MUTHAYAMMAL ENGINEERING COLLEGE

(An Autonomous Institution)

(Approved by AICTE, New Delhi, Accredited by NAAC & Affiliated to Anna University)

Rasipuram - 637 408, Namakkal Dist., Tamil Nadu

Department of Mechanical Engineering

19GES15 -MANUFACTURING PROCESS

UNIT – I

PART-A - (10 X 2 = 20 MARKS)

1. How special forming process is defined?
2. What is metal spinning process? Define casting?
3. When do you make core (or) what is function of core in moulding sand?
4. Explain the core making process?
5. Mention the specific advantages of carbon di oxide process?
6. Write the composition of good moulding sand?
7. What are chaplets?
8. List the factors to be considered in the choice of metal melting furnace?
9. What are the reasons for the casting defects of cold shuts and misrun?
10. Name four different casting defects.
11. How casting defects are identified?
12. Define permeability.
13. What are the factors that you will consider before selecting materials for pattern?
14. What is precission investment casting?
15. How patterns differ from casting?
16. Name the various tools used by pattern makers.
17. What are the defects caused by low pouring temperature?
18. What allowances are generally considered while making patterns?
19. What are the tests are carried out to determine the quality of castings?
20. Mention any two merits and demerits of die casting.

Part-B (16 Marks)

1. What are the pattern allowances? Explain briefly each.
2. Discuss the properties of moulding sand.
3. Explain the **CO**2 process of core making state its advantages and applications.

4. State the different type of mould. Write a short note on 'Green sand mould' and shell moulding
5. Write a neat sketch of a cupola, Explain its operate.
6. Explain with a simple sketch how metal is melted in a cupola furnace.
7. What are the different types of furnace used in foundry? Describe in detail with neat sketches any one of them.
8. Explain briefly the various moulding method used in foundries.
9. Enumerate the continuous casting defects and suggest suitable remedies.
10. Explain the various non –destructive inspection methods of cast products.
11. What is a riser? What are the different types of risers?
12. Explain the following methods in the inspection of casting:
    (a) X-ray testing (6)
    (b) Ultrasonic testing (6)
13. Explain with neat sketch Die casting process.
    (a) Hot chamber die casting
    (b) Cold chamber die casting

UNIT - 2
Part-A (2 Marks)

1. Define welding process.
2. Define fusion welding .
3. What are different method of welding you know ?
4. Define arc crater.
5. Mention any two advantages of D .C and A. C welding.
6. What do you under stand by straight polarity?
7. When is the straight polarity used for arc welding?
8. What is the purpose of coating on an arc – welding electrode?
9. What are the two main different of consumable electrode and non – consumable electrode?
10. How does MIG welding differ from TIG welding?
11. What is the main different between upset butt welding and flash butt welding ?
12. What are the various types of flame?
13. Define plasma arc welding ?
14. What do you mean by fusion welding process?
15. List the advantages of soldering process.
16. What are the functions of coated electrodes?
17. List the different types of shielding gases used in the gas metal arc welding.

Part-B (16 Marks)

1. Explain the method of laser beam welding and give their applications
2. Explain the method of electron beam welding and given their applications
3. Describe plasma Arc welding and given their applications
4. Describe and explain Ultrasonic welding and give their applications
5. Explain Thermit welding and given their applications
6. What is friction welding? give their advantage and limitations
7. Distinguish between brazing, soldering and welding
8. Write briefly on testing and inspection
9. Describe brazing process.
10. Explain with neat sketch the Thermit welding process.
11. Discuss the features and applications of seam welding with a neat sketch.
12. Explain TIG welding process with neat sketch. How does it differ from MIG welding process.(10)
13. Briefly explain the three types of oxy-acetylene flame settings with sketches.(6)
14. Discuss the various filler and flux materials used in welding? (8)
15. Write a brief note on Welding defects. (6)
16. Explain the spot welding process.(8)
17. Describe the submerged arc welding process.(8)

UNIT-III
Part-A (2 Marks)

1. Define cold working of metals
2. Define re crystallization temperature
3. Give some examples for mechanical working of metals
4. Define forging
5. Give some basic forging operations
6. Define extrusion ratio
7. Define tube drawing
8. Define degree of drawing
9. Name four different press-working operations
10. What are the defects in forging operations?
11. Define Blanking.
12. What is upset forging?

13. What are the lubricants used in the wire drawing process?
14. Mention any two defects in rolled parts.
15. Distinguish between a bloom and a billet.
16. Differentiate hot working and cold working.

Part-B (16 Marks)

1. Explain the hot working and cold working with suitable examples
2. Define rolling and discuss according to the classification
3. Discuss the various forging operations
4. Give the advantage of press forging over drop forging
5. What are the defects in forgings? Explain it.
6. How the pipe and tubes are manufacturing?
7. Define drawing and discuss the classification with neat sketch
8. What are the defects in rolled parts?
9. With suitable examples , explain Open –die and Closed –die forging?
10. Write a critical note on principle, types, and characteristics and limitations of the extrusion process.
11. Define the follwing terms:-
    (1) Bend radius
    (2) Bend allowance
    (3) Spanking
    (4) Spring back
    (5) Bottoming force
12. Briefly explain the following press operations:
    (a) Piercing
    (b) Cut off
    (c) Shaving
13. Briefly explain the follwing with appropriate diagrams:
    (a) Nibbing (b) Knock out
    © Progressive die (d) Stretch forming
14. Estimate the blanking force to cut a blank 30mm wide and 35mm long from a 1.8mm thick metal strip if the ultimate shear stress of the material is 450N/mm^2. Also determine the work done if the percentage penetration is 25% of material thickness.
15. Explain briefly the wire drawing process.

UNIT-IV

Part-A (2 Marks)

2. What is sheet metal work?

3. write down any four sheet metal characteristics
4. What is meant by clearance?
5. What is stretching?
6. Define the term "spring back".
7. How force exerted on the form block is calculated
8. What are the formability test methods?
9. Define formability.
10. What is super plasticity of metals?
11. What are the types of special forming process?
12. What is the limitation of metal spinning process.
13. What are the disadvantages of rubber pad forming?
14. What is 'stand off' distance in explosive forming?
15. Give the applications of electro-hydraulic forming.
16. What are the common explosives used in Explosive forming process?

Part-B (16 Marks)

1. Describe shearing operations in a sheet metal work with a neat sketch
2. Describe various types of bending operations with its neat sketches
3. Explain any one method of stretch forming operation with a neat sketch
4. Explain hydro forming process with its neat sketches. State their advantage and applications
5. Explain the power spinning process with a neat sketch .give their applications
6. How magnetic pulse forming process is carried out on sheet metal?
7. Explain peen forming process with a neat sketch
8. What is super plastic of metal? how this process is carried out on sheet metals?
9. With suitable illustrations, explain the Explosive metal working.
10. Write a note on the characteristics and formability of sheet metals.
11. Explain the three bending methods with suitable sketches.

UINT-V

PART-A **(2 Marks)**

1. How the plastic is defined?
2. Give some examples of additives.
3. Give some examples for thermosetting plastics.
4. Give some example of thermo plastics.
5. Give some additives added to the manufacturing of rubber.

6. What are the processes of thermoplastics?
7. What are the two types of injection moulding?
8. What are the types of compression moulding?
9. Define co polymerization
10.What are the foamed plastics?
11. List any four differences between screw type & plunger type injection.
12. Give the types of injection moulding.
13. What is the difference between compression and transfer moulding?
14. Name the parts made by rotational moulding.
15. What is Parison in blow moulding process?
16. List any two industrial applications for blow moulding.

Part-B (16 Marks)

1. What are the characteristics of the forming and shaping processes?
2. What are the types of moulding and thermoplastics?
3. Explain the working principles and application of
    a. injection moulding
    b. blow moulding
    c. rotational moulding
    d. film blowing
4. Explain the thermoforming process
5. Explain induction and ultrasonic methods.
6. Explain working and principle of applications of
    a. compression moulding
    b. transfer moulding

7.Explain the process to manufacture plastic bags.
8. With a neat sketch explain the working principle of screw type injection moulding machine.
9. Explain briefly the following with sketches:
    (a)Calendering
    (b) Blow moulding
10. Sketch and explain the principle of vacuum forming process for plastics.
11. What is laminating? Explain the high pressure method of laminating?
12. For manufacturing the following components suggest a suitable methods. Justify your selection.
    (1)Electrical switches (2) T.V.Cabinets (3)Ball pen cap