XI Maths Worksheet

Time: 60 min **Chapter#8. Binomial Theorem** **Full Marks:**

Q.1	Find the middle term in the expansion of $\left(x-\frac{1}{6y}\right)^{10}$. (2 marks)
Q.2	If a and b are distinct integers, prove that a – b is a factor of $a^n - b^n$, whenever n is a positive integer. (3 marks)
Q.3	Write the general term in the expansion of $(x^2 - y)^6$. (2 marks)
Q.4	The sum of first two terms of a G.P. is -1/64 and the sum of first three terms is 6/34. What is the seventh term?
Q.5	In the expansion of $(1 + x)^{34}$, the coefficients of (2r+1)th and (r +2)th terms are equal, find r. (3 marks)
Q.6	Find the coefficient of a^4 in the product $(1+2a)^4.(2-a)^5$, using binomial theorem.
Q.7	Find the value of $\left(a^2+\sqrt{a^2-1}\right)^4+\left(a^2-\sqrt{a^2-1}\right)^4$
Q.8	Find an approximation of $(0.99)^5$ using the first three terms of its expansion.
Q.9	Find the expansion of $(3x^2 - 2ax + 3a^2)^3$ using binomial theorem. (5 marks)
Q.10	In the expansion of $(1+a)^{m+n}$, prove that coefficients of a^m and a^n are equal.
Q.11	Find the coefficient of x^5y^7 in the expansion of $(x + 2y)^{12}$. (3 marks)
Q.12	Find the general term in the expansion of $\left(5x^2-\frac{1}{6x}\right)^{11}$. (1 mark)
Q.13	Find the number of terms in the expansion of $[(x + y)^3(x - y)^3]^2$. (1 mark)
Q.14	Find the rth term from the end in the expansion of $(x+a)^n$.
Q.15	If the coefficients of T_r, T_{r+1}, T_{r+2} terms of $(1 + x)^{14}$ are in arithmetic progression, then find the value of r. (5 marks)
Q.16	If the coefficients of 7^{th} and 13^{th} terms in the expansion of $(1 + x)^n$ are equal then find the value of n. (1 mark)
Q.17	If the ratio of the coefficients of 3rd and 4th terms in the expansion of $\left(x-\frac{1}{2x}\right)^n$ is 1:2 then find the value of n. (3 marks)
Q.18	The coefficients of three consecutive terms in the expansion of $(1+a)^n$ are in the ratio 1:7:42. Find n.
Q.19	Prove that $\sum_{r=0}^{n} 3^r\ {}^nC_r = 4^n$. (2 marks)
Q.20	Show that the coefficients of the middle term in the expansion of $(1+x)^{2n}$ is equal to the sum of the coefficients of two middle terms in the expansion of $(1+x)^{2n-1}$.