Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

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

Subject code: 2712801 **Date: 07-01-2015**

Subject Name: Advance Casting Technology

Time: 02:30 pm - 05:00 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)**	Explain an activity in Foundry through a flow chart and compare the merits and demerits of Foundry process with other manufacturing process.	**07**
	(b)	Discuss the different ingredients of moulding sand. Also compare these Ingredients with the ingredients of core sands.	**07**
Q.2	**(a)**	Explain Evaporative Pattern Casting with neat sketch.	**07**
	(b)	Explain core location in casting with different core materials and their Characteristics.	**07**
		OR	
	(b)	Explain Continuous Casting Process with merits and demerits.	**07**
Q.3	**(a)**	Explain how nucleation occurs and grows in the freezing of the pure metal. Discuss the difference between homogeneous and heterogeneous nucleation.	**07**
	(b)	Elaborate solidification analysis and state the equation for unsteady state heat transfer involved in solidification of metal in a mould.	**07**
		OR	
Q.3	**(a)**	State the basic requirements for effective function of a riser. State and explain any three commonly used methods for calculating riser size.	**07**
	(b)	Sketch the components of gating system. What are the functions of good gating system? Explain the casting defects attributable to poor gating design?	**07**
Q.4	**(a)**	State the assumptions made for deriving an equation for solidification time of a simple shaped casting and thereby derive Chovorinovôs equation. State the applications of the equation.	**07**
	(b)	Explain the principle, application and limitations of (i) Dye penetrant testing (ii) Magnetic particle testing.	**07**
		OR	
Q.4	**(a)**	Discuss the factors that affect the fluidity of metals also how its measurements taken.	**07**
	(b)	State general guidelines for process-friendly casting design.	**07**
Q.5	**(a)**	State and describe the casting defects and their remedies.	**07**
	(b)	Explain Fettling, Inspection and Testing of Metal Casting Process.	**07**
		OR	
Q.5	**(a)**	Explain Design for Castability.	**07**
	(b)	Write a short note on collaborative engineering.	**07**

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