Seat No.:	Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Sui	oject	code: 1/20809 Date: 05-06-2013	
Sul	oject l	Name: Product Design and Development	
Tin	ne: 10	0.30 am – 01.00 pm Total Marks: 70	
Ins	struc	tions:	
		Attempt all questions.	
		Make suitable assumptions wherever necessary.	
		Figures to the right indicate full marks.	
Q.1	(a)	Discuss in detail the Build time, Voxel geometry, Stair Stepping And Surface Finish, Dimensional Accuracy with reference to rapid prototyping.	07
	(b)	 i) Explain in brief different methods used for depreciation analysis. ii) Using sum of years digits method, find the depreciation expenses for each year for product costing Rs. 2800 and having life of 4 years. 	04 03
Q.2	(a)	Explain how the metal based additive manufacturing process differs from the polymer based system?	07
	(b)	Explain how product design and development activities for an existing product differ from those for a totally new product. OR	07
	(b)	What do you mean sensitivity analysis? Explain how it is useful in Product design & Development.	07
Q.3	(a) (b)	Explain the utility of Fuzzy approach in the selection of material and processes. Explain how Ashby material selection chart can be used in material selection. OR	07 07
Q.3	(a) (b)	Elaborate on the role of supplier in Product design & development. Explain concept generation and evaluation methods.	07 07
Q.4	(a) (b)	What are the two approaches used in Assembly modeling? Explain in detail. Explain the steps involved in construction of QFD matrix. OR	07 07
Q.4	(a) (b)	Explain the phases of product development cycle in detail. Explain the benefits of QFD for Product Design and Development. Also mention Shortcomings in implementing QFD.	07 07
Q.5	(a)	What is the significance of prototypes in Product Design & Development? List different types of prototypes.	07
	(b)	Compare the characteristics of FDM, SLS in detail. OR	07
Q.5	(a)	Explain in detail the advantages of Rapid Prototyping from Product Design & Development Aspect. What can be limitations of Rapid Prototyping?	07
	(b)	Explain in brief DFM, DFA & DFX.	07
