19P1005

Reg. No ..... Name .....

M. Sc DEGREE END SEMESTER EXAMINATION - OCTOBER 2019

SEMESTER 1 : CHEMISTRY / PHARMACEUTICAL CHEMISTRY

COURSE : **16P1CHET01 / 16P1CPHT01 : INORGANIC CHEMISTRY - I**

(For Regular - 2019 Admission and Supplementary - 2016/2017/2018 Admissions)

Time : Three Hours Max. Marks: 75

Section A
Answer any 10 (2 marks each)

1. What are the parameters which are conserved in nuclear reactions?
2. Explain the principle behind titration of silver by chloride ions labelled with ^{36}Cl.
3. A 10 mg of radioactive sample shows activity 150 counts / second in neutron activation analysis. An unknown sample of the same substance shows 30 counts / minute. Calculate the amount of the unknown sample.
4. Explain a preventive measure of human body towards drugs and pesticides.
5. What is sodium potassium pump?
6. Explain the role of contrast agents in MRI scanning.
7. The C-O stretching frequency for $[Ni(CO)_4]$, $[Co(CO)_4]^-$, and $[Fe(CO)_4]^{2-}$ are 2060, 1890 and 1790 cm^{-1} respectively. Account for the observation.
8. Suggest a method to synthesis $Fe_2(CO)_9$. Also give it's structure.
9. State and expalin capping rule.
10. Strong N-N stretching bands appear at 2105 cm^{-1} for $[Ru(NH_3)_5(N_2)]Cl_2$ and at 1995 and 1890 cm^{-1} for trans-$Mo(N_2)_2Me_8$[16]ane S_4. Give reason.
11. Differentiate between fluxional isomerism and tautomerism with examples.
12. What is orthometallation reaction? Give example.
13. Explain methoxy carbonylation reaction with an example.

(2 x 10 = 20)

Section B
Answer any 5 (5 marks each)

14. Discuss the variation of neutron capture cross section with energy.
15. Explain how the nuclear diameter is correlated with debroglie wavelength of slow neutrons of energy 1eV. What will happen when the neutron energy is increased by a factor of 100?
16. What are siderophores? Explain structure of various types of ligands and their mechanism of action.
17. Give the structural features, function and mechanism of action of carbonic anhydrase.
18. Draw the structure of $K[PtCl_3(C_2H_4)]$. How is synergic effect occur in these compounds?
19. Discuss Mingo's rules
20. Explain oxidative addition reaction using examples. Point out the various factors influence oxidative addition reaction.
21. Write a note on Fisher tropsch synthesis. Give its mechanism and application.

Section C
Answer any 2 (15 marks each)

22. a) Explain in detail about the change in nuclear characteristics in the system during photon emission.
    b) What is beta decay? Discuss the various problems associated with beta decay.

23. a) Briefly explain the structure and the nature of oxygen binding in
    i). Hemocyanin. ii). Haemerythrin (4 × 2 = 8 marks)
    b) Explain the z-scheme in photosynthesis. (7 marks)

24. Give an account on LNCC'S & HNCC'S

25. Write a note on Zeigler Natta catalyst. Explain the role of Zeigler Natta catalyst in alkene polymerization. How they are used as templates for alkene polymerization?

(15 x 2 = 30)