GUJARAT TECHNOLOGICAL UNIVERSITY BE - SEMESTER-VII EXAMINATION – WINTER 2015

Subject Code: 172305 Date:04/1			2/2015	
Subject Name: Plastic Testing and Instrumental AnalysisTime: 10:30am to 1:00pmTotal Marks: 7Instructions:1. Attempt all questions.1. Attempt all questions.2. Make suitable assumptions wherever necessary.3. Figures to the right indicate full marks.			70	
Q.1	(a)	Define: Modulus of elasticity and Yield point. Draw stress strain graph of the following material and explain these materials in terms of relative softness, brittleness, hardness and toughness in briefly. (1) PTFE (2) PC (3) PE (4) MF (5) Polyacetal	07	
	(b)	Explain Di-electric strength test with factors affecting the test results.	07	
Q.2	(a)	(1) Universal Testing Machine is used to perform Flexural strength test of specimen having width 1.4 cm and thickness 3 mm. The length of support load span is 50mm. The load recorded at breakage is 40 kg. Then calculate the Flexural strength of the given specimen.	05	
	(b)	(2) List advantages of Flexural strength test over Tensile strength test. Explain in brief: creep and stress relaxation properties of plastic material with suitable examples and graphs.	02 07	
		OR		
	(b)	List and explain various preliminary tests (steps) involved in the identification of unknown plastics.	07	
Q.3	(a) (b)	Explain in brief : (1) Compressive strength test (2) Abrasion resistance test Explain HDT test in detail with neat sketch and factors affecting the test results. OR	07 07	
Q.3	(a) (b)	Explain Flexural strength test in detail with factors affecting the test results. Define Thermal expansion. Which methods are generally used to measure thermal expansion of plastics? Explain any one in detail.	07 07	
Q.4	(a) (b)	List types of Impact test. Explain about chip Impact test. Explain in details about Differential Scanning Calorimetry (DSC). OR	07 07	
Q.4	(a)	Define Hardness. List various hardness test used for plastics material. Explain the hardness test used for softer material like flexible PVC.	07	
	(b)	Define : (1) Di electric constant (2) Dissipation factor (3) volume resistance (4) surface resistance (5) Arc resistance (6) Refractive Index (7) Haze	07	
Q.5	(a) (b)	Explain ESCR test in detail. Explain: (1) Reasons for Testing (2) Specification & Standards. OR	07 07	
Q.5	(a) (b)	Explain in brief : (1) Oxygen Index Test (2) MFI Test What is Non destructive Testing (NDT)? Explain Pulse echo technique in detail.	07 07	
