CLASS –XI

SUBJECT – MATHEMATICS
TOPIC-BIONOMIAL THEORUM

Q1.   Using binomial theorem, write down the expansion of the following:-

(i) $\left(x + 1 - \dfrac{1}{x} \right)^3$ (ii) $(\sqrt[3]{x} - \sqrt[3]{a})^6$ (iii) $(2x + 3y)^4$

Q2.   Evaluate the following :-

(i) $(\sqrt{3} + 1)^5 - (\sqrt{3} - 1)^5$ (ii) $(3 + \sqrt{2})^4 + (3 - \sqrt{2})^4$ (iii) $(.99)^3 + (1.01)^3$

Q3.   Using binomial theorem, prove that $2^{3n} - 7n - 1$ is divisible by 49, where n €N.

Q4.   Using binomial theorem determine which number is larger $(1.2)^{4000}$ or 800?

Q5.   Find the coefficient of x^{10} in the expansion of $\left(2x - \dfrac{1}{x^2} \right)^{25}$

Q6.   Find the fourth term from the end in the expansion of $\left(2x - \dfrac{1}{x^2} \right)^{25}$

Q7.   Find the middle term / terms in the expansion of :-

(i) $\left(2x - \dfrac{3}{2x} \right)^{20}$ (ii) $\left(x^4 - \dfrac{1}{x^3} \right)^{11}$

Q8.   Find the term independent of x in the expansion of :-

(i) $\left(2x - \dfrac{1}{x^2} \right)^{10}$ (ii) $\left(3x^2 - \dfrac{1}{2x} \right)^9$

Q9.   If the fourth term in the expansion of $\left(ax + \dfrac{1}{x} \right)^n$ is $\dfrac{5}{2}$, then find the value of 'a' and 'n'.

Q10.   Find the value of a so that the term independent of x in $\left(\sqrt{x} + \dfrac{a}{x^2} \right)^{10}$ is 405.