This document is a part of Main Course File	Document No.: CFM – 8
	SARDAR VALLABHBHAI PATEL EDUCATION SOCIETY MANAGED # N. G. PATEL POLYTECHNIC **SCIENCE AND HUMANITIES DEPARTMENT** **(CHEMICAL / COMPUTER / MECHANICAL / ELECTRICAL/ IT ENGINEERING DEPARTMENT)**

FORMAT FOR ASSIGNMENTS

Course Name (With Code): Mathematics (DI01000021)

Semester / Year: First / First

Assignment Number: 03 (Vectors)

Assignment CO Number: DI01000021.3

Sr. No.	Questions related to Course Outcomes
Part – A	**Questions carrying 1 Marks**
1	$\bar{a}$ = 2i+3j+k , $\bar{b}$= 2i-3j+2k , then find 1. $\bar{a} + \bar{b}$ 2. $\bar{a} - \bar{b}$
2	$\bar{a}$ = 2i+3j , $\bar{b}$= 3i-j-2k , then find 1. $\bar{a} + \bar{b}$
3	If $\bar{a} = 2i + j$, $\bar{b} = i - 3k$ then find $\bar{a}.\bar{b}$
4	If $\bar{a} = 2i + j + k$, $\bar{b} = i - j + 3k$ then find $\bar{a}.\bar{b}$
Part – B	**Questions carrying 3 Marks**
1	If $\bar{a}$ = 3i+k-2j , $\bar{b}$= 2i-4j-3k , $\bar{c}$ = -i+2j+2k find $\left\|2\bar{a} - 3\bar{b} - 5\bar{c}\right\|$
2	If $\bar{a} = (3, -1, -4)$, $\bar{b} = (-2, 4, -3)$, $\bar{c} = (-1, 2, -5)$ then find $\left\|\bar{a} + 2\bar{b} - \bar{c}\right\|$
3	If $\bar{a} = 3i + j$, $\bar{b} = 2i - j + 6k$, $\bar{c} = i + j + 2k$ find direction cosine of $2\bar{a} + \bar{b} - 2\bar{c}$.
4	For what value of 'p' the vector 2i+3j-k and pi-j+3k are perpendicular to each other?
5	If $\bar{a} = (p, 2,1)$ & $\bar{b} = (2, p, -4)$ are perpendicular to each other then find value of p.
6	For what the value of k, the lines 7x + y = 1 and 3x – ky = -2 are perpendicular to each other
Part – C	**Questions carrying 4 Marks**
1	If $\bar{x} = i - 2j + 3k$, $\bar{y} = -2i + 3j + k$ then P.T $(\bar{x} + \bar{y})$ & $(\bar{x} - \bar{y})$ are perpendicular to eah other
2	Prove that angle between the vector $3i + j + 2k$ and $2i - 2j + 4k$ is $\sin^{-1}\left(\frac{2}{\sqrt{7}}\right)$
3	Prove that angle between the vector $i + 2j$ and $i + j + 3k$ is $\sin^{-1}\left(\sqrt{\frac{46}{55}}\right)$
4	A particle moves from the point $(0,1,-2)$ to the point $(-1,3,2)$ under the effect of Constant forces $(1,2,3)$ and $(-1,2,3)$ and (-1, 2 ,-3) Find work done.
5	A particles moves to the point (5,1,2) from the point (0,1,-2) and under the action of force $(1,2,3)$ & $(3,1,1)$ then find the work done.
Prepared By: (Name of Faculty (ies)) with signature	**Signature of Head of Department**