Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – WINTER • 2013

	-	code: 1720809 Date: 02-01-2014 Name: Product Design and Development	
Tiı	ne: 1	.0.30 am – 01.00 pm Total Marks: 70 etions:	
111)	1. 2.	Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks.	
Q.1	(a)	Enlist various selection criteria of material for a new product and explain them briefly.	07
	(b)	Discuss Concept Selection and evaluation Technique with example.	07
Q.2	(a)	Explain various types of engineering designs and compare scientific and design method.	07
	(b)	Briefly Explain generic product development process with all its six phases.	07
		OR	
	(b)	Explain the automobile safety standards and air pollution standards in terms of the concept of life cycle costs.	07
Q.3	(a) (b)	What are the criteria for selection of a process for a given product? Explain briefly.	07 07
		OR	
Q.3	(a) (b)	Explain DFM guidelines with suitable example. A small manufacturing company is considering an investment in energy efficient electric motors to reduce its large annual energy cost. The initial cost would be Rs. 20,000, and over a 10-year period it is estimated that the firm would save Rs. 3500 annually in electricity costs. The salvage value of the motors is estimated at Rs. 5000. Determine the after-tax rate of return.	07 07
Q.4	(a) (b)	Explain Top-Down and Bottom-Up approaches of assembly modelling. Explain Ashby material selection method with suitable chart.	07 07
		OR	
Q.4	(a) (b)	Enlist various cost estimation techniques and discuss any one. Define depreciation. Explain double decline balance (DDB) method.	07 07
Q.5	(a) (b)	Explain and compare product life cycle and technology development cycle. Enlist the Rapid Prototyping technologies and explain SLA technology	07 07
		OR	
Q.5	(a)	Draw and explain the graph of Sales/Profit v/s time for the new product and explain all stages in detail.	07
	(b)	Explain redesign and discuss fatigue design criteria.	07
