

Model Question Paper 2

ALGEBRA 2

11th Standard

Maths

Reg.No. :

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Answer all the Questions

Time : 02:00:00 Hrs

Total Marks : 65

6 x 1 = 6

Part A

- 1) The largest coefficient in the expansion of $(1+x)^{24}$ is.....
(a) $24C_{24}$ (b) $24C_{13}$ (c) $24C_{12}$ (d) $24C_{11}$
- 2) The total number of terms in the expansion of $[(a+b)^2]^{18}$ is
(a) 11 (b) 36 (c) 37 (d) 35
- 3) Sum of the binomial coefficients is
(a) $2n$ (b) n^2 (c) 2^n (d) $n+17$
- 4) The last term in the expansion of $(2 + \sqrt{3})^8$ is
(a) 81 (b) 27 (c) $\sqrt{3}$ (d) 3
- 5) The value of $\frac{30!}{28!}$
(a) 29 (b) $30 \times 29 \times 28$ (c) 870 (d) 2!
- 6) When $n=5$ and $r=2$, the value of $\frac{n!}{r!}$ is
(a) $(n-r)!$ (b) $3!$ (c) $5!$ (d) 60

Part B

7 x 2 = 14

- 7) Resolve into partial fractions
 $\frac{7x^2 - 25x + 6}{(x^2 - 2x - 1)(3x - 2)}$

- 8) Evaluate the following:

$${}_{75}C_{75}$$

- 9) If ${}_nC_{10} = {}_nC_{12}$, find ${}_{23}C_n$
- 10) If ${}_8C_r - {}_7C_3 = {}_7C_2$, find r
- 11) If ${}_{16}C_4 = {}_{16}C_{r+2}$, find ${}_rC_2$
- 12) Find n if ${}_nC_3 = \frac{20}{3} {}_nC_2$
- 13) Find n if ${}_nC_{(n-4)} = 70$

Part C

10 x 3 = 30

- 14) How many different numbers of six digits can be formed from the digits 2, 3, 0, 7, 9, 5 when repetition of digits is not allowed?
- 15) How many odd numbers less than 1000 can be formed by using the digits 0, 3, 5, 7 when repetition of digits is not allowed?
- 16) How many triangles can be obtained by joining 12 points, five of which are collinear?
- 17) In how many ways can an examinee answer a set of 5 true/false type questions?
- 18) A box contains 5 different red and 6 different white balls. In how many ways 6 balls be selected so that there are atleast two balls of each color?
- 19) How many three - letter words can be formed using a, b, c, d, e if:
(i) repetition is allowed (ii) repetition is not allowed?
- 20) In how many ways can a cricket team of eleven be chosen out of a batch of 15 players if
(i) there is no restriction on the selection
(ii) a particular player is always chosen;
(iii) a particular player is never chosen?
- 21) A coin is tossed five times and outcomes are recorded. How many possible outcomes are there?
- 22) A candidate is required to answer 7 questions out of 12 questions which are divided into two groups, each containing 6 questions. He is not permitted to attempt more than 5 questions from either group. In how many ways can he choose the 7 questions.
- 23) There are 10 points in a plane, no three of which are in the straight line excepting 4 points, which are collinear. Find the
(i) the number of straight lines obtained from the pairs of these points.
(ii) number of triangles that can be formed with the vertices as these points.

Part D

3 x 5 = 15

- 24) Find the constant term in the expansion of $\left(\sqrt{x} - \frac{2}{x^2}\right)^{10}$
- 25) If $n \in \mathbb{N}$, in the expansion of $(1+x)^n$ prove the following :
(i) Sum of the binomial coefficients = 2^n
(ii) Sum of the coefficients of odd terms = Sum of the coefficients of even terms = 2^{n-1}
- 26) How many 4-digit numbers are there?
