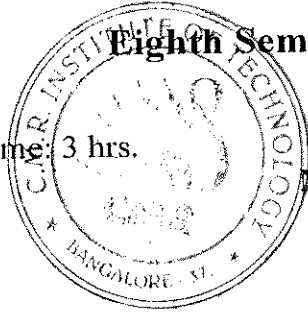


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Time: 3 hrs.

Max. Marks: 100

Eighth Semester B.E. Degree Examination, June/July 2016
Foundry Technology

Note: Answer FIVE full questions, selecting at least TWO questions from each part.

PART - A

- 1 a. Sketch and explain any three methods of degassing. (09 Marks)
- b. Explain the factors that influence on fluidity of molten metal (any four). (06 Marks)
- c. Define hot tearing. Briefly explain the remedial measures to minimize hot tears. (05 Marks)
- 2 a. Mention the causes and remedial measures for the following casting defect: (06 Marks)
 - i) Shrinkage
 - ii) Blow holes.
- b. With the neat sketch, explain the redesign consideration of hot spots. (06 Marks)
- c. Briefly mention the design consideration for easy pattern withdrawal. (08 Marks)
- 3 a. Why directional solidification is preferred during solidification process? Explain the various methods employed to achieve the directional solidification. (10 Marks)
- b. Explain the following: (10 Marks)
 - i) Nucleation
 - ii) Dendritic growth
 - iii) Solidification rate
 Use sketches if necessary.
- 4 a. Why round sprues are preferred over other sections like square or rectangular? Explain. (06 Marks)
- b. Sketch and explain top, bottom and parting line gates with one example each. (09 Marks)
- c. Mention the function of a riser. (05 Marks)

PART - B

- 5 a. Explain the constructional features and working of cokeless cupola. (10 Marks)
- b. Following compositions are required from the foundry casting of cast iron using cupola furnace.

Carbon : 3.0 + 4%; Silicon : 2 - 3 %
 Manganese : 0.4 - 1 % ; Sulphur : Upto 1%
 Phosphorus : 0.3 + 0.7%

The charge consist of,

- i) Pig iron - 1 = 30%
- ii) Pig iron - 2 = 20%
- iii) Scrap = 20%
- iv) Returns = 30%

The loss and gain of various elements are,

Carbon = No gain / loss ; Manganese = 10% loss; Silicon = 10% less

Sulphur = 2% pick up/gain; Phosphorus = No gain / loss

Calculate the final charge proportions from given raw material details in the table below (percentage). (10 Marks)

Material	C	S _i	M _n	S	P
Pig iron - 1	3.5	3	1	0.1	0.4
Pig iron - 2	3.0	2	1	0.2	0.5
Scrap	3.2	2	0.5	0.2	0.5
Returns	3.0	3	0.5	0.1	0.4

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
 2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

- 6 a. Sketch and explain the construction of high frequency induction furnace. (10 Marks)
b. Write a note on spheroidal graphite (SG) iron and compact graphite (CG) iron. (10 Marks)
- 7 a. Write the characteristics of the following:
i) Ferrous alloys ii) Non ferrous alloys iii) Aluminium base alloys
iv) Copper base alloys v) Magnesium base alloys. (10 Marks)
b. Write a note on crucible furnace. Sketch and explain gas or oil fired crucible furnace. (10 Marks)
- 8 a. Write a note on modernization and mechanization of foundry. (10 Marks)
b. Differentiate hand molding and machine molding machines. Sketch and explain Jolt squeeze molding machine. (10 Marks)

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