

Class - XI

MATHEMATICS

F.M- 45

Topic-Binomial Theorem

P.M- 30

Time -1 Hours

Date-06.10. 13

1. Expand $\left(x^2 + \frac{3}{x}\right)^4, x \neq 0$.
2. Using binomial theorem, prove that $6^n - 5n$ always leaves remainder 1 when divided by 25.
3. $\left(\frac{2}{x} - \frac{x}{2}\right)^5$.
4. Using binomial theorem, evaluate each of the following $(101)^4$
5. Find $(a+b)^4 - (a-b)^4$. Hence, evaluate $(\sqrt{3} + \sqrt{2})^4 - (\sqrt{3} - \sqrt{2})^4$.
6. Show that $9^{n+1} - 8n - 9$ is divisible by 64, whenever n is a positive integer.
7. Find a if the 17th and 18th terms of the expansion $(2+a)^{50}$ are equal.
8. Find the coefficient of $x^6 y^3$ in the expansion of $(x+2y)^9$.
9. The coefficients of the three consecutive terms in the expansion of $(1+a)^n$ are in the ratio 1 : 7 : 42. Find n .
10. Find the 4th term in the expansion of $(x-2y)^{12}$.
11. Find the 13th term in the expansion of $\left(9x - \frac{1}{3\sqrt{x}}\right)^{18}, x \neq 0$.
12. The coefficient of the $(r-1)^{\text{th}}, r^{\text{th}}$ and $(r+1)^{\text{th}}$ terms in the expansion of $(x+1)^n$ are in the ratio 1 : 3 : 5. Find n and r .
13. Find a positive value of m for which the coefficient of x^2 in the expansion $(1+x)^m$ is 6.
14. Find the term independent of x in the expansion of $\left(\frac{3}{2}x^2 - \frac{1}{3x}\right)^6$.
15. Evaluate $(\sqrt{3} + \sqrt{2})^6 - (\sqrt{3} - \sqrt{2})^6$.