Uka Tarsadia University (Diwaliba Polytechnic)
Diploma in Mechanical Engineering
Assignment (Manufacturing Engineering-1 -020020302)

Unit-1 Introduction to Manufacturing Process

1. Define Following.
   1. Strength
   2. Ductility
   3. Malleability
   4. Hardness
   5. Machinability Brittleness
   6. Grain growth
   7. Recrystallization Temperature
2. Define manufacturing process.
3. What do you mean by recrystallization temperature?
4. Enlist the Factors affecting Recrystallization Temperature.
5. Explain Residual Stress.
6. Give the Classification of Manufacturing Process.
7. Write short note on mechanical properties of metal.

Unit-2 Metal Working Process

Q-1) Define Following.

1.	Ingot	2.	Sheet
3.	Bending	4.	Bloom
5.	Forging	6.	Billet
7.	Embossing	8.	Bulging
9.	Slab	10.	Stretch Forming
11.	Blanking	12.	Strip
13.	Shot Peening	14.	Lancing
15.	Plate	16.	Spinning
17.	Piercing		

Q-2) Answer the followings:

1. Distinguish among Bloom, Billets and Slabs as applied to rolling process.
2. State the factors causing the defects in cold rolled parts.
3. Explain “three high rolling mill” with neat sketch.
4. List the different metal forming processes.
5. What are the limitations of hot working?
6. Explain “Four high rolling mill” with neat sketch.
7. Explain “Cluster mill” with neat sketch.
8. Explain “Universal rolling mill” with neat sketch.

9. Write brief note on Press forging.
10. State the advantages of hot rolling as compared to cold rolling.
11. State the Characteristics of forged parts.
12. State two applications of each of the following process: Forging, Rolling and Extrusion
13. Explain the points in selection of drop forging.
14. Explain the factors affecting the drawing operation.
15. Name at least two components produced by drawing operation and type of drawing process used for each of them.
16. Give Characteristics of drawing process.
17. State the applications of drawing process.
18. List the factors affecting the drawing process.
19. Explain Shot peening operation and its purpose.
20. Explain Curling operation.
21. Explain Bulging operation.
22. Explain Tube forming Process.
23. Explain Shearing process.
24. Explain piercing and blanking process.
25. Give name of different drive mechanism used in press.
26. List the name of operation which are performed on press.
27. Which points are considered for selection of press?
28. Write a short note on press capacity.
29. Write a short note on shut height.
30. List advantages and disadvantages of hot rolling process.
31. List the various types of rolling mill and explain planetary rolling mill.
32. Differentiate between hot working and cold working processes.
33. Explain “hot rolling” with neat sketch.
34. List the factors influencing rolling operation and explain any one of them.
35. Define metal forming process and classify the same by giving one application of each process.
36. Explain the method of manufacturing round bar from a square bloom.
37. List major elements of rolling mill and write the function of each.
38. Differentiate between hot rolling processes and cold rolling processes.
39. Describe upset forging with help of neat sketch.
40. List the correct sequence of forging operations while producing a hexagonal headed bolt.
41. List the defects in forged parts.
42. Classified the forging process and describe any two of them.
43. Describe drop forging with help of neat sketch.

Unit-3 Metal Casting Process

Q-1) Explain following properties of moulding sand:
1. Cohesiveness
2. Collapsibility
3. Porosity
4. Adhesiveness
5. Refractoriness

Q-2) Write functions of following:
1) Sprue pin 2) Vent rod 3) Gate Cutter

Q-3) State the role of following:
(1) Runner (2) Riser (3) Gate (4) Pouring basin

Q-4) Define Following:
1) Blow holes 2) Cracks 3) Fins 4) Metal penetration 5) shift

Q-5) State the product manufactured by the following casting process
1) Centrifugal 2) Investment 3) Shell moulding 4) Die casting

Q-6) Answer the followings:

1. Give types of foundry used for casting process
2. Name various factors which are considered for selection of pattern making material
3. Explain the Horizontal core with neat sketch
4. Explain the Hanging core with neat sketch
5. Explain the Balanced core with neat sketch
6. Difference between natural sand and synthetic sand
7. Name various ingredients fed into the cupola
8. Advantages and disadvantages of green sand moulding
9. Advantages and disadvantages of Dry sand moulding
10. Advantages and disadvantages of machine moulding over hand moulding
11. State advantages of centrifugal casting process
12. State advantages of Die casting process
13. State the principle of shell moulding process
14. State the principle of vacuum moulding process
15. Explain Safety requirement in casting process
16. Explain pouring equipment
17. State the factors affecting pouring temperature.

Q-7) Answer the followings:

1. Distinguish among Bloom, Billets and Slabs as applied to rolling process.
2. State the factors causing the defects in cold rolled parts.
3. Explain “three high rolling mill” with neat sketch.
4. List the different metal forming processes.
5. What are the limitations of hot working?
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8. Explain “Universal rolling mill” with neat sketch.
9. Write brief note on Press forging.
10. State the advantages of hot rolling as compared to cold rolling.
11. State the Characteristics of forged parts.
12. Explain the points in selection of drop forging.
13. Explain the factors affecting the drawing operation.
14. Name at least two components produced by drawing operation and type of drawing process used for each of them.
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20. Explain Bulging operation.
21. Explain Tube forming Process.
22. Explain Shearing process.
23. Explain piercing and blanking process.
24. Give name of different drive mechanism used in press.
25. List the name of operation which are performed on press.
26. Which points are considered for selection of press?
27. Write a short note on press capacity.
28. Write a short note on shut height.

Unit 4: Plastic Moulding Processes

Q-1) Define Following.

1. Resin
2. Toughness
3. Creep

Q-2) Answer following

1. Write different thermosetting and thermoplastic material.
2. What are the characteristics of polymers?
3. Extrusion is generally used for _____.
4. Name the most commonly used plastic processing method in industry.
5. Which mould is provide highest productivity in injection moulding?

Q-3) Answer the Followings:

1. Explain different properties of plastic.
2. Explain common additives used in plastic.
3. Give classification of plastic material.
4. Explain extrusion process for thermoplastic material.
5. Explain Injection moulding process.
6. Write down short note on blow moulding.
7. Write safety precaution for moulding processes.
8. Discuss Design issue in polymer processing.

Unit 5: Metal Joining Processes

Q-1) Define Following.

1. Soldering
2. Brazing
3. Welding

Q-2) Answer the followings:

1. Explain forehand gas welding with neat sketch.
2. Explain backhand gas welding with neat sketch.
3. Give application of gas welding.

4. Describe steps of gas welding process.

5. Sketch the gas welding torch with its parts.

6. State names of coating material used on arc welding electrodes.

Q-3) Answer the Followings:

1. Give classification of welding.

2. Explain different types of flames obtained in gas welding with neat sketch.

3. Explain the principle of arc welding. Give its advantages, disadvantages and Application.

4. Write short note on electrodes used in arc welding state its application.

5. Write short note on submerged arc welding.

6. State advantages disadvantages and uses of TIG.

7. Explain with neat sketch any one resistance welding process giving its advantage, disadvantages and uses.

8. Give classification of metal joining process.

9. List the equipment used in gas welding. State the functions of each.

10. Stat safety precautions in gas welding.

11. Explain the MIG welding with neat sketch.

12. Explain the principal of Thermit welding.

13. Explain the working of ultrasonic welding with neat sketch.

14. Explain seam welding in brief.

15. State the function of flux and state various materials used as flux.

16. State the difference between soldering and brazing.

Unit 6: Inspection of Joining Processes

Q-1) Define Following.

1. Undercut

2. Porosity

3. Non-destructive testing

4. Slag Inclusion

Q-2) Answer the followings:

1. Explain various welding defects.

2. Discuss post welding Inspection.

3. Differentiate destructive testing and Non-destructive testing.

4. Write safety precaution for welding processes.

5. Explain ultrasonic testing with neat sketch.