

# CC 14 2ND INTERNAL

ANSWER ALL THE QUESTIONS

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1. The vectors  $\alpha_1 = (1,1,1), \alpha_2 = (1,1,-1), \alpha_3 = (1,-1,-1)$  form a basis of  $V_3(C)$ . If  $\{f_1, f_2, f_3\}$  is the dual basis and  $\alpha = (0,1,0)$  then the value of  $f_1(\alpha)$  is

- a) 0                  b) 1                  c) -1                  d)  $\frac{1}{2}$

- a  
 b  
 c  
 d

2. The dimension of the dual space  $V^*$  of a 5 dimensional vector space  $V$  over a field  $F$  is

- a) 5                  b) 3                  c) 1                  d) none of these

- a  
 b  
 c  
 d

3. If  $W_1$  and  $W_2$  be two subspaces of a finite dimensional vector space  $V$  over a field  $F$  then  $(W_1 + W_2)^o =$

- a)  $W_1^o + W_2^o$                   b)  $W_1^o \cap W_2^o$

- a



b

4. If  $W$  is a 3 dimensional subspace of a 5 dimensional vector space  $V$  over a field  $F$  then the dimension of  $W^\circ$  is

a) 3                  b) 2                  c) 5                  d) 3

 a b c d

5. Let  $\phi$  be a linear functional on  $R^2$  defined by  $\phi(x, y) = 3x - 2y$ . For the linear mapping  $T: R^3 \rightarrow R^2$  defined by  $T(x, y, z) = (x + y, y + z)$

$[T^*(\phi)](x, y, z)$  is

a)  $x + y - 2z$

b)  $-x + 5y + 3z$

c)  $3x + y - 2z$

d) none of these

 a b c d

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