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B.E / B.Tech (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY 2014

MATERIALS SCIENCE&ENGINEERING BRANCH

III Semester

ML8301 CASTING AND MACHINING

(Regulation 2012)

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

PART-A (10 x 2 = 20 Marks)

1. Why machining allowance is provided on the patterns?
2. List down the materials which are used for manufacturing dies used in a foundry.
3. Draw the cooling curve of an eutectic binary alloy.
4. What is meant by hot tear?
5. Differentiate between green strength and dry strength of foundry system sand.
6. List down the characteristics of zircon sand.
7. Write short notes on magnetic moulding.
8. List down the advantages of inert gas degassing.
9. What do you mean by inoculation?
10. What is chip thickness ratio?

Part – B (5 x 16 = 80 marks)

11. Discuss the function of the following in a mould
(i) Pouring Basin (ii) Sprue (iii) Riser (iv) Vents (Each 4 Marks)
12. a) Calculate the gating requirements for casting shown in figure .1 to be cast in C30 steel.

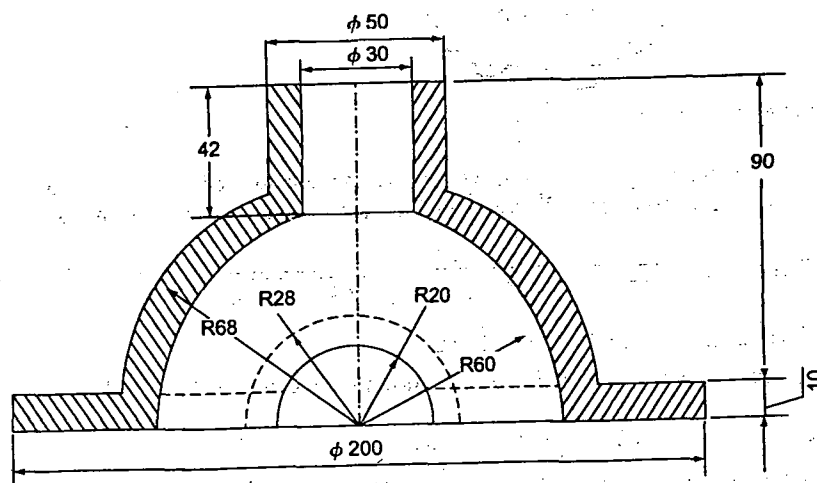


Figure .1.
(All dimensions in mm)

(OR)

- b) Calculate the size of a cylindrical riser (height and diameter equal) necessary to feed a steel slab casting 50X50X10 cm with a side riser, casting poured horizontally into the mould. Use Caine's method. Given

$$\text{Freezing ratio } X = \frac{a}{Y-b} + c$$

Where Y= riser volume/casting volume

For steel a =0.10 b=0.03 c= 1.00

13. a) Explain permanent mould casting process and how it differs from other processes of casting.

(OR)

- b) Explain squeeze casting process with the help of a neat diagram. Mention its advantages and limitations.

14. a) What is a cupola? Describe its main features and working.

(OR)

- b) Discuss the practice adopted for melting aluminum base alloys with special reference to the following:

(i) Melting furnaces (ii) Fluxing of the melt (iii) Grain refinement

15. a) Explain the construction and working principle of a lathe with the neat sketch.

(OR)

- b) Explain the principle of operation of gear hobbing. Give the advantages and limitations of gear hobbing.