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SECOND SEMESTER

Roll No. .....

B. TECH. (Group B)

MID SEMESTER EXAMINATION

MARCH-2011

AC-104 APPLIED CHEMISTRY

Time: 1 Hour 30 Minutes ***Max. Marks : 20***

Note : Question no. ***ONE*** is compulsory.
Answer any ***FOUR*** questions from the remaining.
Assume suitable missing data, if any.

1 Answer the following questions:

[a] What do you mean by titration curve? Draw a titration curve for strong acid and strong base system.

[b] Distinguish between Iodimetry and Iodometry in volumetric analysis?

[c] Arrange the following alkenes towards order of increasing reactivity in cationic polymerisation: $CH_2 = CHCH_3$, $CH_2 = CHCl$ and $CH_2 = CHC_6H_5$.

[d] What types of interparticle forces are present in polyamides and polyesters?

[e] How will you account for the mass increase of a sample with temperature in a thermogram?

[f] β-Carotene is a coloured compound but ethylene is not. Explain.

[g] Out of –C = C- and –C ≡ C-, which will require lower energy for C-C streching and why?

[h] Suggest a method to determine the purity of a pharmaceutical compound.

1x8

2 5.0g of a compound $CaOCl_2$ was suspended in water and volume was made up to 500 ml. 20 ml of this when acidified with acetic acid and treated with excess of potassium iodide solution, liberated iodine, which required 20 ml of N/10 hypo solution for titration. Write the equations involved and calculate the percentage of available chlorine in $CaOCl_2$. 3

3 Draw a block diagram for double beam UV-visible spectrophotometer and explain its merit over single beam. 3

4 Explain the TGA method for the quatitative analysis of a mixture of inorganic oxalates with the help of suitable thermogram. 3

5 Explain the mechanism for the free-radical polymerization of propene. 3

6 A polydisperse sample of polystyrene is prepared by mixing three mono-disperse samples in the following proportions:

1g – 10,000 molecules eight

2 g – 50,000 molecular weight

2 g – 1,00,000 molecular weight

Using this information, calculate the PDI of the mixture. 3