

Comprehensive Test Series
Chapter II – VIII
XI - Maths

TIME: 2.00 hr.

MM: 50

General Instructions:

- All Questions are compulsory.
 - Marks are given along with the questions individually.
 - Use of calculator is not permitted.
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- Q.1 If the 21st and 22nd terms in the expansion of $(1+x)^{44}$ are equal, then find the value of x.
- Q.2 Show that $9^{n+1} - 8n - 9$ is divisible by 64, whenever n is a positive integer.
- Q.3 How many four letters words with or without meaning, can be formed out of the letters of the word, 'LOGARITHMS' if the repetition of letters is not allowed
- Q.4 It is required to seat 5 men and 4 women in a row so that the women occupy the even places. How many such arrangements are possible?
- Q.5 The coefficients of the $(r - 1)^{\text{th}}$, r^{th} and $(r + 1)^{\text{th}}$ terms in the expansion of $(x + 1)x^n$ are in the ratio 1:3:5. Find both n and r.
- Q.6 If all the letters of the word AGAIN be arranged as in a dictionary, what is the fiftieth word?
- Q.7 How many words can we formed with the letters of the word 'UNIVERSITY' the vowels remaining together?
- Q.8 How many words can we formed with the letters of the word 'MISSISSIPPI' if I cannot come together?
- Q.9 Prove that the coefficient of x^n in the expansion of $(1 + x)^{2n}$ is twice the coefficient of x^n in the expansion $(1 + x)^{2n-1}$.
- Q.10 Find the term independent of x in the expansion of $\left(x + \frac{1}{x}\right)^{12}$, where $x \neq 0$.
- Q.11 Find n, if the ratio of the fifth term from the beginning to the fifth term from the end in the expansion $\left(\sqrt[4]{2} + \frac{1}{\sqrt[4]{3}}\right)^n$ is $\sqrt{6} : 1$.
- Q.12 If α and β are different complex number with $|\beta| = 1$, then find $\left| \frac{\beta - \alpha}{1 - \alpha\beta} \right|$
- Q.13 Prove $\tan 4x = \frac{4 \tan x(1 - \tan^2 x)}{1 - 6 \tan^2 x + \tan^4 x}$
- Q.14 $10^{2n-1} + 1$ is divisible by 11.
- Q.15 $x + 2y \leq 10$, $x + y \geq 1$, $x - y \leq 0$, $x \geq 0$, $y \geq 0$ solve graphically.
- Q.16 Determine the domain and range of the relation R defined by $R = \{(x, x + 5) : x \in \{0, 1, 2, 3, 4, 5\}\}$