

III B.Tech II Semester Supplementary Examinations, Apr/May 2008
FOUNDRY AND WELDING
(Production Engineering)

Time: 3 hours

Max Marks: 80

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Discuss the merits and demerits of machine molding.
(b) Explain the procedure in detail the process of preparing the mold for casting a pulley. [8+8]
2. (a) Is it, Possible to obtain a sound casting of a solid bar by centrifugal casting Process? Give reasons in support of your answer.
(b) Explain why most die castings not made out of high strength materials?
(c) 'Large parts can't be manufactured by the Centrifuging process'. Comment on the statement. [5+5+6]
3. (a) Explain various types of risers with their advantages and limitations.
(b) Explain with neat sketches different types of ingates. [8+8]
4. (a) Explain the factors to be considered in selection of weld joint.
(b) Explain various welding positions.
(c) Explain various types of welds with neat sketches. [4+4+8]
5. (a) What is forge welding? What are the different types of forge welding? What factors influence the quality of forge weld.
(b) Classify the resistance welding. Write the advantages of it over other welding processes. [8+8]
6. (a) Explain the reasons for estimating welding costs.
(b) Discuss the factors involved in welding costs. [8+8]
7. (a) Explain the good practices in the design of molded plastic parts.
(b) What are main advantages of injection molding for thermoplastic parts as compared with hot compression molding. [8+8]
8. (a) When and why powder metallurgy preferred over conventional methods?
(b) Briefly discuss the following compaction techniques of powders.
 - i. Isostatic compaction
 - ii. Vibratory compaction
 - iii. Die compaction [4+12]

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1. (a) Describe the major activities in a metal casting industry through a flow sheet.
(b) What do you mean by Pattern design. Explain in detail the various activities in Pattern design. [8+8]
2. Give possible reasons and remedies for the casting defects arising due to improper molding and pouring practice. [16]
3. (a) Distinguish between pressurized and non-pressurized gating system used in foundry shop. Explain with suitable examples.
(b) Explain the parameters which cause the pouring time of a given casting to vary. [8+8]
4. (a) Discuss the distribution of Micro hardness and residual stresses along the weld zone of a V butt Joint and the methods of offsetting them.
(b) Discuss the nature of residual stresses in a fusion weldment Differentiate their occurrence in square butt Joint and V butt Joint. [8+8]
5. (a) What is forge welding? What are the different types of forge welding? What factors influence the quality of forge weld.
(b) Classify the resistance welding. Write the advantages of it over other welding processes. [8+8]
6. (a) Explain the reasons for estimating welding costs.
(b) Discuss the factors involved in welding costs. [8+8]
7. (a) Discuss briefly the various methods used for manufacture of thermo plastics.
(b) What is meant by degree of polymerization?
(c) What are important properties of polymers? [8+2+6]
8. Explain any three of the following powder manufacturing methods and characteristics of the powders thus produced.
 - (a) Production of Aluminum flake powder by ball milling
 - (b) Production of metal powders by thermal decomposition
 - (c) Production of copper powder by electrolytic deposition
 - (d) Production of metal powders by atomization (Water; gas and ultrasonic)[4+4+4+4]

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1. (a) Write the advantages of the casting process.
(b) Enumerate various functions of a pattern.
(c) Explain the steps involved in making sand castings. [6+5+5]
2. (a) What are the functions of flux in melting metals and alloys.
(b) What does normally constitute the charge in cupola furnace.
(c) What are the causes for the change in the composition of the melt obtained from cupola furnace. [6+5+5]
3. (a) What do you mean by centerline feeding resistance? Explain its importance is solidification of castings.
(b) Explain clearly the importance of chvorinov's equations in risering design. [8+8]
4. Discuss the importance of design of weld Joints in service life of welds and weld quality. [16]
5. (a) How the welding of plastics is classified with reference to the source of heat Employed ? Explain them.
(b) With fully a short note on friction welding for plastic rexs. [8+8]
6. (a) Explain the reasons for estimating welding costs.
(b) Discuss the factors involved in welding costs. [8+8]
7. Explain the following in detail:
(a) Blow molding
(b) Vacuum forming. [8+8]
8. (a) Define and explain the term powder Metallurgy.
(b) What are the important advantages, disadvantages and limitations of powder Metallurgy?
(c) Explain in detail the sequence of operations is powder Metallurgy. [5+6+5]

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1. (a) Upon what factors does the choice of a foundry sand depend? Explain them.
(b) Explain the importance of permeability in sand molds. What are the differences between green strength, dry strength and hot strength? [8+8]
2. (a) With a neat sketch explain the constructional features of Cupola furnace.
(b) Explain with a neat sketch centrifugal casting process. [8+8]
3. (a) What do mean by feeding distance? Explain in detail on shape, size, location and feeding distance of risers.
(b) Explain the need of padding chills, insulating sleeves and exothermic compounds in the casting process. [8+8]
4. (a) Discuss the classification of welding processes.
(b) Explain the reason why the cleaning of a joint is important before welding. [10+6]
5. Explain the braze welding process for the following with respect to filler metals, their composition, fluxes, Joint preparation.
(a) Braze welding of steels and cost Irons.
(b) Braze welding copper, Nickle and their alloys. [8+8]
6. (a) Explain the reasons for estimating welding costs.
(b) Discuss the factors involved in welding costs. [8+8]
7. What are the various types of processes for compression molding of plastics? Discuss all of them in detail with neat sketches. [16]
8. (a) Define and explain the term powder Metallurgy.
(b) What are the important advantages, disadvantages and limitations of powder Metallurgy?
(c) Explain in detail the sequence of operations is powder Metallurgy. [5+6+5]
