

NAME: .....

SCHOOL:.....

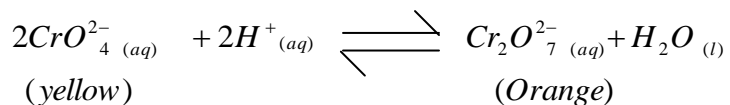
DATE: .....

## REVERSIBLE REACTIONS

### INSTRUCTIONS TO CANDIDATES

*Answer ALL questions in this paper in the spaces provided.*

1. An equilibrium exists between the chromate ion ( $CrO_4^{2-}$ ) and the dichromate ion ( $Cr_2O_7^{2-}$ ) as represented by the following equation

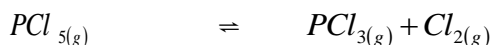


State and explain the observation made on adding aqueous potassium hydroxide solution to the equilibrium mixture

(2mks)

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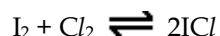
2. Consider the following reaction at equilibrium.



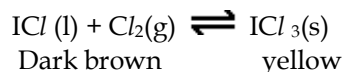
**Complete** the table below to show the effect of different factors on the position of equilibrium. (3marks)

Factor	Effect on the equilibrium position
(i) Decrease pressure	
(ii) Removing chloride	
(iii) Adding Helium gas to mixture	

3. Iodine reacts with chlorine to form dark brown iodine monochloride.



This reacts with more chlorine to give yellow iodine trichloride. There is an equilibrium between these iodine chlorides.



(a) Explain what is meant by *equilibrium*.

.....  
 .....  
 ..... [2]

(b) When the equilibrium mixture is heated it becomes a darker brown colour. Is the reverse reaction endothermic or exothermic? Give a reason for your choice.

.....  
 .....  
 ..... [2]

(c) The pressure on the equilibrium mixture is decreased.  
 (i) How would this affect the position of equilibrium and why?

It would move to the..... [1]  
 reason.....

..... [1]

**(ii)** Describe what you would observe.

.....

..... [1]

[Total: 7]