

Model Question Paper 1

ALGEBRA 1

11th Standard

Maths

Reg.No. :

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Answer all the Questions

Time : 02:00:00 Hrs

Total Marks : 75

10 x 1 = 10

Part A

- 1) If $\frac{ax}{(x+2)(2x-3)} = \frac{2}{x+2} + \frac{3}{2x-3}$, then a=
 - (a) 4 (b) 5 (c) 7 (d) 8
- 2) If $nPr = 720$ nCr , then the value of 'r' is
 - (a) 6 (b) 5 (c) 4 (d) 7
- 3) How many difficult arrangements can be made out of the letters of words ENGINEERING?
 - (a) 11! (b) $\frac{11!}{(3!)^2(2!)^2}$ (c) $\frac{11!}{3!2!}$ (d) $\frac{11!}{3!}$
- 4) The number of 4 digit numbers that can be formed by the digits 3, 4, 5, 6, 7, 8, 0 and no digit is being repeated is
 - (a) 720 (b) 840 (c) 280 (d) 560
- 5) The number of diagonals that can be drawn by joining the vertices of an octagon is
 - (a) 28 (b) 48 (c) 20 (d) 24
- 6) A polygon has 44 diagonals, then the number of its sides is
 - (a) 11 (b) 7 (c) 8 (d) 12
- 7) 20 persons are invited for a party. The number of ways in which they and the host can be seated at a circular table if two particular persons be seated on either side of the host is equal to
 - (a) 18!2! (b) 18!3! (c) 19!2! (d) 20!2!
- 8) If n is a positive integer then the number of terms in the expansion of $(x+a)^n$ is
 - (a) n (b) n-1 (c) n+1 (d) n+2
- 9) The values of $nC_0 - nC_1 + nC_2 - nC_3 + \dots + (-1)^n nC_n$ is.....
 - (a) 2^{n+1} (b) n (c) 2^n (d) 0
- 10) The sum of the coefficients in the expansion of $(1-x)^{10}$ is.....
 - (a) 0 (b) 1 (c) 10^2 (d) 1024

Part B

10 x 2 = 20

- 11) Resolve into partial fractions

$$\frac{1}{(x-1)(x+1)}$$

- 12) Resolve into partial fractions

$$\frac{7x-1}{6-5x+x^2}$$

- 13) Resolve into partial fractions

$$\frac{x^2+x+1}{(x-1)(x-2)(x-3)}$$

- 14) Resolve into partial fractions

$$\frac{1}{(x-1)(x+2)^2}$$

- 15) Resolve into partial fractions

$$\frac{x-2}{(x+2)(x-1)^2}$$

- 16) Resolve into partial fractions

$$\frac{x+1}{(x-2)^2(x+3)}$$

- 17) Resolve into partial fractions

$$\frac{x^2-6x+2}{x^2(x+2)}$$

- 18) Resolve into partial fractions

$$\frac{2x^2-5x-7}{(x-2)^3}$$

- 19) Resolve into partial fractions

$$\frac{x^2-3}{(x+2)(x^2+1)}$$

- 20) Resolve into partial fractions

$$\frac{x+2}{(x+1)(x^2+1)}$$

Part C

5 x 3 = 15

- 21) In a class there are 27 boys and 14 girls. The teacher wants to select 1 boy and 1 girl to represent a competition. In how many ways can the teacher make this selection?
- 22) Given 7 flags of different colours, how many different signals can be generated if a signal requires the use of two flags, one below the other?
- 23) A person wants to buy one fountain pen, one ball pen and one pencil from a stationery shop. If there are 10 fountain pen varieties, 12 ball pen varieties and 5 pencil varieties, in how many ways can he select these articles?
- 24) Twelve students compete in a race. In how many ways first three prizes be given?

25) From among the 36 teachers in a college, one principal, one vice principal and the teacher - in charge are to be appointed. In how many ways this can be done?

Part D

6 x 5 = 30

26) Evaluate the following:

$${}_5P_3$$

27) Evaluate the following:

$${}_{15}P_3$$

28) Evaluate the following:

$${}_{25}P_{20}$$

29) Evaluate the following:

$${}_9P_5$$

30) If ${}_nP_4 = 20$. ${}_nP_3$, find n.

31) Evaluate the following:

$${}_5P_5$$

