Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. Sem-Vth Examination December 2010

Subject code: 152103 Subject Name: Foundry Technology

Date: 16 /12 /2010 Time: 03.00 pm - 05.30 pm

Instructions: **Total Marks: 70**

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

Q.1 **(a)** What is a foundry? What are the advantages of casting process over other fabrication processes? How does a captive foundry differ from a jobbing foundry? **07**

(b) Explain the following terms: **07**

i) Core Print ii) Gating Ratio iii) Chvorinov's Rule iv) Blind riser

v) Centreline feeding resistance(CFR) vi) G-factor vii) Chill test/Wedge test

Q.2 **(a)** What is a pattern? Write a brief note on plastics as a pattern making material. **07**

(b) What is a core box? What are different types of core boxes? Draw figure for each type. **07**

OR

(b) Draw a flow chart showing major foundry activities. Also draw a neat sketch of a sweep pattern and a skeleton pattern. **07**

Q.3 **(a)** Explain in brief the salient features of investment casting process. What are the advantages and limitations of investment casting process? **07**

(b) Rearrange the following terms in column 1 and column 2 in such a way as to make a pair of term related to each other. **07**

Column 1	Column 2
ferrosilicon	defect in casting
bentonite	cupola
shatter index	inoculant
phenolic resin	pattern allowance
scab	synthetic sand
coke bed height	'C' process
draft	sand testing

OR

Q.3 **(a)** What is meant by directional solidification? How does it differ from progressive solidification? **07**

(b) Explain different methods to be adopted for promoting directional solidification. **07**

Q.4 **(a)** How does hydrogen dissolve in molten aluminum? Discuss the degassing practice for aluminum and copper base alloys. **07**

(b) Discuss N.R.L. method of riser calculation. **07**

OR

Q.4 **(a)** Discuss the variables of centrifugal casting process. What are the advantages and limitations of the process? **07**

(b) Give the salient features of shell moulding process. **07**

Q.5 **(a)** Draw a neat sketch of a cupola furnace and indicate various zones and temperatures. **07**

(b) i) What are the properties of a moulding sand? **02**

ii) What are different gassing techniques used in carbon dioxide process? **02**

iii) What are common defects found in castings produced by green sand moulding? **03**

OR

Q.5 **(a)** Why is gating system so important in casting practice? State and explain the hydraulic laws applied to gating system. Illustrate their use in gating design. **07**

(b) Compare no bake air set core making sand with oil bonded core sand. **07**

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