

- Q.1 Find the middle term in the expansion of $\left(x - \frac{1}{6y}\right)^{10}$. (2 marks)
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- 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)
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- Q.3 Write the general term in the expansion of $(x^2 - y)^6$. (2 marks)
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- 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?
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- 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)
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- Q.6 Find the coefficient of a^4 in the product $(1+2a)^4.(2-a)^5$, using binomial theorem.
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- Q.7 Find the value of
- $$\left(a^2 + \sqrt{a^2 - 1}\right)^4 + \left(a^2 - \sqrt{a^2 - 1}\right)^4$$
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- Q.8 Find an approximation of $(0.99)^5$ using the first three terms of its expansion.
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- Q.9 Find the expansion of $(3x^2 - 2ax + 3a^2)^3$ using binomial theorem. (5 marks)
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- Q.10 In the expansion of $(1+a)^{m+n}$, prove that coefficients of a^m and a^n are equal.
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- Q.11 Find the coefficient of x^5y^7 in the expansion of $(x + 2y)^{12}$. (3 marks)
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- Q.12 Find the general term in the expansion of $\left(5x^2 - \frac{1}{6x}\right)^{11}$. (1 mark)
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- Q.13 Find the number of terms in the expansion of $[(x + y)^3(x - y)^3]^2$. (1 mark)
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- Q.14 Find the rth term from the end in the expansion of $(x+a)^n$.
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- 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)
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- Q.16 If the coefficients of 7th and 13th terms in the expansion of $(1 + x)^n$ are equal then find the value of n. (1 mark)
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- 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)
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- Q.18 The coefficients of three consecutive terms in the expansion of $(1+a)^n$ are in the ratio 1:7:42. Find n.
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- Q.19 Prove that $\sum_{r=0}^n 3^r {}^nC_r = 4^n$. (2 marks)
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- 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 $(1+x)^{2n-1}$.
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