THE OPEN UNIVERSITY OF SRI LANKA
Foundation Programme in Science/Continuing Education Programme
LEVEL 2- ASSIGNMENT TEST 1 (NBT) 2006/2007
PSF 2303/PSE 2303 – CHEMISTRY
Answer Guide-Test Assignment I

MCQ

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

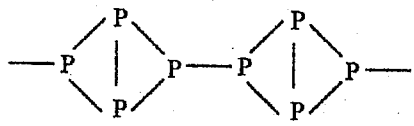
Structured Essay

1 (i) $$C_{rms} = \left(\frac{3RT}{M}\right)^{1/2}$$

$$= \left(\frac{3\times 8.314 \times J\times K^{-1}\times mol^{-1}\times 270\times K}{8.3\times 10^{-3}\times Kg\times mol^{-1}}\right)^{1/2}$$

$$= 9\times 10^{2}\ s^{-1}\ m$$

(ii)



(iii)

Cr^{2+} - $1s^2,2s^2,2p^6,3s^2,3p^6,3d^4$ Sc^{3+} - $1s^2,2s^2,2p^6,3s^2,3p^6$ Ti^{3+} - $1s^2,2s^2,2p^6,3s^2,3p^6,3d^1$

(iv)

$$Fe^{2+} \longrightarrow Fe^{3+} + e \quad \text{.....(1)}$$

$$CrO_4^{2-} + 8H^+ + 3e \longrightarrow Cr^{3+} + 4H_2O \quad \text{.....(2)}$$

(1) × 3 +(2)

$$3Fe^{2+} + CrO_4^{2-} + 8H^+ \longrightarrow Cr^{3+} + 4H_2O + 3Fe^{3+}$$

(v)

$$CaCl_2 + 2AgNO_3 \longrightarrow 2AgCl + Ca(NO_3)_2$$

Amount of AgCl obtained = 4.498 g
No of moles AgCl = 4.498/ 143.5
Amount of $CaCl_2$ moles = 0.01567
Molarity of $CaCl_2$ is = $\frac{0.01567\times 1000}{25.00}$ mol dm^{-3}
= 0.6268 mol dm^{-3}