	TANTA UNIVERSITY FACULTY OF SCIENCE CHEMISTRY DEPARTMENT		
	FINAL EXAM FOR SENIOR STUDENTS (CHEM/BIO, CHEM/ZOO, CHEM/ENT)		
1989	COURSE TITLE:	PHYSICAL CHEMISTRY OF POLYMERS (CH4252)	TIME ALLOWED: 2 HOURS
DATE: MAY 25, 2015	TERM: SECOND	TOTAL ASSESSMENT MARKS: 50	

Question 1: Answer the following: **(25 Marks)**

a) Explain the effect of steric hindrance and crosslinking density on chain flexibility of polymers. (give examples) **(8 Marks)**

b) Describe the effect of strain rate and molecular weight of polymers on mechanical properties. **(8 Marks)**

c) Explain the methods for determination the swellability of crosslinked polymers. **(5 Marks)**

d) Describe the effect of chain flexibility on the polymer crystallinity. **(4 Marks)**

Question 2: Compare between each pair of the followings: (Structure + Reason + Behavior) **(15 Marks)**

a) Polyethylene and cellulose (in glass transition temperature).

b) Polystyrene and styrene-butadiene copolymer (in modulus).

c) Syndiotactic and atactic polybutadiene (in crystallinity).

d) Nylon-6,6 and Nylon 7,7 (in melting temperature)

e) Polyacrylonitrile at ambient temperature and at high temperature (in rigidity).

Question 3: Write short notes on: **(10 Marks)**

a) Ebulliometry.

b) Microporous crosslinked polymers.

GOOD LUCK

Examiners:	
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