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SARDAR PATEL UNIVERSITY

M.Sc. Polymer Science & Technology Semester-III Examination – 2016

Tuesday, 25th October 2016

2:00 p.m. to 5:00 p.m.

PS03CPST10: Polymer Composites and Fiber Technology

Note: (1) Attempt all questions.

(2) Figures to the right indicate full marks.

Total marks: 70

Que: [1] Answer the following

[08]

- (1) _____ type of monomer act as a solvent and to crosslink the polymer chain in unsaturated polyester resin.
(a) Toluene (b) Xylene (c) benzene (d) None of these
- (2) Which monomer improves chemical resistance and hydrolytic stability in polyester resin?
(a) propylene glycol (b) neopentyl glycol (c) maleic acid (d) styrene
- (3) _____ moulding technique is used for manufacture of pipe, tube & cylinders
(a) Pressure bag (b) Resin injection (c) Filament winding (d) None of these
- (4) In Epoxy resin preparation, Bisphenol A to Epichlorohydrin mole ratio is _____
(a) 1:2 (b) 1:3 (c) 1:1 (d) 1: 1.5
- (5) Which procedure is used for thick casting?
(a) two stage casting (b) single one port moulds (c) matching moulds (d) none of these
- (6) In which techniques continuous fiber reinforced sections in which the orientation of the fibers is kept constant during cure
(a) Filament winding (b) pultrusion (3) Centrifugal moulding (d) All of these
- (7) _____ is the reactive diluents in epoxy resin
(a) pine oil (b) benzyl alcohol (c) furfural alcohol (d) none of these
- (8) _____ is an saturated monomer for preparation of unsaturated polyester resin
(a) Fumaric acid (b) maleic anhydride (c) Itaconic acid (d) None of these

Que: [2]

Answer the following (any seven)

[14]

- (1) Write a note on plaster mould
- (2) Discuss the curing agent and selection of curing agent in epoxide resin
- (3) Write a note on wooden mould.
- (4) Discuss the advantage and disadvantage of composite
- (5) Write a note on pressure bag moulding
- (6) How to calculate Amount of hardner needed for 300 gm of epoxy resin. We can use epoxy equivalent weight = 250 and hardner used is diethylene triamine
- (7) Discuss the comparison between composite and metal.
- (8) Define composite. Give the classification of composite based on reinforcement material.
- (9) Write a note on hand lay up techniques

- Que: [3] (a) Explain the anhydride curing reaction of epoxide resin [06]
- (b) **Answer the following** [06]
 (i) Write a note on two stage casting of epoxide resin mould.
 (ii) Write a note on matching mould.
- OR
- (b) **Write a note on following** [06]
 (i) Split mould.
 (ii) Single one –part mould of GRP mould
- Que: [4] (a) Write the factor affecting the material selection and process selection in designing of FRP. [06]
- (b) **Answer the following** [06]
 (i) Write a note on diluents in epoxide resin
 (ii) Write a note on carbon fiber production process with diagram.
- OR
- (b) **Answer the following** [06]
 (i) Discuss low shrink unsaturated polyester resin
 (ii) Explain the significance of glycol and unsaturated acid in polyester resin.
- Que: [5] (a) Discuss the sheet moulding compounds [06]
- (b) **Answer the following** [06]
 (i) Which are three different stages for curing of polyester resin? Explain it.
 (ii) Explain the role of inhibitor in polyester resin
- OR
- (b) **Answer the following** [06]
 (i) Explain significance of accelerator in polyester resin
 (ii) Write a synthesis scheme of Nomex and Kevlar fiber.
- Que: [6] (a) Discuss the resin injection moulding process [06]
- (b) **Answer the following** [06]
 (i) Write a note on foam reservoir moulding process
 (ii) Explain the spray lay up techniques
- OR
- (b) **Answer the following** [06]
 (i) Explain glass fiber with its properties
 (ii) Discuss the dough moulding compounds
