

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) 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 label 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
