Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – I • EXAMINATION – WINTER • 2014

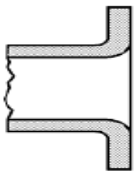
Subject code: 710807N **Date: 05-12-2014**

Subject Name: Advanced Materials and Processes

Time: 10:30 am - 01:00 pm **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	(a)	What do you mean by the smart materials? Enlist the five smart materials and one application for each.	07
	(b)	Through sketch show the working principle of scanning electron microscope (SEM) and write the characteristic information obtained by SEM.	07
Q.2	(a)	Define the "corrosion". Write the types of corrosion and the ways to prevent the corrosion.	07
	(b)	List the general "Design-for-Machining" rules and justify the "minimize the number of machined orientation" rule with suitable example.	07
		OR	
	(b)	List the stages of design information content and explain any one .	07
Q.3	(a)	 Evaluate the design of flange as shown in figure that have uniform thickness with respect to casting rules and suggest the imrovemnt accordingly.	07
	(b)	Justify by the suitable example, "Minimization of machined stock allowance" rule of Design-for-Machining.	07
		OR	
Q.3	(a)	Write design guidelines, which supports to "reduce the chance of heat concentration" with suitable examples for casting.	07
	(b)	Describe with sketch any one method to minimize heat sink differential during the welding of unequal section thickness.	07
Q.4	(a)	Write and briefly explain the basic requirements of forging die design.	07
	(b)	List the design guidelines for extruded sections.	07
		OR	
Q.4	(a)	Explain the role of parting line for design consideration in forging.	07
	(b)	Suggest the design guide lines for pressed components.	07
Q.5	(a)	Sketch and labled the "Keeler Goodman Forming Line Diagram".	07
	(b)	List the design guidelines for plastic components.	07
		OR	
Q.5	(a)	Describe the sources of residual Stresses.	07
	(b)	List the design considerations for parts to be made by "Injection Moulding".	07

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