Term Test 2022-23

Std: X MHB   **Subject: Algebra**   **Marks: 40**

Duration: 2hrs

Topics Covered: Linear Equations in two Variables, Quadratic Equation, Financial planning, Probability, Statistics

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Q. 1.(A) Solve the following questions (any four).   **(4 × 1 = 4)**

1. What is the value of |-9| - |-5|?

2. If a:b = 3:2 and b:c = 2:5, find a:c.

3. How much education cess at 2% is levied on income tax Rs. 2,00,000?

4. Frame a linear equation in two variables (x and y) to represent the following information:
   The length of a rectangle is 12 m more than its breadth.

5. Write the degree of the polynomials $p^2q^3 + p^3q^2 - p^3q^3$.

(B) Solve the following questions (any two)   **(2 × 2 = 4)**

1. The mean of 5 observations is 40. The mean of 4 of them is 35. Find the 5th observation.

2. Solve the simultaneous equations: x + y = 7 and x – y = 5

3. If $7\sqrt{3} + 3\sqrt{7} - 3\sqrt{3} - 2\sqrt{7} = a\sqrt{3} - b\sqrt{7}$, then find a and b.

Q. 2.(A) Choose the correct alternatives. (4 × 1 = 4)

1. What is the sum of the first 30 natural numbers?

    A. 464
    B. 465
    C. 462
    D. 461

2. The distance of point A(2, 4) from the x-axis is

(a) 2 units

(b) 4 units

(c) -2 units

(d) -4 units

3. Cumulative frequencies in a grouped frequency table are useful to find
    A. Mean
    B. Median
    C. Mode
    D. All of these

4. In a graph of 4x + 5y = 19, find y when x = 1.
    A. 4
    B. 3
    C. 2
    D. -3

(B) Solve any two of the following sub-questions. (2 × 2 = 4)

1. Solve: $x^2 + x - 20 = 0$

2. Find the simultaneous equations in x and y if
    $D_x = 12$ and $D = 4$, find the value of x.
    $D = -3$, $D_y = 6$, find the value of y.

3. A die is rolled. E is the event that the uppermost face shows a number multiple of 3.
    Write n(E) and P(E).

Q. 3.(A) Solve any two of the following sub-questions. (2 × 2 = 4)

1. Find the value of $\Sigma f_i d_i$ for $\overline{d} = 1.2$ and $\Sigma f_i = 15$.

2. What is the brokerage at 2% on a share of MV Rs. 120?

3. Write the next four terms of an A.P. 2, 5, 8, 11...

(B) Solve any two of the following sub-questions. (2 × 2 = 4)
Two coins are tossed. Find the probability of getting at least one head.

1. For solving the quadratic equation $x^2 + 8x = -15$ by the completing square method, find the third term.

2. If $3x + 4y = 11$ and $4x + 3y = 10$, then find the value of $x - y$.

Q. 4.Solve any three sub-questions. (3 × 3 = 9)

1. Bhavesh purchased 150 shares at MV Rs. 50. Brokerage was paid at 0.2% and GST on brokerage 18%. What is his total investment?

2. Solve the simultaneous equation using the graphical method: $x + y = 7$ and $x - y = 3$

3. Find $\overline{X}$ by the step deviation method: A = 2200, $\sum f_i x_i = -15$, $\sum f_i = 100$ and g = 400.

4. How many two-digit numbers are divisible by 3?

Q. 5.Solve any one of the following sub-questions. (4 × 1 = 4)

1. Solve $9x + 1 = 4x^2$ using the formula method.

2. Find the mode of the following:

Class	35–40	40–45	45–50	50–55	55–60
Frequency	7	6	9	5	3

Q. 6.Solve any one of the sub-questions. (3 × 1 = 3)

1. Three coins are tossed simultaneously. Find the probability that a tail appears on the middle one.

2. Find S_{10} for an A. P. $\dfrac{1}{6}, \dfrac{1}{4}, \dfrac{1}{3}, ...$