

METAL CASTING PROCESSES

ASSIGNMENT – 1

Descriptive questions [7 marks]

1. Differentiate Casting and Forging
2. Discuss pattern materials with reasons
3. Discuss properties of molding sand
4. Discuss types of cores used in Foundry
5. Explain Gating System with its elements
6. Discuss casting defects with causes and remedies
7. Explain Investment Casting Procedure in detail
8. Explain Shell Molding procedure in detail

9. Give a detailed classification of casting processes.
10. Enlist types of patterns. Discuss any three in detail.
11. Explain various types of pattern allowances with sketch.
12. Describe the green sand molding process in detail.
13. Describe various types of sands used in mold making.
14. Explain the working of a Cupola furnace
15. Explain any two Non-destructive testing methods of cast parts.
16. Explain the centrifugal casting process in detail.
17. Explain the Gravity die casting process in detail.

18. What is annealing? What is the necessity of heat treatment to a medium carbon steel casting? Explain any two heat treatment methods in brief.
19. What is a sprue? Why it is required? Explain elements of gating system with a simple casting design.
20. What is net cast? How one can improve casting ability? What precautions should be taken?
21. What is shrinkage? What are the causes of defects in a casting? How the defects can be eliminated? Explain any five defects in brief.
22. Which test is required to find out depth of casting? Explain any two testing methods in detail.
23. What is a backing sand? How molding sand is prepared? Which are the additives and binders used in preparing molding sand?
24. Can CAD/CAM system be applied to a foundry? How? What will be the benefits?

Short questions [4 marks]

25. Give eight examples of products of foundry technology
26. Brief about four important pattern allowances
27. Discuss contents of molding sand
28. What is Core? What is the use of core prints?
29. Discuss hand molding tools
30. Draw sketch of Cupola showing different stages
31. Mention steps of Permanent Mold Casting Technique
32. Discuss four NDT techniques in brief

33. Enlist the steps involved in the sand casting process.
34. Write a brief note on pattern materials.
35. Dictate any four required properties of molding sand.
36. Discuss some of the functions of a riser.
37. Discuss any two commonly used heat treatments on castings.
38. Briefly describe the shell-molding process.
39. Enlist the applications of investment casting process.
40. What are the steps of sand preparation carried out before mold making.

Short questions [3 marks]

41. Mention six basic steps of metal casting
42. Classify Patterns
43. How computer can be useful in casting process?
44. How permeability of sand is tested?
45. What is Riser? Why it is used?
46. Why a casting is to be heat treated?
47. Discuss Slush Casting in brief
48. Differentiate green and dry mold

49. Mention some of the advantages of casting over other manufacturing processes.
50. Define pattern. State the functions of a pattern.
51. Explain the Loam molding process with sketch.
52. Write a brief note on sand cores.
53. Draw the neat sketch of gating system showing each part of the same.
54. Identify some of the defects that may arise in cast parts.
55. What is the principle of electric arc furnace ?
56. Give a brief note on directional solidification.

METAL CASTING PROCESSES
ASSIGNMENT – 2

Descriptive questions [7 marks]

1. Write how pattern is different than casting? Explain pattern color coding system.
2. Write pattern allowances using schematic diagram.
3. Write short note on Die casting
4. Write steps for mould making using two piece patterns.
5. Explain centrifugal casting with neat sketch.
6. Write casting quality inspection techniques. Explain any one NDT in detail.

7. Explain shell molding process in detail.
8. Explain investment casting process in detail.
9. Explain various sand properties.
10. Explain elements of gating system in detail.
11. Explain various methods of tasting for finding defects.
12. Explain modernization of foundry.
13. Explain centrifugal casting technique in detail.
14. Explain Die Casting technique in detail.

15. Define a pattern? Explain types of pattern with neat sketch.
16. Which are the materials used in pattern making? Which one is better for steel casting? Explain in detail all pattern materials.
17. Explain the principle, construction and working of electric arc furnace in foundry.
18. Explain various molding methods used in a foundry. Which method is best suited for making flywheels? Differentiate hand molding and machine molding.
19. Explain principle, construction and working of cupola furnace in a foundry. For which purpose this furnace is used?
20. Differentiate green sand and dry sand. Explain each type of sand with its application.
21. What is a core? Why and where it is used? Explain any five types of cores with its application.
22. What is shot blasting? How a casting is cleaned? Elaborate cleaning methods of casting.
23. Which investment is carried out in investment casting? Explain the process in detail.
24. What is a shell in shell mould casting? Which sand is used in shell mould casting? Explain the process in detail.

Short questions [4 marks]

25. Draw any four type of core.
26. Compare sand casting, investment casting and die casting using various characteristic.
27. Write short note on mould materials used for mould making.
28. Write application of die casting, investment casting.
29. Explain with cause and remedies (1) Crack (2) shrinkage.
30. Differentiate between bottom gating system and part gating system in detail.
31. Explain Antioch casting in detail.

32. Explain any two pattern materials.
33. Differentiate hand and machine molding.
34. Differentiate open and blind risers.
35. Explain reasons for casting defects and its remedies.
36. Explain annealing heat treatment of casting.
37. Explain sand preparation for molding.
38. Explain stages of combustion in cupola furnace.

Short questions [3 marks]

39. Draw any three type of pattern.
40. Write short note pattern making.
41. Write functions of various hand tools used in foundry.
42. Write advantage, disadvantages of casting process.
43. Write short note on visual inspection of casting and identification of related defect.
44. Draw part gating system showing different gating elements.
45. Write short note on shell molding.

46. Explain any two types of patterns in detail.
47. Differentiate green and dry molding sand.
48. Explain riser functions in detail.
49. Explain various casting defects in brief.
50. Write principle and working of induction furnace.
51. How sand is reclaimed in foundry?
52. Write principle of electric arc furnace.