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[A-23]

SARDAR PATEL UNIVERSITY

M. Sc. (Semester-IV) Examination

Saturday, 25th April 2015

10:30 AM to 1:30 PM

Industrial Polymer Chemistry, PS04CIPC03

Processing of Polymers

Total Marks: 70

Q-1 Answer the following: **[8]**

(i) Polymeric substances are

(a) non-Newtonian fluids
(b) Elastoviscous in nature
(c) Viscous in nature
(d) Elastoplastic in nature

(ii) High Speed Mixer is used extensively for

(a) PVC dry blends
(b) Epoxies
(c) Dough like blends
(d) Moist solids

(iii) The process of coating a substance with a dry plastics powder is called

(a) Powder coating
(b) Brush coating
(c) Static molding
(d) Spray coating

(iv) Which of the following method is used for making large parts such as boats & spas.

(a) Spray up
(b) Hand Lay up
(c) Pultrusion
(d) Cold press molding

(v) In Injection molding - L/D ratios are

(a) 12:1 and 20:1
(b) 12:1 and 18:1
(c) 12:1 and 10:1
(d) 10:1 and 20:1

(vi) Which of the following thermoforming method gives sharp reproduction of the design details.

(a) Matched mold forming
(b) Plug and Ring forming
(c) Matched mold forming
(d) Plug-assist forming

(P.T.O.)

(vii) Tensile Testing is performed according to the

(a) ASTM D-638
(b) ASTM D-648
(c) ASTM D-1238
(d) ASTM D-1895

(viii) Tumbling removes unwanted stumps of

(a) Gates & flashes
(b) Runners & flashes
(c) Sprue & flashes
(d) Runners, gates, sprue & flashes

Q-2 Answer the followings (Any SEVEN) **[14]**

(i) List out the limitations of theory of mixing.

(ii) Write about the factors on which the rate of cooling depends in the case of crystalline polymers.

(iii) Give examples of dip coated objects.

(iv) Which molding process would be used to make long sections of plastic pipes?

(v) Give advantages and disadvantages of extrusion blow molding process.

(vi) Name four commonly used polymers in Reaction Injection Molding.

(vii) Write the important aspects of thermoforming process.

(viii) List four favourable properties possessed by most plastics.

(ix) Define the term: Dielectric Strength.

Q-3 (a) Explain about polymer processing and list out the various processing methods by which polymers are made into user products. **[6]**

(b) Write briefly on: **[6]**

(i) Crystallization tendency of polymer melts
(ii) Ball Mill

OR

(b) Give detail notes on the following: **[6]**

(i) A ribbon blender
(ii) A continuous kneader

Q-4 (a) With a neat sketch explain the cell casting process. **[6]**

(b) Describe briefly about the action of counter-rotating screw and co-rotating screw. **[6]**

OR

(b) With a neat sketch explain the working of transfer mold. **[6]**

Q-5	(a)	Write a note on: Extrusion foaming	[6]
	(b)	Explain in detail about the sequential steps of rotational molding process.	[6]
		OR	
	(b)	Name the different techniques of thermoforming and describe briefly about the plug-assist forming process.	[6]
Q-6	(a)	Explain ashing, buffing and polishing of polymeric materials.	[6]
	(b)	Describe the following tests: (i) Melt flow index and (ii) Rockwell Hardness	[6]
		OR	
	(b)	List out the major design considerations for plastic materials and discuss any one in detail	[6]

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