DELHI PUBLIC SCHOOL, BPKIHS, DHARAN
PERIODIC TEST -I (2023-24)

CLASS: 11 MARKS: 25
SUBJECT: MATHEMATICS TIME: 50 MINUTES

SECTION-A (3X1M=3M)
1) A and B are two sets given in such a way that (AXB) contains 6 elements. If three elements of (AXB) is (2, 5), (3, 6) and (4, 5), find its remaining elements.

2) If R = {(x, y): y = 2x + 7, where x ∈ R and -5 ≤ x ≤ 5} is a relation. Find the domain and range.

3) Find the radian measure corresponding to the degree measure 340°

SECTION-B (4X2M=8M)
4) Let A = {2, 4, 6}, B = {4, 6, 18} and R be the relation ‘is a factor of” from A to B. Find R as a set of ordered pairs and represent it by an arrow diagram.

5) Let A = {9, 10, 11, 12, 13} and let f: A → N be defined by f(n) = the highest prime factor of n, n ∈ A. Write f as a set of ordered pairs and find the range of R.

6) Find the value of trigonometric functions: a) cosec (\frac{23\pi}{3}) b) sin (-1125°)

7) Prove that 2cos \frac{\pi}{13}cos \frac{9\pi}{13} + cos \frac{3\pi}{13} + cos \frac{5\pi}{13} = 0.

SECTION-C (3X3M=9M)
8) Prove that 2sin^2 \frac{3\pi}{4} + 2cos^2 \frac{\pi}{4} + 2sec^2 \frac{\pi}{3} = 10

9) Prove that cot^2 \frac{\pi}{6} + cosec \frac{5\pi}{6} + 3sec^2 \frac{\pi}{6} = 6

10) Find the value of sin 690°. Cos 930° + tan (-765°) cosec(-1170°)

SECTION-D (1X5M=5M)
11) a) If cosx = \frac{3}{5} and x lies in the 3rd quadrant, find the value of \frac{secx - tanx}{cosecx + cotx}