

**III B.Tech II Semester Supplementary Examinations,  
November/December 2005  
FOUNDRY & WELDING  
(Production Engineering)**

**Time: 3 hours**

**Max Marks: 80**

**Answer any FIVE Questions  
All Questions carry equal marks**

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1. (a) Explain the method of determining the moisture content in a moulding sand.  
(b) What is the role played by clay in a moulding sand? What is the method adopted for determining the clay content in a moulding sand. [8+8]
2. What are the defects caused by the molten metal? Explain why they are formed? How these defects can be avoided or minimized? [16]
3. (a) State clearly the significance of feeding distance of risers in risering calculations. How would you calculate the feeding distance for bars and plates.  
(b) Find the modulus of the following castings.
  - i. Sphere of 100 mm diameter
  - ii. Cube of 50 mm side.
  - iii. Cylinder of height=75 mm
  - iv. Cylinder of diameter=50 mm. [8+8]
4. What is welding? What are the advantages and disadvantages of welding? Write a detailed account on the history and development of welding technique. [16]
5. (a) Explain the principle of Adhesive Joint.  
(b) What are the basic steps in adhesive bonding and Explain all them in detail. [6 +10]
6. (a) Explain the economics of welding as compare to costing process.  
(b) Explain the oxygen lance cutting process with a diagram and give the application. [8+8]
7. (a) What are the various components which make up a molding compound for plastics and Explain the function of each.  
(b) What is hot compression molding? For what type of work these are used.  
(c) Explain the principle advantages of the casting method of molding plastic parts. [8+4+4]
8. (a) Which method will you recommend for the manufacture of the following powders of the metals and why?
  - i. Fe

ii. Mg

iii. W

- (b) What is sintering? What conditions must be satisfied for obtaining a good sintered product? [9+7]

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1. Explain with neat sketches different types of patterns. [16]
2. (a) Explain with a neat sketch working of a Cupola.  
(b) Explain the causes and remedies of the following sand casting defects
  - i. Misrun and cold shuts
  - ii. sand inclusions
  - iii. Hot- Tears
  - iv. Metal penetration. [8+8]
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) A Plate 50 mm wide carrying a load of 12,000 kg is to be welded by 4 equal fillets to another fillet as shown in figure. Find the necessary size of each fillet, (Assume the necessary data.)  
(b) Draw the different types of welded Joints and represent the same, with welding symbols as per Indian standards specifications. [8+8]
5. (a) Define the term braze welding.  
(b) Why braze welding is also called as Bronze welding formerly? Explain.  
(c) Explain the differences between brazing and Braze welding.  
(d) Name the equipment used in braze welding process. [4+4+4+4]
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. (a) Give Various methods of reporting size distribution of powders highlighting their advantages and disadvantages.  
(b) With a neat flow sheet explain the production of self lubricating bearings. [8+8]

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1. (a) What are the advantages of using plastics as pattern material.  
(b) Explain the composition of moulding sand.  
(c) Write short notes on synthetic sands. [6+4+6]
2. (a) What are the main factors which are responsible for producing defects in the castings.  
(b) Explain the main advantages and disadvantages of die casting.  
(c) Describe the various alloys commonly cast through the die-casting process. [6+6+4]
3. (a) Explain why sharp bends are avoided at runner-sprue Junction.  
(b) Explain why a large riser is provided for steels castings while riser is optional for grey cast iron casting. [8+8]
4. What are the various types of welding Joints? How are they classified? Explain all of them with neat sketches. [16]
5. (a) Explain the effect of polarity on penetration in DC arc welding.  
(b) Explain the principle of gas welding. [8+8]
6. Calculate the total cost of manual flux shielded metal arc welding using the data given below.  
Weld length : *2metres*  
Welding speed : *12M/hour*  
Operating factor : *30%*  
Labour and overhead charges/hour : *Rs.5*  
Electrode consumption : *0.35Kg/m.*  
Electrode price : *Rs.20perKg.*  
Arc voltage : *22Volts*  
Arc current : *200Amps.*  
E (Efficiency) : *0.6*  
Rate/KW Hr. : *Rs.0.40.* [16]
7. What are the various additives used during the processing of polymers? Explain the function of each one of them in detail. [16]

8. (a) Which method will you recommend for the manufacture of the following powders of the metals and why?
- i. Fe
  - ii. Mg
  - iii. W
- (b) What is sintering? What conditions must be satisfied for obtaining a good sintered product? [9+7]

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1. (a) Explain why ramming obtained in sand slingers are more uniform over the depth than that in sand squeezers or Jolting machine?  
(b) Define the term pattern. Explain how patterns differ from the drawing of the castings. [8+8]
2. (a) What are the factors which govern the selection of a particular type of furnace for melting a particular metal.  
(b) What are the crucible furnaces ? Where they are preferred and why?  
(c) With a neat sketch explain the working of a pit furnace. [4+4+8]
3. (a) Explain various types of risers with their advantages and limitations.  
(b) Explain with neat sketches different types of ingates. [8+8]
4. Discuss the importance of design of weld Joints in service life of welds and weld quality. [16]
5. (a) Write short notes on the following:
  - i. Braze welding filler metals and their compositions
  - ii. Braze welding fluxes.  
(b) Explain the metallurgy of braze welding. [8+8]
6. (a) Explain the reasons for estimating welding costs.  
(b) Discuss the factors involved in welding costs. [8+8]
7. (a) What are the various methods of molding plastics? Describe Ram type and screw type injection molding processes with neat sketches.  
(b) Name any six types of thermosetting plastics, give their advantages, limitations and applications. [8+8]
8. (a) Which method will you recommend for the manufacture of the following powders of the metals and why?
  - i. Fe
  - ii. Mg
  - iii. W

- (b) What is sintering? What conditions must be satisfied for obtaining a good sintered product? [9+7]

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