

# ME8351 MANUFACTURING TECHNOLOGY-I

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## UNIT-I METAL CASTING PROCESS

### PART A

1. Define foundry (AU MAY-JUNE 2006)
2. Define casting. (AU MAY-JUNE 2006, 2014)
3. Define pattern. (MAY/JUNE 2014)
4. Name the various pattern materials. (AU MAY-JUNE 2006)
5. What are the difference between shaking allowance and other allowance? (AU MAY-JUNE 2006)
6. When do you make core or what is function of core in molding sand?
7. Define pattern allowances or what the main purpose of providing pattern is.
8. What is the final product of CO<sub>2</sub>process?(AU MAY-JUNE 2007)
9. Mention the specific advantages of CO<sub>2</sub>process. (Nov/Dec-2018)
10. What is the properties good molding sand? (AU MAY-JUNE 2007)
11. What are the ingredients of molding sand?
12. State the purpose of adding ingredient to the molding sand.(AU NOV-DEC 2007)
13. What are the different types of molding sand?
14. Write the composition of good molding sand?(Nov/Dec-2018)
15. List out any five molding tools. (AU NOV-DEC 2007)
16. Define deformation. (AU MAY-JUNE 2010)
17. List the factors to be considered in the choice of metal melting furnaces. .(AU MAY-JUNE 2010)
18. State the principle of thermocouple pyrometer? (AU MAY-JUNE 2011)
19. What is die casting? (AU MAY-JUNE 2011)
20. What are the types of alloys cast in cold chamber die casting machines? (AU NOV-DEC 2010)
21. What are the reasons for the casting defects of cold shuts and misrun?(AU NOV-DEC 2010)
22. Name four different casing defects (Nov/Dec-2013)(Apr/May-2019).
23. State any four types of pattern. (May/ June 2012).
24. What are the causes for the formation of blow holes in the sand casting? (May/ June 2012)
25. What is meant by core print?[AU-NOV/DEC-2012](Nov/Dec-2018)
26. Name the different metal melting furnaces used in foundries . [AU-NOV/DEC-2012]
27. Compare the advantage of metal moulds over sand (expandable) moulds. (May/ June 2013)
28. What are the function of flux in melting metals and alloy? (May/ June 2013)
29. Differentiate shrinkage and porosity. (Nov/Dec-2013)

### PART B

1. Describe briefly about the various types of molding tools used with sketch.(AU MAY – JUNE 2010)
2. Describe briefly the various pattern material used for making pattern. Pattern materials: (AU MAY – JUNE 2010)
3. Explain the types of pattern in details. (AU NOV-DEC 2010)

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4. What are the types of molding process? And briefly explain. Molding processes (AU NOV-DEC 2010)
5. Enumerate the various casting defects and suggest suitable remedies. (AU MAY-JUNE 2011, Nov/Dec-2012, 2013, May/June 2014)
6. Figure shows the cross section of a control component (having a flange and an axial hole).
7. Describe briefly, with sketches, the steps involved in making a sand mould to cast this component. Sketch also the shape of the casting as soon as it removed from the mould. (AU MAY-JUNE 2012, 2014)
8. Explain the steps involved in "Lost wax process", with suitable sketches. (May/ June 2012, Nov/Dec-2013)
9. Write short notes on following: (May/ June 2012, Nov/Dec-2013)(Nov/Dec-2018)
10. Describe the various pattern allowances which can be quantitatively specified. [AU-NOV/DEC-2012; May/JUNE-2013](Nov/Dec-2018)
11. What are the desirable properties of molding sand for sand casting? Explain briefly each one [AU-NOV/DEC-2012]
12. Explain the stages of preparing shell mould, with suitable sketches. List the unique advantages of making castings in shell moulds. [AU-NOV/DEC-2012, 2013]
13. Describe the process of Investment casting. What process controls are needed in this case? (May/ June 2013)
14. Briefly explain the Principle, operation, advantages, disadvantages and application of CO<sub>2</sub> molding. (May/ June 2013)(Nov/Dec-2018)
15. Describe with a neat sketch of cold chamber die casting machine. Give its Advantages and Limitations. (May/ June 2013)
16. Explain with neat sketch with Stir casting with advantages. (Apr/May-2019)
17. Explain the constructional features of Cupola Furnace with Neat sketch? (Nov/Dec-2018)
18. Explain the hot chamber die casting with figure. (May/June 2014)(Apr/May2019)(Nov/Dec-2018)

### UNIT II JOINING PROCESS

#### PART A

1. What is the principle of resistance welding? (AU MAY-JUNE 2010)
2. What is the chemical reaction occurs in Thermit welding? (AU MAY-JUNE 2010)
3. Define percussion welding. (AU NOV-DEC 2010).
4. Difference between brazing and soldering? (AU NOV-DEC 2010, MAY/JUNE 2014)
5. What is the function of TIG welding? (AU MAY-JUNE 2011).
6. What are different methods of welding? (AU MAY-JUNE 2011)
7. Mention any two advantages of DC and AC welding. (AU NOV-DEC 2011)
8. When is the straight polarity used for arc welding
9. How does MIG welding differ from TIG welding? (AU NOV-DEC 2011)

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10. State any two advantages of MIG welding..
11. Mention various types of resistance welding. (AU MAY-JUNE 2007)
12. State any two advantages of TIG welding. (AU MAY/JUNE 07).
13. What is the purpose of using inert gas in TIG welding?
14. What are the functions of flux in welding electrode? (May/ June 2012, Nov/Dec 2013)
15. What are the types of adhesives used in adhesive bonding? (MAY/ JUNE 2012)
16. What is meant by carburizing flame in gas welding [AU-NOV/DEC-12,]
17. What is the principle of Thermit welding [AU-NOV/DEC-12, 13]
18. What is the minimum distance maintained between two successive sport welds made by resistance welding? Why? (May/ June 2013)
19. Write short notes on transferred and non-transferred arc in plasma arc welding. (May/ June 2013)
20. Give the applications of gas welding.
21. What is arc welding?(Nov/Dec-2018)(Apl/May-2019)
22. What are the functions of a coating on electrode?
23. Explain thermoplastic adhesives.
24. Explain thermosetting adhesives.
25. Define soldering and classify it.(Nov/Dec2018(Apl/May-2019)
26. What is brazing?

### **PATC B**

1. Discuss the gas welding process and the necessary equipments needed with suitable sketches. [AU-NOV/DEC-2012]
2. Explain the metal arc welding process with a sketch. [AU-NOV/DEC-2012, 2013](Nov/Dec-2018)
3. Explain with a neat sketch the equipment and process of submerged arc welding. (May/ June 2013)
4. Explain electro gas welding with its principles and application. (Nov/Dec 2013).8
5. Explain the friction stir welding process with neat sketch.(Nov/Dec 2013).8
6. Explain with neat diagram of resistance welding. (AU MAY-JUNE 2010, MAY/JUNE 2014)8
7. Explain the electro slag process. (AU MAY-JUNE 10, 12, NOV/DEC 13)(Nov/Dec-2018)8
8. Explain the process of flame cutting (AU NOV-DEC 2010) 8
9. Explain with neat diagram of plasma arc welding. (AU MAY-JUNE 2011) [AU-NOV/DEC-2012]8
10. Explain with neat diagram process of laser beam welding (AU MAY-JUNE 2011)
11. With the help of suitable diagram, explain the following type of welding: (May/ June 2012)
12. What is the principle of thermit welding? Explain the same with a neat sketch of the welding arrangement. (May/ June 2012)(Nov/Dec-2018)
13. Explain the principle of operation, advantages and limitations of electron beam welding. Principle: (May/ June 2012)(13)

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14. Explain the principle of operation, advantages and limitations of Thermit Welding (TW), Friction Welding (FRW), Brazing and Soldering
15. Sketch the different types of weld defects and mention how they occur [AU-NOV/DEC-2012]
16. Explain any four major ways to control the output of arc welding transformer. (May/ June 2013)
17. Discuss about to control the arc, various reactors are used with welding transformers. Some methods to control the arc are given below:
18. Explain the three variables involved in continuous drive friction welding. (May/ June 2013)
19. What are the nondestructive tests used in welding inspection? Explain any one method. (May/ June 2013)

### UNIT-III METAL FORMING PROCESS

#### PART A

1. What is meant by recrystallization temperature?(APRIL/MAY-2010)(Nov/Dec-2018)(Apl/May-2019)
2. List out any four parts that can be manufactured by shape rolling operations.[APRIL/MAY-2010]
3. Define extrusion ratio.[NOV/DEC-2011]
4. Distinguish between hot working and cold working of metals. (MAY/JUNE 2012)
5. Define extrusion, as a manufacturing process. (MAY/JUNE 2012) (NOV/DEC 2009)
6. List two advantages of hot extrusion over cold extrusion.[NOV/DEC-2012]
7. Define recrystallization temperature.
8. Define the process of mechanical working metals
9. Define hot working of metal.
10. What are the advantages of hot working over cold working?
11. What are the advantages of cold working over hot working?
12. 15. What are two common methods of thread rolling?
13. 16. What are the advantages of cold rolling?
14. 17. Define forging.
15. Define open – die forging.
16. Define closed die forging.
17. Define press forging.
18. Define upsetting.
19. hat is wire drawing?
20. Define tube drawing.AU(NOV/DEC 2010)
21. What are the classifications of tube drawing process?
22. Distinguish between direct and indirect extrusion. What are advantages?(Nov/Dec-2018)
23. Which extrusion process requires more force? Why?
24. what are the general advantages of forging as a manufacturing process?
25. What are advantages of cold forming?

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26. Differentiate extraction and forging. (Nov/Dec 2013)
27. What is difference between hot and cold forging. (Nov/Dec 2013)
28. What do you mean by angle of bite. (Nov/Dec-2018)

### **PART B**

1. Compare hot rolling and cold rolling
2. What are the types of power hammers available and explain the pneumatic hammer with a neat sketch  
or  
Classify the types of forging machines
3. Classify the extrusion processes and describe any two.
4. With the aid of neat sketches explain the wire drawing process. Wire drawing process
5. Describe the followings.  
(i) Press forging                      (ii) Upset forging
6. How round section are manufactured by rolling process. Explain the various sequence of operation.
7. with the help of neat sketches, explain how a hexagonal nut can be manufactured from a cylindrical rod
8. Distinguish between 'Open-die forging' and 'Closed-die forging'[APR/MAY-2010;NOV/DEC-2011]
9. What are the defects in parts produced by rolling? Explain any four defects.[APR/MAY-2010, NOV/DEC 2013]
10. Distinguish between wire drawing and tube drawing.[APR/MAY-2010]
11. Describe the principle of Hydrostatic extrusion[APR/MAY-2010, NOV/DEC 2013]
12. What is smith forging operation? [NOV/DEC-2011]
13. Briefly explain what are compound dies and progressive dies, with suitable sketches.[NOV/DEC-2011]
14. . (i) With a neat sketch, explain the working of a Pneumatic Hammer for forging. (MAY/JUNE 2012) – REFER QUESTION NO. 2  
  
(ii) List four tools used for forging. Sketch any two of them. (MAY/JUNE 2012)
15. (i) With neat sketches , explain the different types of roll stand arrangements used in the rolling mills. (MAY/JUNE 2012)
16. State clearly for what purpose each arrangement is used. (MAY/JUNE 2012)
17. With a neat sketch, explain the principle used in tube drawing process ? (MAY/JUNE 2012)
18. With neat sketches. Explain the following smith forging operations. (NOV/DEC 2012)
19. With suitable sketches. Explain the following: (NOV/DEC 2012)
20. Briefly explain about flat strip Rolling.[AU-MAY/JUNE-2013]
21. Explain with a neat sketch the process of wire drawing. [AU-MAY/JUNE-2013]

## UNIT-IV SHEET METAL PROCESSES

### PART A

1. What is spring back? How is it recovered? (APRIL/MAY 10, 12, 13, NOV/DEC 13)
2. What is peen forming? What are its application? (APRIL/MAY 2010)
3. What is ironing, applied to sheet metal work? (NOV/DEC.2011)
4. What are the advantage of Rubber Pad Forming process? (NOV/DEC.2011)
5. 5.What are the advantages of hydro forming process.[MAY-2012]
6. 6.What are the limitations of explosive forming.[NOV-2012]
7. 7.What is lancing operation that is done on sheet metals?[NOV-2012]
8. What is sheet metal work? (APRIL/MAY 2013)
9. List the various major shearing operations in sheet metal. (Apl/May-2019)
10. What is meant by clearance? (Nov/Dec 2008)
11. Define the term “spring back “(May/June 2005) (Nov/Dec-2018) (Apl/May-2019)
12. List out the applications of stretch forming operations.
13. What is punching operation? (May/June 2005)
14. What is super plastic forming operation? (Nov/Dec 2007)(Nov/Dec-2018)
15. 17. How is hydro – forming similar to rubber forming (Nov/Dec 2007)
16. What are the types of special forming process? (Nov/Dec 2008)
17. Describe power spinning process? (April/May2004)
18. How magnetic pulse in created? (April/May2008)
19. What are the applications of super plastic forming? (April/May2004)
20. Define limiting drawing ratio. (May/June 2006)
21. Define “embossing”
22. Write the shot notes on hydro forming.(Nov/Dec-2018)
23. What is metal spinning process? (May/June 2006)
24. What is peen forming process? (April/May2008)
25. Mention the various types of simulative tests carried out for various cup forming.
26. What is stretching? (April/May2008)
27. What is meant by seaming? (April/May2008)
28. What are the advantages and disadvantages of peen forming process?
29. Mention the Advantages of super plastic forming. (Nov/Dec 2008, 2013)
30. What are the applications of forming limit diagram? (Nov/Dec 2008)
31. 38. What is mean by standoff distance in explosive forming process (Nov/Dec-2018)

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## PART B

1. Explain the principle of stretch forming? Explain its types.(Nov/Dec-2009)  
(OR)  
How curvature are made on thin sheet metals, explain the suitable process with neat sketch.(Nov/Dec 2013)
2. Explain the process of hydro forming. Explain the types of hydro forming. (NOV/DEC.2011)
3. Explain the principle of metal spinning process with a neat sketch. (NOV/DEC.2011)
4. Explain peen forming process with a neat sketch. (April/May-2008)
5. List out the sheet metal characteristics. (Nov/Dec-2008)
6. i) Enumerate with a neat sketches three phase in shearing. (APRIL/MAY 2010)
7. What are various bending operations? Explain any four.
8. Write short notes on (APRIL/MAY 2010)  
(i)Hydro forming (refer question no.2)  
(ii)Magnetic pulse forming
9. Distinguish between blanking and punching operations. Sketch and explain the elastic phase, plastic phase and fracture phase that take place in a blanking operation. (NOV/DEC.2011)
10. Briefly explain what are compound die and progressive dies, with suitable sketches. (NOV/DEC.2011)
11. Describe the metal spinning process with a neat sketch and state its advantages and specific uses. (NOV/DEC.2011) (REFER Q.NO:3)
12. Explain the hydro forming process with neat sketches. Make a brief comparison of this process with conventional deep drawing. (NOV/DEC.2011) (REFER Q.NO:2)
13. Explain the principle of stretch forming? Explain its types.[MAY/JUNE-2013] (REFER Q.NO:1)
14. Explain the principle of metal spinning process with a neat sketch. .[MAY/JUNE-2013] (REFER Q.NO:3)
15. With a neat diagram, explain the principle of explosive forming.[NOV/DEC-2012, 2013]
16. .Describe with illustrative sketches, the following sheet metal operations:[MAY/JUNE-2012]
17. Explain with a neat sketch the principle and operation of magnetic pulse forming?[MAY/JUNE-2013] (REFER Q.NO:7)
18. 15.Discuss superplastic forming with neat sketches.[MAY-2013] (REFER Q.NO:7)
19. 16.With a neat sketch explain the rubber pad forming process.[MAY-2012]
20. (a) sketch explain the following sheet metal bending operation:(NOV/DEC 2012)  
(i) Sheet bending using V-die(REFER Q.NO:6)  
(ii) Bending edge of a sheet using wiping-die(REFER Q.NO:13)  
(iii) Roll bending(REFER Q.NO:6)  
(iv)Bending a sheet to a round shape using four-slide machine. (REFER Q.NO:6)
21. Describe forming limit diagram. (Nov/Dec 2013)
22. Explain briefly micro forming in sheet metal processes

## UNIT-V MANUFACTURE OF PLASTIC COMPONENTS

### PART A

1. Plastic strips are to be converted into 3D objects. Suggest one process and explain. (APRIL/MAY 2010)
2. Describe briefly the principle of film blowing. (APRIL/MAY 2010).
3. Name two adhesives that are used for adhesive bonding of plastics.(NOV/DEC 2011) (MAY/JUNE 2012)
4. What are the advantages of transfer moulding? (NOV/DEC 2011)
5. Name two important differences between thermoplastics and thermosetting plastics. (NOV/DEC 2012)
6. What is film blowing? (NOV/DEC 2012) (MAY/JUNE 2012)(Apl/May-2019)(Nov/Dec-2018)
7. What is polymerization? (MAY/JUNE 2013)
8. What is calendaring in processing of plastics?(MAY/JUNE 2013)
9. What are the characteristics of thermo plastic? (NOV/DEC 2009)
10. List the advantages of cold forming of plastics(NOV/DEC 2009)
11. What are the types of plastics? (MAY/JUNE 2009)
12. What are the characteristics of shaping and forming process? (MAY/JUNE 2009)
13. What are the types of moulding of thermo plastics? (MAY/JUNE 2008)
14. Explain extrusion process. (MAY/JUNE 2008)
15. Explain the working principle of compression moulding. (MAY/JUNE 2006)
19. Explain the working principle of transfer moulding. (MAY/JUNE 2006)
20. What is bonding of thermo plastic? (MAY/JUNE 2007)
21. What are the fusion and solvent methods? (NOV/DEC 2006)
22. What are the limitations of solvent bonding of plastic? (NOV/DEC 2006)
23. What is calendaring? Why it is used. (MAY/JUNE 2007)
24. What is solid state forming? (MAY/JUNE 2005)
25. Mention the advantages of induction welding. (MAY/JUNE 2005)
26. Difference between thermoplastic and thermo setting plastics. (MAY/JUNE 2004)
27. What are the different types of compression moulds? (Nov/Dec 2013)
28. Define pul forming. (Nov/Dec 2013)
29. Write short notes on thermo set plastics(Nov/Dec-2018)

### PART B

1. Explain the process of reciprocating screw injecting moulding.(APRIL/MAY 2010) (MAY/JUNE 2012)
2. Enumerate with neat sketch of film blowing.
3. . Explain with neat sketch transfer moulding. (APRIL/MAY 2010) (NOV/DEC 2012,2013)
4. . Explain the process of ultrasonic welding of plastics. (APRIL/MAY 2009)



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5. Explain different types of plastic with its application.
6. Explain blow moulding process.(NOV/DEC 2011,2013) (MAY/JUNE 2012, 2013)
7. Describe with neat sketches various steps involved in rotational moulding. State its application. (APRIL/MAY 2010) (MAY/JUNE 2012) (MAY/JUNE 2013)
8. What are the methods of bonding thermoplastics? Explain any one method. (APRIL/MAY 2010) (MAY/JUNE 2013)
9. Briefly explain the following plastic processing methods, with the help of neat sketches(NOV/DEC 2011) (MAY/JUNE 2013)
10. Describe the following plastic processing methods, with the help of neat sketches: (NOV/DEC 2011)
11. Describe briefly the plunger type injection moulding process for producing plastic components. (NOV/DEC 2012) (MAY /JUNE 2010)
12. Explain, with neat diagram, the thermoforming process. State its advantages over other process. (NOV/DEC 2012)
13. Explain with neat sketch pulforming process.(Nov/Dec 2013)