Printing Page(s) : 1   **Paper Code :DSC-101**

Roll No. ☐☐☐☐☐☐☐☐☐☐

B.Sc. (PCM)-1, B.A. (Math)-1
1st Year Examination, Calendar Batch 2017
Mathematics-1 (Algebra, Trigonometry & Vectors)

Time : 3 Hours]   *[Max. Marks : 100*

Note. *Attempt any **five** questions. Each questions carry equal marks.*

Q.1. Use matrix method to solve the equation-
$2x-y+3z=9$, $x+y+z=6$, $x-y+z=2$

Q.2. Prove **that [a + b, b + c, c + a] = 2[a b c].**

Q.3. If $(G,*)$ be a group ,then the inverse of each element of G is unique.

Q.4. Show that every finite group G is isomorphic to a permutation group

Q.5. If $u =\log\tan\left(\dfrac{\pi}{4}+\dfrac{\theta}{2}\right)$, prove that $\tanh\dfrac{u}{2} = \tan\dfrac{\theta}{2}$.

Q.6. Prove that the div (curl V) = 0.

Q.7. Show that the set Z of all integers form a group with respect to binary operation * defined by **a * b = a + b + 1 for all a, b €Z** is an abelian group.

Q.8. determine the rank of the matrix
$$\begin{matrix} 1 & 2 & 3 \\ 3 & 4 & 5 \\ 4 & 5 & 6 \end{matrix}$$