



Std : 11 (Science Stream) Maths (050)

Unit test

Time : 1 Hour

Total Marks : 25

Section : A

Give the Answer of the following question 1 to 5 as directed. (Each carries 1 mark) [05]

- (1) How many elements has  $P(A)$ , if  $A = \{\phi\}$  ?
- (2) If  $A = \{1, 2, \{3, 4\}, 5\}$  then \_\_\_\_ is incorrect.  
(A)  $\{1, 2\} \subset A$  (B)  $\{5\} \subset A$  (C)  $\{3, 4\} \subset A$  (D)  $\{1, 2, \} \notin A$
- (3) If there are  $m$  elements in  $A$  and  $n$  elements in  $B$ , then the number of relations from  $A$  to  $B$  \_\_\_\_\_.  
(A)  $2^{mn}$  (B)  $(mn)^2$  (C)  $n^m$  (D)  $mn$
- (4) Let  $A = \{0, 1, 2, 3, 4, 5\}$ . A relation  $R$  define from  $A$  to  $A$ . by  $R = \{(x, x+4) : x \in A\}$ , then find domain of  $R$ .
- (5) Fine value of  $\tan\left(\frac{19\pi}{3}\right)$

Section : B

Five the Answer of the following questions 6 to 8 as directed. (Each carries 2 marks) [06]

- (6) Let  $A = \{2, 3\}$  and  $B = \{x | x \text{ is solution of } x^2 + 5x + 6 = 0\}$ .  
Are there  $A$  and  $B$  equal sets or disjoint sets?

OR

If  $N_k = \{kx | x \in \mathbb{N}\}$  then verify  $N_2 \cap N_3 = N_6$

- (7) Find the domain and range of the real function  $f(x) = \sqrt{16 - x^2}$
- (8) Find the value of  $\sin 75^\circ$

Section: C

Give the Answer of the following questions 9 to 11 as directed. (Each carries 3 marks) [09]

- (9) If  $U = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$ ,  $A = \{2, 4, 6, 8, \}$ , and  $B = \{2, 3, 5, 7\}$   
verify that (a)  $(A \cup B)^c = A^c \cap B^c$  (a)  $(A \cap B)^c = A^c \cup B^c$
- (10) Let  $A = \{1, 2, 0, -1\}$   $B = \{1, 3, -1, -3\}$  and function  $f: A \rightarrow B$ ,  
 $f(x) = px + q$ . If  $f = \{(1, 1), (2, 3), (0, -1), (-1, -3)\}$  then find value of  $p$  and  $q$ .
- (11) Prove that  $\cos 6x = 32\cos^6 x - 48\cos^4 x + 18\cos^2 x - 1$ .

Section : D

Give the Answer of the following question as directed. [05]

- (12) If  $\cot x = -\frac{3}{4}$ ,  $x$  in II quadrant, then find  $\sin \frac{x}{2}$ ,  $\cos \frac{x}{2}$ ,  $\tan \frac{x}{2}$

OR

For  $\Delta ABC$  prove that  $\frac{b^2 - c^2}{a^2} \sin 2A + \frac{c^2 - a^2}{b^2} \sin 2B + \frac{a^2 - b^2}{c^2} \sin 2C = 0$