

All parameters Forward

Measurement Engineering

19/ENG 06/005

MAF 002

1.) If  $A = (6u^2 + 8)j + (4u - 10)j + 8u^3k$  and  $B = 3ui + (2u - 5)j + 5k$

i) Find  $d/du (A \cdot B)$

$$A = (6u^2 + 8)j + (4u - 10)j + 8u^3k \quad \text{and} \quad B = 3ui + (2u - 5)j + 5k$$

$$\begin{aligned} A \cdot B &= 3u(6u^2 + 8)j + (4u - 10)(2u - 5)j + 5k(8u^3)k \\ &= (18u^3 + 24u)j + (8u^2 - 20u - 20u + 50)j + (40u^3)k \\ &= 40u^3 + 18u^3 + 8u^2 + 24u - 20u + 50 \\ &= 58u^3 + 8u^2 - 16u + 50 \end{aligned}$$

$$\frac{d(A \cdot B)}{du} = 174u^2 + 16u - 16$$

ii)  $\frac{dA}{du} = (6u^2 + 8)j + (4u - 10)j + 8u^3k$   
 $= 12ui + 4j + 24u^2k$