

BE /B.Tech [Full Time] DEGREE END SEMESTER EXAMINATIONS APRIL/MAY 2012

MATERIALS SCIENCE & ENGINEERING BRANCH

THIRD SEMESTER

ML-9201 FOUNDRY AND MACHINING

(REGULATIONS: 2008)

TIME: 3 HRS

MAX MARKS: 100

PART – A (10*2 = 20 Marks)

1. What is a pattern and what are the various allowances provided on the pattern during pattern Manufacturing and why?
2. List the various types of Pattern and how the pattern material is selected from end user point of view.
3. List some of the very popular and widely employed Moulding processes in the Foundry Industry.
4. What is meant by "Dwell Time" and where is it employed?
5. List some of the requirements of basic Silica sand to make it suitable for foundry process.
6. Define inoculation of metal.
7. Compare between Orthogonal and Oblique Cutting.
8. What is the concept of Broaching?
9. Differentiate between Gear forming and generating.
10. Write any 4 differences between a planer and a shaper.

PART – B (5*16 = 80 Marks)

11.
 - i. With neat sketches, explain the Investment Casting process for the production of Precision Castings [8]
 - ii. Explain with neat sketches, how a shell moulded casting is made. List the unique advantages of shell moulded casting process [8]
12. a.
 - i. Explain in detail with necessary sketches, the "Gravity Die Casting Process" of making Non-Ferrous Castings, its advantages and limitations [8]
 - ii. With neat sketches, explain the "Centrifugal Casting" process of making castings [8]

OR

12. b.

- i. With a neat sketch, explain the hydraulic quick drive motion mechanism of a Shaper [8]
- ii. With a neat sketch explain the construction and working of a coreless Induction furnace. State its advantages and limitations [8]

13. a.

- i. With the help of a neat diagram, explain the nomenclature of a single point cutting tool. State the significance of various tool angles [10]
- ii. Define Taper. How is the amount of taper expressed? Explain the different methods of taper turning done on a centre lathe by drawing simple sketches [6]

OR

13. b.

- i. Explain in detail with necessary sketches the mechanisms behind the formation of various types of chips. What are the factors affecting metal characteristics during Cutting? [8]
- ii. Explain with neat sketches, the thermal effects produced during Cutting. How does a Cutting fluid reduce the temperature? [8]

14. a.

- i. What is tool wear? List the types of tool wear and the reasons for such tool wear [10]
- ii. Explain the mechanisms of tool wear [6]

OR

14. b.

- i. What are the different types of Milling? [4]
- ii. What are the different methods of Gear Machining process? Explain with a neat sketch, the Gear Hobbing process [12]

15. a.

- i. What are the reasons for tool failure? [4]
- ii. Explain with neat sketches, the factors upon which tool life depends [12]

OR

15. b.

- i. Explain in detail how machining and work piece variables influence surface roughness [8]
- ii. Define machinability of a metal. Discuss in detail the variables that affect the machinability of a metal (8)