KENDRIYA VIDYALAYA SITAPUR (1st SHIFT)
I st-UNIT TEST (SESSION-2018-19)
CLASS-XI
SUBJECT-MATHEMATICS

Time : 1:30 hrs **M.M.:50**

Note: There are four sections in this Question paper. Section A, B, C and D. Section A contains 4 Questions of 1 mark each, Section B contains 4 Questions of 2 marks each, Section C contains 5 Questions of 4 marks each and Section D contains 3 Questions of 6 marks each.

SECTION-A **MARKS-1*4=4**

Q1-Write the set A= {5, 25, 125, 625} in set-builder form.

Q2- Determine the domain and range of the relation R defined R = {(x, x+5)}; x ∈ {0, 1, 2, 3, 4, 5, }}.

Q3- Find the principal solution of the following equation: tan x = -√3.

Q4- Let A={x, y, z} and B = {1, 2}. Find the number of relations from A to B.

SECTION-B **MARKS-2*4=8**

Q5-Let A= {a, b}, B= {a, b, c}, Find (i) A∪ B (ii) A ∩ B

Q6 – Find cot 15°.

Q7- Find range of following functions

(i) f(x)= $\frac{1}{1-x^2}$ (ii) $\sin^2 x$.

Q8- Let A= {a, b} and B = {1, 2}. Find A× B and write all subsets of A× B.

SECTION-C **MARKS-4*5=20**

Q9-Write down all the subsets of following sets.

(i) {a} (ii) {a, b} (iii) {a, b, c} (iv) ∅.

Q10-Draw appropriate Venn diagram or each of following:

(i) ($\bar{A} \cup \bar{B}$) (ii) ($\bar{A} \cap \bar{B}$) (iii) $\overline{(A \cup B)}$ (iv) $\overline{(A \cap B)}$.

Q11-If S and T are two sets such that S has 21 elements, T has 32 elements, and S ∩ T has 11 elements, how many elements does S U T have?

Q12-Find the general solution of the equation: $\sqrt{3}$ cos x – sin x =1.

Q13-Draw graph of y = $\sqrt{x}$ and y = x – [x], where [x] is greatest integer function.

SECTION-D **MARKS-6*3=18**

Q14- In a survey of 100 students the number of students studying the various languages were found to be: English only18, English but not Hindi 23, English and Sanskrit 8, English 26, Sanskrit 48, Sanskrit and Hindi 8, no language 24.Find

(i) How many students were studying Hindi?

(ii) How many students were studying English and Hindi?

(iii) How many students were studying Sanskrit only?

Q15- (i) Find the domain and range of the function f(x) =$\sqrt{x^2 - 25}$.

(ii)A function f is defined by f(x) =2x-5.write down the values of (i) f(0) (ii) f(7) (iii) f(-3).

Q16- (i) Prove that: $\cos^2 x + \cos^2\left(x + \frac{\pi}{3}\right) + \cos^2\left(x - \frac{\pi}{3}\right) = \frac{3}{2}$.

(ii) Prove that: $\sin 10° \sin 50° \sin 60° \sin 70° = \frac{\sqrt{3}}{16}$.