B.K. BIRLA CENTRE FOR EDUCATION

SARALA BIRLA GROUP OF SCHOOLS
A CBSE DAY-CUM-BOYS' RESIDENTIAL SCHOOL

MID-APRIL TEST 2025-26
APPLIED MATHEMATICS

Class: XII

Date: 17.04.25

Admission no:

Time: 1hr

Max Marks: 25

Roll no:

<u>General Instructions:</u>

1. This Question Paper has 4 Sections A, B, C and D.
2. Section A has 5 MCQs carrying 1 mark each
3. Section B has 2 questions carrying 02 marks each.
4. Section C has 2 questions carrying 03 marks each.
5. Section D has 2 questions carrying 05 marks each.
6. All Questions are compulsory.

SECTION A

1. If $100 \equiv X \pmod 7$, then the least possible value of X is   1
(a) 2
(b) 3
(c) 6
(d) none of above

2. In what ratio shall I add water to the liquid detergent costing Rs. 480 per litre to get resulting mixture worth Rs. 300 per litre   1
(a) 5:3
(b) 3:8
(c) 3:5
(d) none of the above

3. In 1000 metres race, A reaches the final point in 56 seconds and B reaches in 70 seconds. By how much distance does A beat B?   1
(a) 200
(b) 120
(c) 150
(d) none of the above

4. If x is a negative integer, then the solution set of $-12x > 30$ is   1
(a) { -2,-1}
(b) { …..,-5,-4,-3}
(c) {…-5,-4,-3,-2}
(d) none of the above

5. The solution set of $6 \le -3(2x-4) < 12$, x belongs to real numbers is   1
(a) [-1,3]
(b) (-1,3)
(c) (-1,3]
(d) none of the above

SECTION B

6. *The ratio of speed of a motorboat and that of the current of water is 36: 5. The boat goes certain distance along with the current in 5 hours 10 minutes how much time will it take to come back?* **2**

7. In the given question, one statement has been followed by two conclusions. Find which of the given conclusion is true or false. **2**
   Statement: C = B ≥A≤D = E
   Conclusion 1:C = X   Conclusion 2: C<D

8. Pipes A and B can fill a tank in six hours and eight hours respectively pipe C can empty it in 12 hours, if all the three pipes are open together find the time in which the tank can be filled. **3**

9. Solve (a) $4x+3 ≤ 6x +7$ **3**
        (b) $3x-7 > 5x -1$

10. (a) How many kg of sugars costing Rs. 45 per kg must be mixed with 30KG sugar costing Rs. 35 per kg so that there may be a gain of 12% by selling the mixture at Rs. 47.04 per kg? **5**

    (b) The average salary per worker of the entire staff of a polythene bag manufacturing unit including machine operator and labours is 7500. The average salary per head of the machine operator is 25000 and that of labours is 6000. Find the number of workers in the unit if there are 3 machine operators.

11. A manufacturer has 1125 litres of 45% acid solution. He wants to dilute it by adding water or some low concentrated acid solution. **5**
    Based on the above information, answer the following questions:
    (i)   Find the minimum volume of water that should be added so that resulting mixture will contain less than 30% acid content.
    (ii)   Find the volume of water that should be added so the resulting mixture will contain more than 25% but less than 30% acid content.
    (iii)   How many litres of 35% had its acid solution should be added so that the resulting mixture will contain at least 42 .5% acid content?

*************BEST OF LUCK***********