CHE 602.1 **Reg. No. .....**

CREDIT BASED SIXTH SEMESTER B.Sc. DEGREE EXAMINATION - APRIL 2012

CHEMISTRY

ELECTIVE – I: ANALYTICAL AND INDUSTRIAL CHEMISTRY

Duration: 3 hours **Max marks: 70**

PART A

1. Answer any TEN of the following: **1x10=10**

a) What is meant by confidence limit?

b) Explain the term Hypsochromic shift.

c) What is Ellingham diagram?

d) What is meant by occlusion?

e) Explain how adulteration of ghee is detected?

f) Give examples for petro chemicals produced from C_3 compounds.

g) Explain the term Retention factor.

h) What are plant nutrients?

i) Mention any two applications of Gas-Liquid Chromatography.

j) Name any two nitrogeneous fertilizers and give their chemical composition.

m) Explain the significance of DO level of water.

n) What is meant by a cathodic protection?

PART-B

UNIT-I

Answer any TWO of the following. **10x2=20**

2. a) What is significance of F-test? Explain. 04

b) Discuss the principle of UV Spectroscopy. 03

c) What is a complexometric titration? Give an example. 03

3. a) Explain the principle and application of Flame photometry. 04
   d) Write a note on column chromatography. 03
   e) Discuss the principle invovled in potentiometric titration. 03

4. a) Give the principle and applications of Differential Thermal Analysis. 04
   b) What is meant by co-precipitation and post-precipitation? 03
   c) Discuss the principle of Thin Layer Chromatography. 03

UNIT-II

Answer any <u>TWO</u> of the following. **10x2=20**

5. a) How is copper extracted from its ore? 04

   b) What is electrochemical series? Explain its importance. 03

   c) Explain the production of any two petrochemicals from C_3 compounds. 03

6. a) With an example explain the analysis of redox cycle. 04

   b) Describe the extraction of lead by carbon reduction process. 03

   c) Explain the production of any two petrochemicals from C_2 compounds. 03

7. a) How is aluminium extracted from purified bauxite? 04

   b) Explain the extraction of gold from Alluvial river sands. 03

   c) Explain the disilverisation of lead by Parke's process. 03

UNIT-III

Answer any <u>TWO</u> of the following. **2x10=20**

8. a) Explain the electrochemical theory of corrosion. 04
   d) What are food additives? Explain with suitable examples. 03
   e) How is water analysed for COD? 03

9. a) Explain the manufacture of i) DDT ii) Parathion

b) Give the production of superphosphate of lime.

c) Write a note on prevention of food adulteration by PFA act. 03

10. a) What are the food standards practiced to maintain quality of food? Explain.

b) Explain the major industrial effluents which cause water pollution? 03

d) Mention the different types of corrosion with suitable examples. 03

****

CHE 602.1 **Reg. No. .....**

CREDIT BASED SIXTH SEMESTER B.Sc. DEGREE EXAMINATION - APRIL 2013

CHEMISTRY

ELECTIVE – I: ANALYTICAL AND INDUSTRIAL CHEMISTRY

Duration: 3 hours **Max marks: 80**

PART A

1. Answer any <u>TEN</u> of the following: **2x10=20**

a) Explain the terms (i) absolute error (ii) relative error.

b) How many significant figures are there in (i) 0.0304 (ii) 01.006

c) What is hyperchromic shift?

d) Define retention factor.

e) State Nernst distribution law.

f) Mention the flux and reducing agent used in the pyrometallurgy of iron.

g) Explain the purification of copper.

h) How is polythene manufactured?

i) How is the presence of starch in milk detected?

j) What are food standards?

o) How is Urea manufactured?

p) Explain the terms (i) BOD (ii) COD.

PART-B

UNIT-I

Answer any <u>TWO</u> of the following. **10x2=20**

2. a) Differentiate between F-test and t-test. 02

   b) Explain the theory of acid-base indicators. 04

   c) Explain ion exchange chromatography with its application. 04

3. a) Write a brief note on assessment of analytical data. 02

   f) What are complexometric titrations? Explain with suitable examples. 04

   g) Explain the principle gas-liquid chromatography. 04

4. a) Explain the advantages of organic reagents in gravimetry. 02

   b) What is the principle of atomic absorption spectroscopy? Give its applications. 04

   c) Explain the principle of TGA. Mention its applications. 04

UNIT-II

Answer any <u>TWO</u> of the following. **10x2=20**

5. a) Explain the application of solvent extraction in metallurgy.
   02

   b) How is aluminium extracted from its ore?
   04

   c) Mention any two types of synthetic rubber. How are they manufactured?
   04

6. a) How is water gas produced?
   02

   b) How is copper extracted from its ore?
   04

   c) Explain the manufacture of steel by Bessemer process.
   04

7. a) How is isopropyl alcohol produced?
   02

   b) Explain important features of Ellingham diagram.
   04

   c) How is lead extracted from its ore?
   04

UNIT-III

Answer any <u>TWO</u> of the following. **2x10=20**

8.	a)	What is food adultration?	02
	f)	Explain different types of fertilizers with suitable example.	04
	g)	Explain different methods of prevention of corrosion.	04
9.	a)	Explain electrochemical theory of corrosion.	
	b)	Explain the method of sewage water treatment.	
	c)	Write short note on food additives.	04
10.	a)	How are adultrants in chilli powder detected?	02
	b)	How are super phosphate of lime and triple phosphate manufactured?	04
	d)	Explain different types of air pollutants caused by industrial activity.	04

****

CHE 602.3 **Reg. No. .....**

CREDIT BASED SIXTH SEMESTER B.Sc. DEGREE EXAMINATION APRIL 2014

CHEMISTRY

ELECTIVE I: ANALYTICAL AND INDUSTRIAL CHEMISTRY

Duration: 3 hours **Max marks: 80**

PART A

1. Answer any <u>TEN</u> of the following: **10x2=20**

a) How many significant figures are present in (i) 112000 (ii) 84.300.

b) Give the advantages of organic precipitating agents in the gravimetric determination of metal ions.

c) Give the expression for the calculation of standard deviation for the set of n measurements.

d) Give the principles of flame photometry.

e) Explain froth flotation process.

f) Give a method of preparation of vinyl chloride.

g) Aluminium can be the reducing agent for chromium. Explain using Ellingham diagram.

h) Give reason: aluminium displaces iron from ferrous sulphate..

i) What are artificial sweetners?

j) Give the significance of measurement of BOD in water sample.

q) What is malathion? Give its structure?

r) What is Food Product Order?

PART-B
UNIT-I

Answer any **TWO** of the following. **2x10=20**

2. a) Give the principle of Electrogravimetry. 03
   b) Give the applications of UV visible spectrophotometry. 03
   c) Give the instrumentation of atomic absorption spectrometry. 04

3. a) Explain the theory of titration of a weak base against a strong acid. 03
   b) Give the instrumentation of UV visible spectrophotometry. 03
   c) Explain the theory of complexometric titration. 04

4. a) Differentiate between absolute and relative error. 03
   b) Give the advantages of DTA over TGA. 03
   c) Explain the theory of redox titration of Mohr's salt with potassium dichromate. 04

UNIT-II

Answer any **TWO** of the following. **2x10=20**

5. a) Explain the concentration of the ore by magnetic method. 03
   b) Among carbon and carbon dioxide, which is the better reducing agent for hematite at . Explain. 03
   c) Give a brief account of manufacture of steel by Bessemer process. 04

6. a) Explain the concentration of bauxite by Baeyer's method. 03
   b) Explain Mac Arther and Forest cyanide process. 03
   c) With a neat diagram, explain the extraction of iron from hematite. 04

7. a) Write a note on intermediates from aromatics. 03
   b) Explain the Parke's process of desilverisation of lead. 03
   c) Explain the analysis of a redox cycle. 04

UNIT-III

Answer any TWO of the following. **2x10=20**

8. a) Give an account of food additives. 03
   h) Outline the production of urea. 03
   i) Write a note on Bureau of Indian Standards and Agmark standard as

certification system for food products. 04

9. a) Give the method of preparation of DDT.
   b) Explain the production superphosphate of lime. 03
   c) Give a brief account of methods used in the treatment of sewage water. 04

10. a) Explain the methods of food preservation.
    b) Explain the method of determination of DO in the water simple. 03
    c) Give an account of different types of fertilizers. 04

****

CHE 602.3 **Reg. No. .....**

CREDIT BASED SIXTH SEMESTER B.Sc. DEGREE EXAMINATION APRIL 2015

CHEMISTRY

ELECTIVE I: ANALYTICAL AND INDUSTRIAL CHEMISTRY

Duration: 3 hours **Max Marks: 80**

PART A

1. Answer any <u>TEN</u> of the following: **10x2=20**

a) How many significant figures are present in decimal value of $^{\sqcup}$?
b) Illustrate the term standard deviation.
c) Give reason – phenolphthalein is used as indicator for titration of strong base against weak acid.
d) Explain the role of stationary phase in chromatography.
e) Give reason: Hydrogen gas is not used as reducing agent in the extraction of zinc from ZnO.
f) Write the chemical equation involved in the extraction of gold by Mac Aurther cyanide process.
g) How is Buna-S in synthesized?
h) Explain Baeyer's method of purification of aluminium.
i) What are artificial sweeteners? Give an example.
j) Explain Food Product order.
s) Write all the plant nutrients present in diammonium phosphate and give their functions.
t) Explain D.O. Level of water.

PART-B

UNIT-I

Answer any **<u>TWO</u>** of the following. **2x10=20**

2. a) Explain TGA with one application in analytical chemistry. 03

	b)	How is U.V-Visible spectra useful in the analysis of ion.	03
	c)	Explain peptization and coprecipitation with an example each.	04
3.	a)	Explain complexometric titration with suitable example.	03
	b)	Explain errors in quantitative analysis. How are they classified?	03
	d)	Explain principle and instrumentation in gas liquid chromatography.	04
4.	a)	Explain the principle and instrumentation of flame photometry.	04
	b)	Calculate the standard deviation for five determination of copper in mg 48.4100, 48.108, 48.4122, 48.4088, 48.4112	03
	c)	Explain the choice of indicator in weak base and strong acid litrations.	03

UNIT-II

Answer any **TWO** of the following. **2x10=20**

5.	a)	How is lead extracted from galena? Write chemical reaction involved.	04
	b)	How is methanol produced from methane?	03
	c)	Using redox potential data explain why oxygen is necessary in the cyanide process of extraction of silver.	03
6.	a)	Explain Bessemer process of production of steel.	03
	b)	How is isopropyl alcohol produced in petrochemical industries?	03
	c)	Name any two aromatic petrochemicals, give their application in the production of synthetic chemicals.	04
7.	a)	Explain the different methods of concentration of iron ore.	03
	b)	How is acrylonitrile manufactured from propene?	03
	c)	Explain electrolytic refining of copper and silver.	04

UNIT-III

Answer any TWO of the following. **2x10=20**

8.	a)	Explain the essential commodities act and control orders for food industries.	04
	j)	How is superphosphate of lime manufactured? Write one application.	03
	k)	How is COD of water measured?	03
9.	a)	What are food additives? How are they useful in the production of food?	
	b)	Explain the manufacture of malathion.	03
	d)	Explain sewage water treatment.	04
10.	a)	What are fertilizers? How are they classified?	

b) What is BOD? How is it measured? 03

c) Explain the various chemistry aspects of storage techniques used for food materials. 04

****

CHE 602.3 Reg. No. .....

CREDIT BASED SIXTH SEMESTER B.Sc. DEGREE EXAMINATION APRIL 2016

CHEMISTRY

ELECTIVE I: ANALYTICAL AND INDUSTRIAL CHEMISTRY

Duration: 3 hours **Max Marks: 80**

PART A

1. **Answer any TEN of the following:** **10x2=20**

   a) How many significant figures are there in
   (i) 0.0405 (ii) 6.022×10^{23}

   b) What is relative error?

   c) Define peptisation with an example.

   d) Name two organic precipitating agents used in gravimetry. Write their structure.

   e) Aluminium is used in the reduction of chomite ore by thermite process. Explain.

   f) What is desilverization of lead?

   g) How vinyl chloride is synthesized from ethylene?

   h) Explain placer mining process for the extraction of gold.

   i) What are food preservatives? Give an example.

   j) Write the reaction involved in the preparation of diammonium phosphate and give its use.

   k) What is food adulteration? Explain with example.

   l) Explain the adverse effects caused by decrease in DO level in water.

PART-B

UNIT-I

Answer any **TWO** of the following. **2x10=20**

2. a) What is redox titration? Explain with example. 03

   b) Explain the working of DTA with the help of suitable block diagram. 03

   c) Describe the principle and separation teachniques involved in column chromatography. 04

3. a) For titrating 10ml of a solution with the help of a microburette, the volumes of the titrant used are 9.98, 9.99, 9.98, 10.00 and 10.02ml. Calculate the standard deviation. 03

   b) Discuss the principles of Thermogravimetric Analysis. 03

   c) Explain co-precipitation and post precipitation with example. 04

4. a) Describe the instrumentation and application of UV-visible spectrophotometry. 04

   b) Explain the choice of indicator for the titration of a strong alkali with a weak acid. 03

   c) Briefly explain the classification of errors. 03

UNIT-II

Answer any **TWO** of the following. **2x10=20**

5. a) Write the reaction involved the extraction of gold by Forest Cyanide Process. 03
   b) Write the reaction and explain the process involved in the preparation of acetone from isopropanol. 03
   c) Give four applications of electrochemical series. 04

6. a) How to Buna-S synthesized? 02
   b) What is Ellingham diagram? Discuss briefly the applications of this diagram. 04
   c) Explain briefly the manufacture of steel by Bessemer Process. 04

7. a) Explain Parke's process for the desilverisation of lead. 03
   b) Explain the different steps involved in the concentration of the ore. 03
   c) Explain the production of methanol from CO & H_2. 04

UNIT-III

Answer any TWO of the following. **2x10=20**

8. a) Define fruit product order. 02
   b) Explain the production of urea and ammonium sulphate fertilizers. 04
   c) Give the method of sewage water treatment. 04

9. a) How in BHC prepared? 02
   b) What is Bureau of Indian Standard and Agmark standard. Explain 04
   c) How are BOD and COD experimentally determined? 04

10. a) How is Ammonium nitrate prepared? Give its use. 03
    b) Explain water pollution by industrial effluents. Suggest the methods of its control. 03
    c) Write a note on food additives. 04

****