PSCCHT04 - Analytical Chemistry Paper-IV

P. Pages : 2

Time : Three Hours

1364

GUG/S/23/11186

Max. Marks : 80

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1. a) Give the classification of instrumentation methods? Discuss different types of molecular analysis in reference to quantitative and qualitative applications. **8**

b) Explain significant figures and rules to determine significant figure with examples. **8**

OR

c) Explain Q-test and F-test in detail. **4**

d) Explain with example absolute and relative error. **4**

e) Discuss confidence limits in details. **4**

f) Discuss about the correlation and regression. **4**

2. a) Explain the principle of Thin Layer Chromatography. Discuss its applications in separation of amino acids and vitamins? **8**

b) Discuss the principle of ion exchange techniques. Explain zeolites as an ion exchanger? **8**

OR

c) Discuss the technique used in paper chromatography? **4**

d) Explain the principle of column chromatography. **4**

e) What is distribution ratio? Explain the factors affecting the extraction efficiency? **4**

f) Explain the role of chelating ligand in solvent extraction? **4**

3. a) What are indicators? Discuss any two theories of indicators. **8**

b) Explain aging and peptization in details. **8**

OR

c) Explain the titration curves for monoprotic and polyprotic acid? **4**

d) Explain the principle of complexometric titration with the role of indicator used? **4**

e) Explain the general principle of volumetric analysis. **4**

f) Explain post precipitation and co-precipitation? **4**

4. a) Draw and explain the instrumentation of double beam spectrophotometer? **8**

b) Explain the role of organic ligands in spectrophotometric analysis of metal ion. **8**

OR

c) Discuss Job's ratio method to determine stability of complex. **4**

d) Discuss the factors responsible for deviation from the Beer's law. **4**

e) Discuss relative errors in spectrophotometry with the help of Ringbom plot. **4**

f) Define Transmittance and molar extinction coefficient. The absorption of solution containing 3.0mg of solute, per litre is 1.2 in a 1 cm cell calculate. Extinction coefficient and molar extinction coefficient. **4**

5. a) Distinguish between accuracy and precision. **2**

b) What is mean by synergistic extraction. **2**

c) What are Photomultiplier Tubes. **2**

d) State Lambert's law. **2**

e) Define the chromatography parameter R_f, R_x, R_m. **2**

f) How chelating agents help in extraction of metal ions. **2**

g) Write a note on fractional precipitation? **2**

h) Write any two examples of primary standard for all four types titration reactions. **2**

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