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1304E117

Candidate's Seat No :_____

M.Sc. (Sem.-IV) Examination

508

Chemistry (Analytical)

April-2017

Time : 3 Hours] **[Max. Marks : 70**

Note: Draw the diagram where ever required.

Q.1 Answer the following in detail: (Each question of 7 marks) **[14]**

a) What is the necessity of hollow cathode lamp? Explain the working of HCL.

OR

a) Explain the functioning of total consumption burner and premixed chamber burner with neat and labeled diagram.

b) Name the three methods for the background correction. Explain any two of them.

OR

b) Discuss any two methods for the determination of unknown concentration in given sample.

Q.2 Answer the following in detail: (Each question of 7 marks) **[14]**

a) Enlist the types of nebulizers used for conversion of sample into aerosol for introducing in plasma. Describe any two of them.

OR

a) Explain the non-flame emission sources in brief. Describe the working of ICP torch.

b) Explain the detection and measurement of ICP-AES output.

OR

b) Discuss the chemical and physical principle of ICP-AES.

Q.3 Answer the following in detail: (Each question of 7 marks) **[14]**

a) Discuss the difference between dispersive and non-dispersive components in AFS Technique.

OR

a) Describe the various types of sources being used in Atomic Fluorescence Spectroscopy.

b) Explain the functioning of atom cell and detector in AFS.

OR

b) Discuss the physical and chemical principle of AFS.

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Q.4 Answer the following in detail: (Each question of 7 marks) **[14]**

a) Name the methods used for generation of X-ray Fluorescence Spectrometry and describe any one in detail.

OR

a) Name the detectors used in X-ray Fluorescence Spectrometry. Describe any one in detail.

b) Explain the function of monochromator used in X-ray Fluorescence Spectrometry.

OR

b) Explain the principle of X-ray Fluorescence Spectroscopy. Discuss the qualitative and quantitative information of X-ray Fluorescence Spectroscopy.

Q.5 Answer the following in short (each carry one mark): **[14]**

a) What is the function of an ionization suppressor?

b) What are releasing agents?

c) Define Resonance line and Line width.

d) Why organic solvents give finer aerosol than water?

e) Name the nebulizers used for lower and higher viscosity solution.

f) Name the gases used in DCP, MIP and ICP.

g) What is the difference between Rich and Lean flame?

h) Name the types of fluorescence transition observed in AFS.

i) Give the general uses and limitations of AFS.

j) Give full form of GFLEAFS and HGAFS.

k) Name two complementary techniques of AFS.

l) Which wavelength region of X-ray is used in analytical application?

m) What is auger effect?

n) What is white radiation?

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1104E075

Candidate's Seat No : _____

M.Sc. (Sem.-IV) Examination

507

Chemistry (Analytical)

Time : 3 Hours] **April-2017** **[Max. Marks : 70**

Q1. Answer the following: **14 marks**

(a) Give the classification for the composition of whole blood and explain the process of collection and preservation of the biological samples. (7)

OR

(a) State some common determinants in biological samples and discuss their methods of analysis. (7)

(b) Explain in detail the fundamentals of fluorescence immunoassay. (7)

OR

(b) Discuss the basic principle of immunoassay techniques. Explain types of ELISA in clinical analysis. (7)

Q2. Answer the following: **14 marks**

(a) Discuss in brief the degradation and impurity analysis of drug substances. (7)

OR

(a) Write a note on pre-formulation and stability studies of drug substances. (7)

(b) Explain in brief pharmaceutical method development and method validation. (7)

OR

(b) Describe the role of discovery of new chemical entity and high throughput screening in drug discovery process. (7)

Q3. Answer the following: **14 marks**

(a) Discuss the regulatory considerations in pharmaceutical analysis. (7)

OR

(a) Explain the importance of quality control and quality assurance in different clinical phases. (7)

(b) What do you understand by NDA? Discuss the entire set of documents to be provided for NDA filing at USFDA. (7)

OR

(b) What are ICH guidelines? Discuss the issues covered under ICH guidelines. (7)

Q4. Answer the following: **14 marks**

(a) Discuss bio-analytical method validation acceptance criteria based on USFDA guidelines. (7)

OR

(a) Explain the role of Incurred Sample Reanalysis (ISR) in bioanalysis. (7)

(b) Describe in brief the three essential components of bioanalysis. (7)

OR

(b) Define pharmacokinetics. Discuss various parameters of pharmacokinetic profile with a neat diagram. (7)

(P.T.O)

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Q5. Answer in brief: (**1 mark each**) **14 marks**

1. Distinguish between bioavailability and bioequivalence.
2. What do you understand by freeze-thaw stability?
3. Write the equation to evaluate absolute matrix effect.
4. What is USFDA?
5. Give the full form of: NME and IND.
6. What is the fundamental difference between clinical and non-clinical study in drug discovery?
7. Mention the terms which are used to describe impurities during drug discovery process.
8. What is the main objective for method validation?
9. What are the three main categories of requisite tests during method development?
10. What is combinatorial chemistry?
11. Give any one example of neutral protein free filtrate.
12. What is an antigen?
13. Why is mineral oil added in the sample analysed for CO_2?
14. What is the difference between Fab and Fc?