14CHU16

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2017
(Fifth Semester)

Branch - **CHEMISTRY**

INORGANIC CHEMISTRY

Time : Three Hours Maximum : 75 Marks

SECTION-A (20 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 x 2 = 20)

1 Write any four general characteristics of d-block elements.
2 What are chelating ligands? Mention the applications of chelates.
3 What is mean by CFSE?
4 What do you mean by spectrochemical series?
5 Write any two limitations of CFT.
6 Define trans effect.
7 What do you know about cytochromes?
8 What are essential and trace elements? Give suitable examples.
9 How is sodium nitroprusside prepared?
10 What are nitrosyl? Give examples.

SECTION - B (25 Marks!
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 5 = 25)

11 a Explain with illustrations (i) ionization isomerism (ii) hydrate isomerism (iii) ligand isomerism.

OR

b What are d-.block elements? Discuss the colour, magnetic properties, oxidation states and tendency to form complexes of d-block elements.

12 a Give the postulates of Werner's theory of co-ordination compounds with a suitable example.

OR

b Give an account of valence bond theory. What are the limitations of valence bond theory of co-ordinates bonding and how far have these been rectified in the CFT?

13 a Compare VBT and CFT.

OR

b Discuss the different theories proposed for explaining the trans-effect.

14 a What are biological importance and functions of Na^+- K^+pump?

OR

b Explain the relative affinity of 0_2 for haemoglobin and myoglobin.

15 a What are metal carbonyls? How are they classified? Give an example for each type. Discuss the preparation, nature of bonding and structure of $Ni(CO)_4$.

OR

b Describe the structure of $Fe_3(CO)i_2$ and $Cr(CO)_6$.

Cont...

SECTION - C (30 Marks)

Answer any **THREE** Questions
ALL Questions Carry **EQUAL** Marks (3 x 10 = 30)

16 a What are ligands? How are they classified? Give an example for each type. (4)

b Explain optical isomerism in 4 co-ordinate complexes and geometrical isomerism in 6 co-ordinate complexes with suitable example. (6)

17 a Write the salient features of crystal field theory. (5)

b Write down the d-orbital split diagram in a tetrahedral, octahedral field. (5)

18 Explain the ligand substitution reactions in square planar complexes.

19 a Write short note on (i) Vitamin B_{12} (ii) Iron-sulphur protein. (4)

b What are the important role of essential and trace elements in biological systems? (6)

20 Discuss the preparation, properties and structure of
(i) Ferrocene and (ii) $Fe_2(CO)_9$.

Z-Z-Z END