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SARDAR PATEL UNIVERSITY

M. Sc. Semester - II Examination

Monday, 27th April 2015

INDUSTRIAL CHEMISTRY

PS02EICH04

Subject: Polymer characterization

Time: 10 :30 to 01:30 p.m.

Marks: 70

Q. 1 Answer the following MCQ s (Attempt all) [08]

- I _____ is a concentration free term in viscometry
(a) Intrinsic viscosity (b) reduced viscosity
(c) Relative viscosity (d) All of these
- II Ultracentrifugation determines _____ molecular weight
(a) M_v (b) M_z
(c) M_w (d) M_n
- III _____ technique uses freezing point depression for molecular weight determination
(a) Cryoscopy (b) Ebulliometry
(c) GPC (d) Light scattering
- IV _____ method is used for the determination of density of the polymer sample
(a) Ring and Ball method (b) Hot plate method
(c) Duran mercury method (d) None of these
- V _____ types of durometer hardness testers are used for measurement of hardness.
(a) Four (b) Three
(c) Two (d) Five
- VI The highest point on the smoke density test curve gives _____.
(a) Smoke volume (b) Minimum smoke density
(c) % smoke (d) Maximum smoke density
- VII The oxygen index percent of acetal is _____.
(a) 10.2 (b) 16.2
(c) 21.2 (d) 4.2
- VIII In solvent stress cracking resistance test, the point at which crazing stops is called as _____.
(a) Critical stress point (b) Crazing point
(c) Cracking point (d) Yield point

Q.2 Answer the following short question (Any seven) [14]

- I. Explain the importance of characterization of polymers.
- II. Discuss the principle of Ebulliometry.
- III. Enlist various methods which determine weight average molecular weight of polymer.
- IV. Discuss the principle of duran's mercury method.
- V. Define proportional limit and modulus of elasticity.
- VI. Write the advantages of flexural strength test over tensile test.

- VII. Enlist the methods for impact test.
- VIII. Enlist the environmental factors that affect the plastics.
- IX. Write advantage of solvent stress cracking resistance test.
- Q.3 (a) Explain the different types of molecular weights of polymer. [06]
 (b) Discuss in detail about Gel permeation chromatography. [06]
 Or
 (b) Discuss in detail about End group analysis. [06]
- Q.4 (a) Explain principle and methodology of HDT measurement. [06]
 (b) Discuss density gradient method in detail. [06]
 Or
 (b) Explain the principle and methodology of
 i. Ring and ball method ii. Capillary method [06]
- Q.5 (a) Write explanatory note on tensile test and factors affecting the test results. [06]
 (b) Explain in detail about factors affecting the impact strength. [06]
 Or
 (b) With the help of diagram explain ignition temperature determination of plastics. [06]
- Q.6 (a) Write note on solvent stress cracking resistance. [06]
 (b) Explain in detail about environmental stress cracking resistance [06]
 Or
 (b) Write note on accelerated weathering tests [06]

Best of Luck.....