CENTRE FOR POLYMER SCIENCE AND ENGINEERING
PTL 711 Engineering Plastic and Specialty Polymers
MAJOR TEST

Date 30/4/2010
TX 120, 3.30-5.30P.M
Max marks 80

Attempt all questions:

Q 1. (a) Define nanocomposites. Discuss the possible morphologies expected when we mix polyolefins with nanoclay. What are the challenges before scientists and how can we overcome these?
(b) Why lotus leaf does not get wet and approaches used for making polymers having similar hydrophobic surfaces .

(10 marks)

Q 2. (i)Why fluoropolymers are preferred over polyolefins . Discuss their physical properties in terms of structure.
(ii) How can we overcome some of the disadvantages of Teflon giving in details about the approaches and material performance. List atleast 3 important alternative materials which can be processed like thermoplastics and retain the properties of flouropolymers.
(iii) Give atleast two applications of Tedlar and Tefzel.

(4+ 8+4 marks)

Q3. (i) In what way silicone fluids are different from paraffin liquid? How can you prepare silicon fluids and give atleast 3 important applications.
(ii) What do you understand by RTV compounds? How can you prepare and give two major applications.

(2+5+4 marks)

Q 4. (i) How can you prepare high molecular weight polyacetals?
(ii) Discuss the various reasons for the instability of polyacetals and give the various approaches which have been used to prepare stabilized polyacetals.
(iii) List the important properties of polyacetals in comparison to nylon and polyethylene. Give 3 applications.

(5+5+5 marks)

Q 5. How can you prepare :
(i) Glass clear polyamides
(ii) Polyamides with enhanced solubility

(5+5 marks)

Q 6. Write short notes on :
(i) PPS
(ii) PEN, PTT and PBT
(iii) Kapton, Torlon, Ultem

(6+ 6+6)