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C - 4585

Reg. No. :

Name :

Fourth Semester M.Sc. Degree Examination, July 2017
Branch : Analytical Chemistry
CL - 241 : ANALYTICAL CHEMISTRY
(2013 Admission Onwards)

Time : 3 Hours

Max. Marks : 75

SECTION - A

Answer **any two** among (a), (b) and (c) from **each** question. **Each** question carries 2 marks.

1. a) How can you estimate the amount of Magnesium in a given water sample ?
b) How does the radioactive pollutants in effluents analysed ?
c) High BOD is desirable or not ? Justify your answer.
2. a) Mention the important humic substances in soil with suitable examples.
b) What is soil Eh ? How does flooding affect the value of soil Eh ?
c) What are the different Biochemical processes that influences soil solution pH ?
3. a) What are the harmful effects of polluted air on human being ?
b) Give a note on ozone layer depletion.
c) Mention the common sources of NO_x in atmosphere.
4. a) What are the benefits of food sanitation ?
b) Distinguish between LD 50 and LC 50.
c) What are the major effects of poisoning due to dioxine ?
5. a) What are the major parameters measured during the analysis of milk ?
b) Define Bromine value. Mention its significance.
c) What is the chemistry behind the breath alcohol test ?

(2×10=20 Marks)

P.T.O.



SECTION - B

Answer **either (a) or (b)** from **each** question. **Each** question carries **5** marks.

6. a) Describe the various physical parameters which determine the quality of water.
b) Distinguish between BOD and COD.
7. a) With suitable example, explain the use of pE-pH diagrams for redox sensitive elements.
b) Explain how the Agrochemical waste pollute the soil differently from other soil pollutants.
8. a) Explain the major types of pollutants that lead to Air pollution.
b) Write down the principle and working of High Volume Air Sampler.
9. a) What are the various types of food adulteration ? How can you find remedy to overcome food adulteration ?
b) Describe the method of analysis of cyanide poisoning.
10. a) Write down the principle and method of estimation of haemoglobin.
b) Mention the factors determining the quality parameters of Alcoholic beverages. Describe the method of determination of any one among them. **(5×5=25 Marks)**

SECTION - C

Answer **any three** questions. **Each** question carries **10** marks.

11. Discuss the estimation of various minor components of water.
 12. Discuss the various oxidation reduction reactions in soil.
 13. What are the different regions of the atmosphere ? Explain. Mention the different chemical species present in each region.
 14. Give an account of the salient features of forensic analysis.
 15. Outline the classical and modern methods of drug analysis. **(10×3=30 Marks)**
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E - 4225

Reg. No. :

Name :

Fourth Semester M.Sc. Degree Examination, July 2018
Branch : Analytical Chemistry
CL 242 : APPLIED ANALYTICAL CHEMISTRY
(2016 Admn.)

Time : 3 Hours

Max. Marks 75

SECTION - A

Answer **any two** among (a), (b) and (c) from **each** question. **Each** sub-question carries 2 marks.

1. a) Define the terms Eluent and Eluate.
b) What do you mean by column capacity? How is it related Retention volume?
c) Explain the term 'Gradient elution' in HPLC analysis.
2. a) Why are the applications of TGA more limited than those for DSC?
b) Why does glass transition for a polymer yield no exothermic or endothermic peak in DTA?
c) What are the methods and precautions to be adopted for the disposal of nuclear waste?
3. a) What is the difference between fats and oils?
b) Distinguish between LD 50 and LC 50.
c) Write down the physiological effects of Hashish.
4. a) What is XPS? Write down the principle of XPS.
b) Why is source modulation used in AAS?
c) Write down the working principle of plasma emission spectrometry.
5. a) How can you estimate urea in a given sample?
b) How is pepsin assay carried out?
c) What are antipyretics? Give two examples.

(2×10=20 Marks)

P.T.O.



E – 4225

SECTION – B

Answer either (a) or (b) from each question. Each question carries 5 marks.

6. a) What are the precautions to be followed when you prepare a column in column chromatography ?
b) Describe the phenomena 'Reverse Osmosis'.
7. a) What is the theoretical basis of DTA ? What are the factors affecting the DTA curve ?
b) Write down the principle and applications of isotopic dilution analysis.
8. a) What is meant by the term 'Rancidity' ? How can you detect and determine rancidity ?
b) How is the presence of chromium in biological samples detected and determined ?
9. a) Describe the methods used for improving the signal intensity in X-ray fluorescence studies.
b) Give a comparison of relative merits and drawbacks between atomic emission and atomic absorption spectroscopy.
10. a) What do you mean by Quality control of a drug ? Explain its significance.
b) Explain the determination of alcohol content and CO₂ in alcoholic beverages. (5×5=25 Marks)

SECTION – C

Answer any three questions. Each question carries 10 marks.

11. Describe the principle, instrumentation and applications of Gas chromatography.
 12. Describe the principle, instrumentation and applications of DSC. What are the physical and chemical phenomena which can be detected by DSC but not by TG ?
 13. What is meant by Forensic analysis ? Discuss the special feature of forensic analysis in (a) sampling (b) sample storage (c) sample dissolution.
 14. Give an account of various type of detectors used in AAS.
 15. Give a comparison between classical and modern methods of drug analysis. (10×3=30 Marks)
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Reg. No. :

Name :

Fourth Semester M.Sc. Degree Examination, March 2021

Analytical Chemistry

CL 242 : APPLIED ANALYTICAL CHEMISTRY

(2016 Admission Onwards)

Time : 3 Hours

Max. Marks : 75

SECTION – A

Answer any two sub-questions among (a), (b), or (c) from each question. Each sub-question carries 2 marks.

1. (a) Discuss the migration rates of solutes in gas chromatographic analysis.
(b) Distinguish between dialysis and electro dialysis.
(c) Discuss the operating principle and applications of microfiltration.
2. (a) What is the theory of thermogravimetric analysis?
(b) What are the applications of Thermo Mechanical Analyzer?
(c) Discuss the applications of radioactive isotopes in medicinal field.
3. (a) What are the main ways by which food stuff is contaminated?
(b) What are the physiological effects of hashish?
(c) What is the significance of LC 50?

P.T.O.



4. (a) What is the basic theory of photoelectron spectroscopy?
(b) What are the disadvantages of Atomic Absorption Spectroscopy?
(c) What are the applications of background correction method?
5. (a) Discuss the estimation and interpretation of cholesterol in blood.
(b) Discuss the biological significance of the analysis of monoaminoxidase.
(c) What is meant by sordine bromine value?

(10 × 2 = 20 Marks)

SECTION – B

Answer either (a) or (b) of each question. Each question carries 5 marks.

6. (a) Compare the advantages and disadvantages of thin layer chromatography method.
(b) Discuss the roles of chelating ligands and calixarenes in solvent extraction.
7. (a) What is the principle of Neutron Activation Analysis? What are its applications?
(b) Describe the applications of radiometric titrations.
8. (a) Describe the methods used for the detection of pesticides in food materials.
(b) Briefly explain the method of determination of poisonous lead in forensic samples.
9. (a) Compare the applications of Molecular Fluorescence and X-ray Fluorescence Spectroscopy.
(b) Describe the sample introduction and applications of plasma emission spectroscopy.
10. (a) Briefly explain the importances of determination of carbohydrates.
(b) Discuss the method of estimation of antibiotics.

(5 × 5 = 25 Marks)



SECTION – C

Answer **any three** questions. Each question carries **10** marks.

11. Explain the principle, technique and applications of ion exchange chromatography.
12. Explain the theory and instrumentation of differential scanning calorimetry. By taking an example draw the thermogram with heat flow vs temperature. Discuss the thermal changes.
13. (a) Write a short note on nuclear waste disposal.
(b) Explain the method of action of organo-phosphorous substances.
14. Explain the instrumentation, types of analysis and applications of Atomic emission spectroscopy.
15. Explain the methods of analysis of common pharmaceuticals for its quality control.

(3 × 10 = 30 Marks)

