Total No. of Questions :6]

SEAT No. : ____

P2902

[Total No. of Pages :3

[5023] - 416

M.Sc.-II

ANALYTICAL CHEMISTRY

CHA - 491 : Analytical Methods for Analysis of Fertilizers, Detergents, Water, Polymer, Paint and Pigment

(2013 Pattern) (Semester - IV)

Time : 3 Hours] ***[Max. Marks :50***

Instructions to the candidates:

1) ***All questions of respective section are compulsory.***
2) ***Figures to right hand side indicate full marks.***
3) ***Neat labelled diagram must be drawn wherever necessary.***
4) ***Use of log tables / non - programmable calculator is allowed.***
5) ***Write the answers of two sections on separate answer books.***

SECTION - I

Q1) Answer the following questions: **[10]**

a) Give the general methods of analysis for soaps and detergents.

b) Explain the term Syndet. Give it's examples.

c) What is total hardness? Give it's estimation method.

d) Enlist four organic pollutants found in waste water.

e) What is chlorine demand?

Q2) Attempt any two of the following: **[10]**

a) Discuss the estimation of potassium by direct intensity flame photometry method.

b) How free glycerol from soap is determined?

c) Discuss analytical method for the determination of cyanide from waste water.

P.T.O.

d) Orthophosphate was determined by weighing as ammonium phosphomolybdate $(NH_4)_2\ PO_4\ .12\ MoO_3$. Calculate the percentage of phosphorus and phosphorus pentoxide if, 1.832 g precipitate was obtained from 0.323 g of sample.

[Given : Atomic mass, g mol^{-1}: H = 1.00, N = 14.00, O = 15.99, P= 31.00, Mo = 95.94]

Q3) Attempt any one of the following: **[5]**

a) Write a note on industrial waste water treatment.

b) Give a brief account of biodegradability of detergents.

SECTION - II

(Polymer Analysis)

Q4) Answer the following: **[10]**

a) Explain the term

i) Haze

ii) Vapour permeability

b) Define lacquers and extenders.

c) What is the role of thinner in paints?

d) Give brief account of electrical properties of polymer.

e) What is polydispersivity index?

Q5) Answer any two of the following: **[10]**

a) Describe the role of x -ray diffraction in structure determination of polymer.

b) Explain 'isolation and determination of pigments'.

c) Explain mechanical properties of polymers with respect to fatigue testing and impact testing.

d) The intrinsic viscosity of myosin is 217 cm^3/gm. Calculate the approximate concentration of myosine in water, which could have a relative viscosity of 1.5.

Q6) Answer any one of the following: **[5]**

a) Explain the role of thermal methods used in structure elucidation of polymeric material with respect to TGA and DTA.

b) 0.230 gm of yellow chrome pigment was disintegrated and soluble chromate was extracted with sulphuric acid. The solution was used for chromate estimation iodometrically which required 13.5 ml of 0.05 N $Na_2S_2O_3$ solution. Calculate the percentage of chromium in a given sample. (At.wt. of Cr = 51.87)