THE OPEN UNIVERSITY OF SRI LANKA
B.Sc/ B.Ed DEGREE PROGRAMME- 2006/2007
Level 4- CHU 2123/ CHE 4123
INORGANIC CHEMISTRY

ASSIGNMENT TEST II (REPEAT)

Date: 01st March 2007 Time: 3.30- 5.00 p.m.

Part A- Multiple Choice Questions (45 marks)

Answer all the questions

Select the most correct answer to each question given below and mark a cross ***X*** over the answer on the given answer sheet. Any answer with more than one ***X*** will not be counted. 3 marks will be awarded for each correct answer. 1/6 th of a mark will be deducted for each incorrect answer.

1. Which of the following is a bidentate ligand that does not form chelates?

   (1) $H_2NCH_2COO^-$ (2) $Ph_2PCH_2CH_2PPh_2$ (3) $C_2O_4^{2-}$ (4) NH_2-NH_2
   (5) $NH_2(CH_2)_2NH(CH_2)_2NH_2$

2. What is the coordination number of Mo in $[Mo(CN)_8]^{4-}$?
   (1) 4 (2) 6 (3) 8 (4) 16 (5) 12

3. In which one of the following does the metal have a tetrahedral geometry?
   (1) $[PtCl_2(PR_3)_2]$ (2) $[Ni(CN)_4]^{2-}$ (3) $[FeBr_4]^-$ (4) $[Fe(CO)_5]$
   (5) $[Mo(CO)_6]$

4. The oxidation number of Pt in $[PtMe(CN)(NO_2)(en)(PPh_3)]^+$ is
   (1) +6 (2) +4 (3) +5 (4) +3 (5) +2

5. How many geometric isomers are possible for complexes with the general formula MA_4BC?
   (1) 2 (2) 3 (3) 4 (4) 5 (5) 6

6. Identify the type of isomerism found in the pair of compounds $[CoNO_2(NH_3)_5]Cl_2$ (yellow) and $[Co(ONO)(NH_3)_5]Cl_2$ (red).
   (1) Coordination isomerism (2) Linkage isomerism (3) Geometric isomerism
   (4) Polymerization isomerism (5) Ionization isomerism

7. What is the type of isomerism found in the pair of compounds, $[Co(NH_3)_6][Cr(CN)_6]$ and $[Cr(NH_3)_6][Co(CN)_6]$?
   (1) Coordination position isomerism (2) Linkage isomerism (3) Geometric isomerism
   (4) Polymerization isomerism (5) Ionization isomerism

8. The IUPAC name of the complex [Co F $I_2(NH_3)_3$] is
(1) diiodofluorotriamminecobalt(III)
(2) fluorodiiodotriamminecobalt(III)
(3) triamminediiodofluorocobalt(III)
(4) triamminefluorodiiodocobalt(II)
(5) triamminefluorodiiodocobalt(III)

9. What is the IUPAC name of the complex $K_3[Fe(CN)_5(NO)]$?
(1) potassium nitrosylpentacyanoferrate(III)
(2) tripotassium nitrosylpentacyanoferrate(III)
(3) potassium pentacyanonitrosylferrate(III)
(4) potassium pentacyanonitrosylferrate(II)
(5) tripotassium pentacyanonitrosylferrate(III)

10. Which of the following complexes obey the EAN rule?
(1) $[Mn(CO)_5]^{2-}$ (2) $[Co(CN)_5]^{2-}$ (3)$[Ni(NH_3)_6]^{2+}$
(4) $[MnBr(CO)_5]$ (5) $[Fe(CN)_6]^{3-}$

11. Decay of carbon -14 produces nitrogen. What is the mode of decay of carbon -14?
(1) α emission (2) β emission (3) positron emission
(4) electron capture (5) γ emission

12. ^{238}U decays to give ^{234}Th, ^{234}Pa and ^{206}Pb among other products. To what decay series do these radionuclides belong?
(1) (4n) (2) (4n+1) (3) (4n+2) (4) (4n+3)
(5) They do not belong to any of these series

13. Which of the following represents a fusion reaction?
(1) $^{2}_{1}H + {}^{3}_{1}H \rightarrow {}^{4}_{2}He + {}^{1}_{0}n$ (2) $^{14}_{7}N + {}^{1}_{0}n \rightarrow {}^{14}_{6}C + {}^{1}_{1}H$
(3) $^{31}_{15}P + {}^{1}_{0}n \rightarrow {}^{32}_{15}P + \gamma$ (4) $^{235}_{92}U + {}^{1}_{0}n \rightarrow {}^{139}_{54}Xe + {}^{95}_{38}Sr + 2({}^{1}_{0}n)$
(5) $^{235}_{92}U \rightarrow {}^{231}_{90}Th + {}^{4}_{2}He$

14. In the ^{235}U (4n+3) decay series, ^{231}Th, ^{231}Pa and ^{227}Ac are formed as the initial products of decay .The modes of decay, respectively, leading to these products will be

(1) β, α, α, ending with lead-207 (2) α, β, α, ending with lead-207
(3) α, β, β, ending with lead- 206 (4) α, α, β, ending with lead-207
(5) β, β, α, ending with lead-208

15. Which of the following statements are true about a β particle?
(a) It is identical to an electron
(b) It carries a charge of -1
(c) It is deflected by electric and magnetic field
(d) It has a higher penetrating power than an α particle.

The correct answer is
(1) (a) and (b) only (2) (b) and (c) only (3) (c) and (d) only
(4) (a) and (d) only (5) All of the above