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= {0, 7, 26, 63} in set-builder form.

Q2- Find domain of function $f(x) = \dfrac{1}{\sqrt{x-|x|}}$

Q3- Draw the graph of cosec x.

Q4- Let A={x, y, z} and B = {1, 2}. Find the number of relations from A to B which is not function.

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

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

Q6 – Find cot 15°.

Q7- Find range of following functions

(i) $f(x) = \dfrac{1}{1-x^2}$ (ii) sin² x.

Q8- Find $\sin\dfrac{\pi}{8}$ and $\cos\dfrac{\pi}{8}$.

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

Q9-Find the range of function f(x) = 2x²-5x+6

Q10-Prove that A= B if P(A) = P(B)

Q11- A survey shows that 63%of Indians like cheese where as 76% like apples. If x % of Indians like cheese and apples. Find the value of x.

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 of the real function f(x) =$\dfrac{1}{\sqrt{x^2-64}}$
        (ii) Find range of the function f(x) =$|x-1|+|x-2|$

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

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