B.K. BIRLA CENTRE FOR EDUCATION

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

MID-APRIL TEST 2025-26
MATHEMATICS

Class: X | **Time: 1hr**
Date: 22.04.25 | **Max Marks: 25**
Admission no: | **Roll no:**

General Instructions:

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 $\sin 2B = 2 \sin B$ is true when B is equal to 1
   (a) 90°
   (b) 60°
   (c) 30°
   (d) 0°

2. $5 \tan^2 A - 5 \sec^2 A + 1$ is equal to 1
   (a) 6
   (6) -5
   (c) 1
   (d) -4

3. What is the minimum value of $\cos \theta$, $0 \leq \theta \leq 90°$ 1
   (a) -1
   (b) 0
   (c) 1
   (d) 1/2

4. If in ΔABC, $\angle C = 90°$, then $\sin (A + B) =$ 1
   (a) 0
   (b) 1/2
   (c) $1/\sqrt{2}$
   (d) 1

5. If $\sin A - \cos A = 0$, then the value of $\sin^4 A + \cos^4 A$ is 1
   (a) 2
   (b) 1

(c) 3/4
(d) ½

SECTION B

6. **If tan α = √3 and tan β = 1/√3,0 < α, β < 90°, find the value of cot (α + β).** 2

7. **If θ = 45°, then what is the value of 2 $\sec^2\theta$ + 3 $\text{cosec}^2\theta$?** 2

SECTION C

8. **Prove that** 3

$$\frac{\sin\theta - 2\sin^3\theta}{2\cos^3\theta - \cos\theta} = \tan\theta$$

9. **If tan (A + B) = √3 and tan (A – B) = 1/√3; 0° < A + B ≤ 90°; A > B, find A and B.** 3

SECTION D

10. **Prove that:** 5

$$\frac{\tan\theta}{1-\cot\theta} + \frac{\cot\theta}{1-\tan\theta} = 1 + \sec\theta\,\text{cosec}\,\theta$$

11. **Find value of:** 5

$$\frac{\sin 30° + \tan 45° - \text{cosec}\,60°}{\sec 30° + \cos 60° + \cot 45°}$$

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