



Dnyansagar Coaching Classes, A'nagar

First Preliminary Exam

Std. - X

Sub-Algebra

Time - 2 $\frac{1}{2}$ hrs

Max Marks - 60

Q.1 Attempt any six of the following. 12

- i) Find the value of the determinant $\begin{vmatrix} -3 & 5 \\ 0 & 4 \end{vmatrix}$
- ii) Find the H.G.F. $2x + 4$; $8x^2 - 8$
- iii) Simplify - $\frac{x^2 - 36}{x^2 + 10x + 24}$
- iv) If $x = 5$ is the solution of $kx^2 - 14x - 5 = 0$ then what is the value of k?
- v) Convert the binary integer to their decimal equivalent 10111_2 .
- vi) For an A.P. if $t_1 = 100$, $t_n = 2000$ and $n = 10$ find S_n .
- vii) Write the sample space and the number of sample points for the experiment 'a coin is tossed double'.
- viii) Amit has 500 shares of face value Rs. 10 at Rs. 60 market price. Find the rate of dividend if he received Rs. 2000 dividend.

Q.2 Attempt any Four of the following. 12

- i) Solve the following simultaneous equations by the method of determinants.
 $2x = 11 - 3y$ & $2y = 22 - 5x$
- ii) Factorize - $2x^3 - 8x^2 + 10x - 4$
- iii) Add binary numbers verify your answer in the decimal system.
 $1011_2 + 1100_2 + 110_2$
- iv) For an A. P. if $t_4 = 20$ and $t_7 = 32$ Find a, d and t_n .
- v) Find the mean marks from the frequency distribution given below assumed mean method

Marks	0-10	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90	90-100	Total
No. of students	3	5	7	10	12	15	12	6	2	8	80

- vi) Solve the following quadratic equations by formula method.
 $2p^2 - 5p + 1 = 0$

Q.3 Attempt any Four of the following. 12

- i) Find the H.C.F. and L.C.M. $8(x^4 - 81)$; $12(x^3 - 27)$
- ii) Solve the quadratic equation by the perfect square method.
 $x^2 + 8x + 9 = 0$
- iii) Convert the decimal integer to its binary equivalent by using expansion method
 219_{10} .
- iv) A committee of two is to be formed from 2 men & 2 women. Find the probability that committee contains.
- i) atleast one women
- ii) no women

- v) A tape recorder is available for Rs. 3200 cash or for Rs. 2000 cash down payment and Rs. 1290 to be paid after six month in one instalment. Find the rate of interest charged under the instalment scheme.
- vi) Solve by converting the following numbers to binary system.
 $59_{10} - 47_{10}$

Q.4 Attempt any Three of the following.

12

- i) Draw the graphs of the following equations with the same co-ordinate system.
 - i) $y = \frac{1}{2}x$
 - ii) $2y = x + 4$
 - iii) $2x - 4y + 3 = 0$

ii) Simplify - $\frac{m-1}{m^2+3m+2} \div \left[\frac{m-3}{m+1} - \frac{m-4}{m+2} \right]$

iii) Solve - $(2m+3) + \frac{12}{(2m+3)} + 13 = 0$

- iv) Find the sum of all the natural numbers from 1 to 200 which are divisible by 3.
- v) Find median

Height in cm	100-110	110-120	120-130	130-140	140-150
No. of students	5	8	20	10	7

- vi) ii) A coin is tossed thrice. Find the probability of the events,
 - i) head appears twice.
 - ii) tail appears twice.

Q.5 Attempt any Three of the following.

12

- i) Out of 20 litres a milkman sells some milk at the rate 15 Rs / lit and remaining at 20 Rs/ lit. If he gets Rs. 340 on selling it, how much milk he sold at each rate.
- ii) If $x = 10.3$ and $y = 9.3$ then find the value of

$$\frac{1}{x + \frac{y^2}{x+y}} \div \frac{x+y}{x^3 - y^3}$$

- iii) From two digit numbers using the digits 0,2,3,4,5,8 without repeating the digits A is the event that the number is even B is the event that the number divisible by three C is the event that the number is greater than 50.
Write down the sample space s, number of sample points n(s), events A, B, and C, n(A), n(B), & n(C).

- iv) Draw the pie diagram to represent the following information.

Mode of transport	Bicycle	Bus	Walk	Train	Car
Number of students	140	100	70	40	10

- v) A cash price of an electric motor is Rs. 18,000. But a farmer wants to buy it for Rs. 4760 as cash down payment and he has to pay remaining amount in 3 equal annual instalments. In this instalment scheme compound interest is calculated at the rate of 10% p.a. Find the amount of each instalment.
- vi) A person invested Rs. 22,500 and brought shares of a company whose market price is Rs. 125. The face value of a share is Rs. 10. If the company paid 60% dividend at the end of the year ;what was his income that year ?