obtain expression for its moment generating function. Hence evaluate its mean & variance.

Q 15) Show that sum of i.i.d geometric variates is a negative binomial variate.

Q 16) If a random variable X follows geometric distribution with parameter p, with usual notations show that

i) $P[\ X \geq r+s\ /\ X \geq s\ ] = P\ [X \geq r\ ]$

ii) $P[\ X = r+s\ /X \geq s] = P[X = r]$

Q 17) If a random variables X& Y are two independent geometric variates with parameter p then show that
$P[X=Y]= p/(1+q)$

Q 18) If a random variables X& Y are two independent geometric variates with parameter p then show that the conditional distribution of X given X+Y=n is a uniform distribution.

Q 19) If a random variable X follows negative binomial distribution with parameters (k, p), obtain expression for its cumulant generating function . Hence evaluate its mean & variance, β_1, β_2.

Q 20) If a random variable X follows negative binomial distribution with parameters (k, p), obtain its mean & variance.

Q 21) State and prove additive property of negative binomial distribution

Q 22) Show that under certain conditions to be stated by you negative binomial variate tends to Poisson variate

Q 23) Define hypergeometric variate. Write down its probability mass function, Obtain its mean and variance.

Q 24) Show that under certain conditions to be stated by you the hypergeometric distribution can be approximated to binomial distribution

Q 25) Define truncated distributions. Obtain p.m.f. of truncated binomial distribution truncated at zero. Find its mean and variance.

Q 26) Obtain p.m.f. of truncated binomial distribution truncated at zero and one . Obtain its mean and variance

Q 27) Obtain p.m.f. of truncated binomial distribution truncated at ‘n’. Find its mean and variance

Q 28) Obtain p.m.f. of truncated Poisson distribution truncated at zero. Find its mean and variance.

Q 29) Obtain p.m.f. of truncated Poisson distribution truncated at zero and one. Obtain its mean and variance

Q 30) Obtain p.m.f. of truncated Poisson distribution truncated at n+1 from right. Obtain its mean and variance