



Eastern University, Sri Lanka

First Year Second Semester Examination in Science-2016/2017

March/April' 2019-Old syllabus

CH 105-Introductions to Polymer Chemistry (Repeat)

Answer all questions

Time: 01 hour

1 a) Attempt the following;

i) Describe the initiation and propagation process between the $\text{CH}_2=\text{CHCN}$ and Lithium t-butyl.

ii) What is cage effect?

iii) What is living polymerization? Why does it occur?

(30 Marks)

b) i) Polymers sometimes are referred to as 'macromolecules'. Briefly explain the statement using nylon 6, 6 as an example.

(20 Marks)

ii) Distinguish between the terms homopolymer and copolymer and give an example of each.

(20 Marks)

c) Define natural and synthetic polymers with examples?

(10 Marks)

d) What is the molecular weight of polypropylene (PP), with a degree of polymerization of 3×10^4 ?

(10 Marks)

e) Write short note on ring opening polymerization.

(10 Marks)

Contd...

2 a) Briefly *discuss* each of the following free radical polymerisation steps of $\text{CH}_2=\text{CHR}$.

i) Initiation

ii) Propagation

iii) Termination by disproportionation

(30 m)

b) Briefly *discuss* the following;

i) Terelene

ii) Natural Rubber

(20 m)

c) *Write* equations for the synthesis of the following polymers.

i) Polyetheretherketone (PEEK)

ii) Teflon

(20 m)

d) *Explain Flory-Huggins* theory and parameters on which it is based.

(10 M)

e) i) Write polymerization steps for cationic and anionic polymerization with $\text{CH}_2=\text{CHR}$

(10 M)

ii) *Explain* the merits and demerits of emulsion polymerization with respect to polymerization processes.

(10 m)
