1st semester   Marks-10

(1) Find the eq to the curve $9x^2 + 4y^2 + 18x - 16y - 11 = 0$ referred to the parallel
axes through the point $(-1,2)$ Marks- 3

(2) Evaluate: Marks-2

$$\underset{x \to 0}{\text{lt}} \frac{\tan x - x}{x - \sin x}$$

(3) What type of curve represents $2x^2 + 4xy + y^2 = 0$?   Marks-2

(4) If $\ln y = \tan^{-1} x$ Marks-3
then show that $(1 + x^2)y_{n+2} + (2nx + 2x - 1)y_{n+1} + n(n + 1)y_n = 0$

(1)   Define (a) Derived set $1 \times 3 = 3$
                 (b) limit point
                 (c) closed set

(2) prove that A finite set has-no limit point.   Marks-2

(3) Find the derived set of the following set   Marks-5

$$S = \left\{ \frac{2}{p} + \frac{3}{q} : p, q = 1,2,3, \dots \right\}$$

(1) Prove that $\qquad\qquad\qquad\qquad 2\frac{1}{2} \times 4 = 10$

Every cyclic group is commutative, but the converse is not true.

(2) Find the order of the permutation -

$$\begin{pmatrix} 1 & 2 & 3 & 4 & 5 \\ 2 & 3 & 1 & 5 & 4 \end{pmatrix}$$

(3) Find the inverse of the permutation

$$f = \begin{pmatrix} 1 & 2 & 3 & 4 \\ 2 & 3 & 4 & 1 \end{pmatrix}$$

(4) Show that the vectors $(-1,2,1); (3,0,-1); (-5,4,3)$ are L. D

VIVEKANANDA COLLEGE
ALIPURDUAR

DATED- 20-01-2022

N O T I C E

This is to notify that the Students of **1st**, **3rd and 5th** Semester examination-2022 are directed to
Collect the Question papers for Internal Assessment of different subjects from the College Website
on **29-01-2022** and upload their Answer Sheets to the following Departmental E.mai ID 's on or
before **08-02-2022.**

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