NAME :	**TOTAL MARKS:**
ID :	$\left(\dfrac{}{14} \right)$
GROUP:	

1.   Find the angle between the vectors $\underset{\sim}{a} = \langle 2, \ -1, \ 1 \rangle$ and $\underset{\sim}{b} = \langle 3, 2, \ -1 \rangle$. Use Dot Product.

[3 marks]

Solution:

2.   Find the unit vector perpendicular to both $\underset{\sim}{a} = \underset{\sim}{i} + \underset{\sim}{j}$ and $\underset{\sim}{b} = \underset{\sim}{i} - \underset{\sim}{j} + \underset{\sim}{k}.$ [2 marks]

Solution:

3.   Given a plane contains points $A(0,1,1)$, $B(1,0,1)$ and $C(1,1,0)$.

   i)   Find the vectors $\overrightarrow{AB}$ and $\overrightarrow{AC}$.
   ii)   Find the $\overrightarrow{AB} \times \overrightarrow{AC}$.
   iii)   Based on part (i) and (ii), find the equation of the plane. Express your answer in
          $ax + by + cz = d$.

                                                                              [4 marks]

<mark>Solution:</mark>

4.   The frequency table shows the ages of a sample of workers in a company. Complete the table and **calculate the mean, variance and standard deviation** for the data. Round off your answer to two decimal places.

[5 marks]

<mark>Solution:</mark>

Mass (kg)	Frequency, f	Midpoint, m	mf	$m^2 f$
$20-24$	9			
$25-29$	11			
$30-34$	7			
$35-39$	6			
$40-44$	4			
$45-49$	3			
	$\sum f = 40$			