



SECTION - D

Answer any 2 questions. Each carries a weightage 4.

19. a) Name any four oxyacids of phosphorous and give their molecular formulae.
 b) Why oxygen is exceptional in its behaviour, compared to other elements of the group? Mention any two exceptions.
20. Write notes on :
 i) EAN rule
 ii) Chelate effect and
 iii) Spectrochemical series. (1½+1½+1)
21. a) Explain the effect of coprecipitation and post precipitation in gravimetric analysis.
 b) What are redox titrations? Give examples. (4×2=8)

SECTION - C

Answer any 4 questions. Each carries a weightage 2.

13. What is diagonal relationship? Explain with example.

14. Explain the inert pair effect with reference to 14th group elements.

15. Illustrate the type of hybridization of Xe in XeF₄ and XeOF₄.

16. Sketch the splitting pattern of d orbitals in octahedral field and explain.

17. Draw the structure of benzene and explain the type of bonding.

18. What are the different types of determinate errors? How can they be minimized?

(2×4=8)



Reg. No. :

Name :

III Semester B.Sc. Degree (CCSS – Supple./Imp.)

Examination, November 2015

Core Course in Chemistry

3B04 CHE : INORGANIC CHEMISTRY – I

(2013 & Earlier Admissions)

Time : 3 Hours

Max. Weightage : 25

SECTION - A

Answer all questions. Each bunch of four questions carries a weightage 1.

1. i) Which of the following is the correct order of ionic size ?
 A) $Mg^{2+} > Na^+ > \bar{F} > O^{2-}$
 B) $Na^+ > Mg^{2+} > O^{2-} > \bar{F}$
 C) $O^{2-} > \bar{F} > Na^+ > Mg^{2+}$
 D) $\bar{F} > O^{2-} > Na^+ > Mg^{2+}$
- ii) In the modern long form of the periodic table, majority of 'd' block elements are present in
 A) Groups 3 to 12 and Periods 4 to 6
 B) Groups 3 to 12 and Periods 3 to 5
 C) Groups 3 to 12 and Periods 3 to 6
 D) Groups 3 to 13 and Periods 4 to 6
- iii) A radioactive species among the following is
 A) Protium
 B) Deuterium
 C) Tritium
 D) Ortho hydrogen
- iv) The correct order of stability of alkalimetal hydrides is
 A) $LiH > RbH > KH > NaH$
 B) $NaH > KH > RbH > LiH$
 C) $RbH > KH > NaH > LiH$
 D) $LiH > NaH > KH > RbH$
2. i) Bauxite is
 A) $Al_2O_3 \cdot 2H_2O$
 B) $Al_2O_3 \cdot 3H_2O$
 C) Al_2O_3
 D) Na_3AlF_6
- ii) Which of the following compounds doesnot exist ?
 A) CCl_4
 B) $SiCl_4$
 C) PbI_4
 D) CF_4



- iii) A binuclear organometallic compound among the following is
 A) Ferrocene B) Dibenzene chromium
 C) $\text{Fe}_2(\text{CO})_9$ D) $\text{Fe}(\text{CO})_5$
- iv) Which among the following is a σ bonded organometallic compound?
 A) $\text{Ni}(\text{CO})_4$ B) Ferrocene
 C) Ziese's salt D) $(\text{C}_2\text{H}_5)_2\text{Zn}$
3. i) A polydentate ligand among the following is
 A) Ethylene diamine B) CN^- C) EDTA D) NH_3
- ii) The coordination number and oxidation state respectively of Pt in $[\text{Pt}(\text{NH}_3)_4\text{Cl}_2]\text{Br}_2$, are
 A) 6 and 4 B) 6 and 2 C) 2 and 6 D) 8 and 4
- iii) $[\text{Co}(\text{NH}_3)_5\text{SO}_4]\text{Cl}$ and $[\text{Co}(\text{NH}_3)_5\text{Cl}]\text{SO}_4$ are
 A) Coordination isomers B) Ionisation isomers
 C) Linkage isomers D) Geometrical isomers
- iv) A high spin complex is
 A) $\text{K}_4[\text{Fe}(\text{CN})_6]$ B) $[\text{Ni}(\text{CO})_4]$ C) $\text{K}_3[\text{Fe}(\text{CN})_6]$ D) $[\text{CoF}_6]^{3-}$
4. i) Which is not used as stationary phase in adsorption column chromatography?
 A) Alumina B) Silicagel
 C) Cellulose powder D) Na_2CO_3
- ii) Chromatography was discovered by
 A) Tswett B) Richard Kuhn
 C) Martin D) Gordon
- iii) Which is not an acid-base indicator?
 A) Phenolphthalein B) N-phenyl anthranilic acid
 C) Methyl orange D) Methyl red
- iv) The common complexing agent in complexometric titrations is
 A) Ethylene diamine B) Starch C) EDTA D) AgNO_3
 (1×4=4)



SECTION – B

Answer **any 5** questions. **Each** carries a weightage 1.

- What is effective nuclear charge? How is it related to screening constant?
- Write any two factors affecting the electronegativity of an element.
- Give any two features of alkali metals in liquid NH_3 .
- What are clathrate compounds?
- SiCl_4 is readily hydrolysed but CCl_4 is not. Why?
- Write the IUPAC names of
 i) $[\text{Co}(\text{en})_3]\text{Cl}_3$ and ii) $\text{K}_2[\text{Ni}(\text{CN})_4]$
- What are π bonded organometallics? Give example.
- Accuracy is always associated with precision, while the reverse is not true. Justify. (1×5=5)

SECTION – C

Answer **any 4** questions. **Each** carries a weightage 2.

- What is diagonal relationship? Explain with example.
- Explain inert pair effect with reference to 14th group elements.
- Illustrate the type of hybridisation of Xe in XeF_4 and XeOF_4 .
- Sketch the splitting pattern of 'd' orbitals in octahedral field and explain.
- Draw the structure of ferrocene and explain the type of bonding.
- What are the different types of determinate errors? How can they be minimised? (2×4=8)