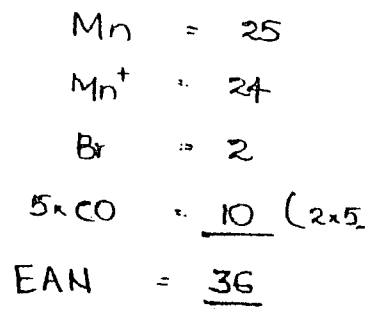
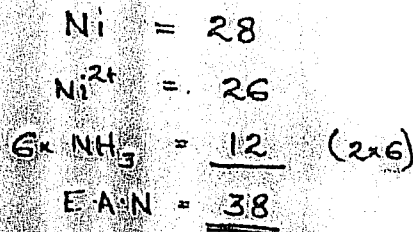
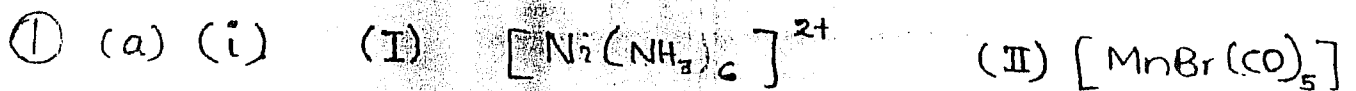


The Open University of Sri Lanka  
 B.Sc. Degree Programme 2006/2007  
 CHU 2123 / CHE 4123 - Inorganic Chemistry - Level 4  
 Assignment Test II - (Repeat) MCQ Test

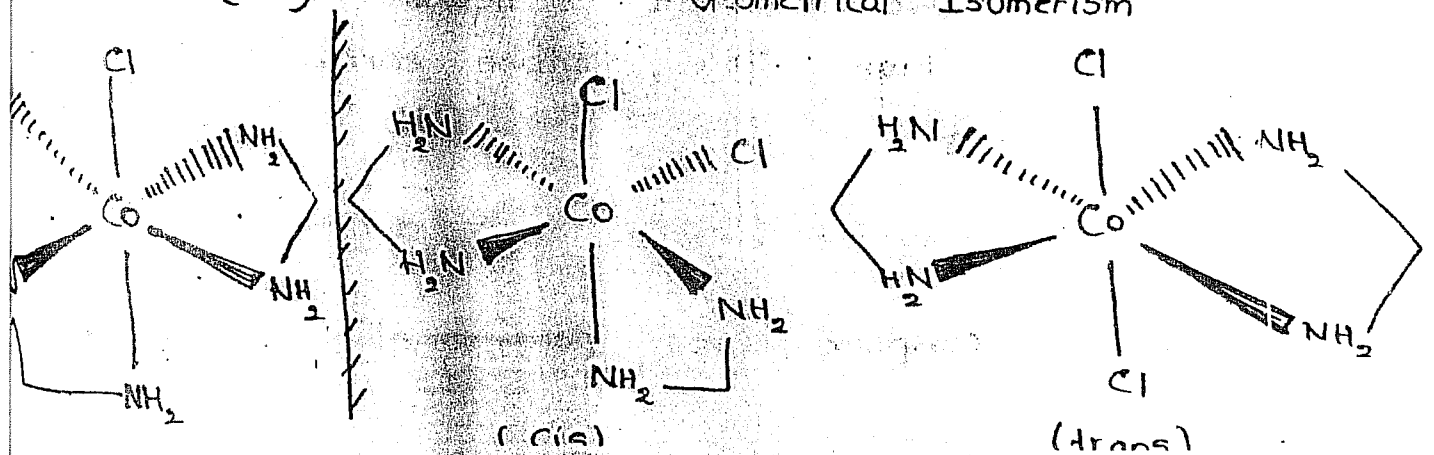
Part A - MCQ Test

1. 4	6. 2	11. 2
2. 3	7. 1	12. 3
3. 3	8. 5	13. 1
4. 2	9. 3	14. 2
5. 1	10. 4	15. 5

Part B - Structured Essay

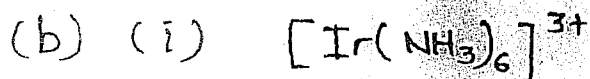


(ii) (I) Geometrical Isomerism



(II) Refer Part (IV) - pg : 100

(i) Refer Part (IV) - pg : 07

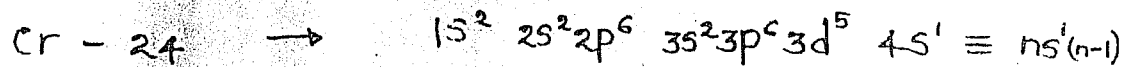
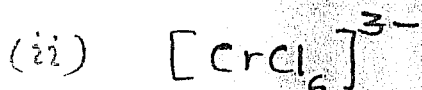


$$\bar{\nu} = \frac{1}{\lambda}$$

$$41,000 \text{ cm}^{-1} = \frac{1}{\lambda}$$

$$\lambda = \frac{1}{41,000 \text{ cm}^{-1}} = 2.43 \times 10^{-5} \text{ cm}$$

$$\lambda = \underline{\underline{243.4 \text{ nm}}}$$



$\text{Cl}^-$  - Weak field ligand  
high spin, splitting energy  $<$  Pairing Energy  
 $n = 3$

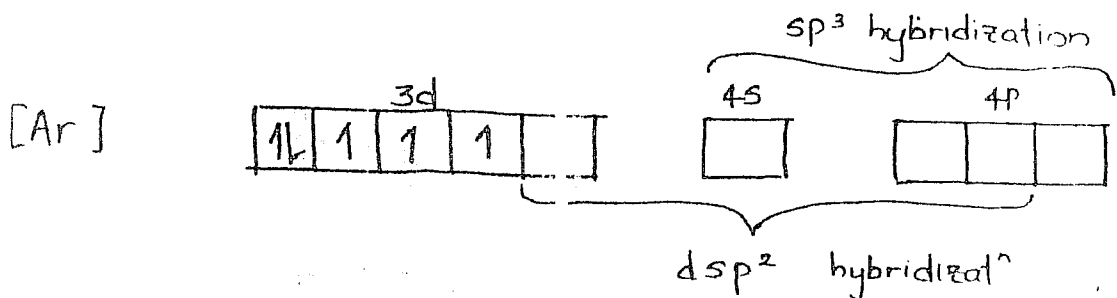
$$\mu = \sqrt{n(n+2)} = \sqrt{3(3+2)} = \sqrt{15}$$

Complex is paramagnetic

(C) (i) Refer Part (i) - Pg : 38

(ii) Coordination number of the  $Mn^{2+}$  ion is four. The geometry of this complex ion is either tetrahedral ( $sp^3$  hybridization) or square planar ( $dsp^2$  hybridization)

Since it has 3 unpaired  $e^-$ 's



It can undergo either  $dsp^2$  - hybridization or  $sp^3$  hybridization. Then the complex ion could be square-planar or /and tetrahedral.

② (a) (i)  $\lambda = \frac{0.693}{t_{1/2}}$

(ii)  $t_{1/2} = 5600 \text{ Years}$

$$\lambda = \frac{0.693}{5600 \times 365 \times 24 \times 60 \times 60}$$

$$= \frac{0.693 \times 10^{-12}}{(1.2375 \times 10^7)}$$

Method I

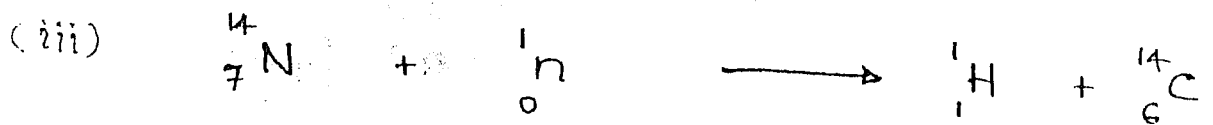
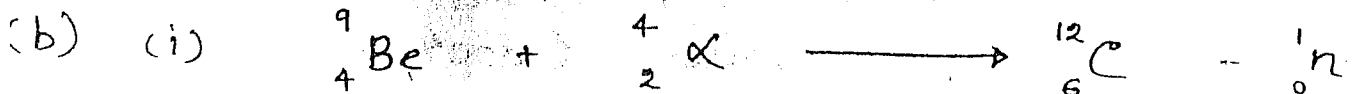
$$\ln \frac{N_0}{N} = \lambda t$$

$$\ln \frac{100}{3.125} = \frac{0.693}{5600 \text{ yr}} \times t \quad \text{So, } t = \underline{28000 \text{ years}}$$

Method II

i  $100 \xrightarrow{t_{1/2}} 50 \xrightarrow{t_{1/2}} 25 \xrightarrow{t_{1/2}} 12.5 \xrightarrow{t_{1/2}} 6.25 \xrightarrow{t_{1/2}} 3.125\%$

so,  $t = 5600 \times 5 = \underline{28000 \text{ years}}$



(c) (i) Fusion

(ii) Radioactive decay

(iii) Fission chain reaction.