

ASSIGNMENT/ MANUFACTURING PROCESS/ CUTM1604

Module I/ Classification of Materials

1. What is steel? Classify plain carbon steel.
2. Define Alloy.
3. Differentiate alloy and composite.
4. Define allotropy of iron.
5. How do cast irons differ from steels?
6. What are the four major alloying elements that form carbides in tool steel?
7. What are the different types of tool steels used for dies?
8. What are the different types of tool steels used for dies?
9. What are the properties of aluminium alloy?
10. What are the different types of crystal structures?
11. What are the different types of crystal structures?
12. What is the atomic packing factor?
13. What are crystal defects?
14. How does a scanning electron microscope work?
15. What are the advantages, disadvantages and applications of SEM?

Module II/ Tool Materials

1. What are the most common non-ferrous alloys?
2. What are the properties of non-ferrous alloys?
3. What are the properties of non-ferrous alloys?
4. What are the different types and properties of cast iron?
5. What are the most common modern cutting tool materials?
6. What are the properties of engineering alloys?
7. How are engineering alloys made?
8. What are the different types of steel?
9. What are the different steps in Powder Metallurgy?
10. What are the advantages, disadvantages and applications of Powder Metallurgy?

Module III/ Heat Treatment

1. What is heat treatment?
2. What are the different types of heat treatment?
3. What are the goals of heat treatment?
4. What are the effects of heat treatment on the properties of metals?
5. What are the different methods of heat treatment?
6. What are the safety precautions that need to be taken when performing heat treatment?
7. What are the common defects that can occur during heat treatment?
8. How do you select the right heat treatment process for a particular application?
9. What are the advantages and disadvantages of heat treatment?
10. What are the future trends in heat treatment?

Module IV/ Manufacturing Processes

1. What are manufacturing processes?
2. What are the different types of manufacturing processes?
3. What are the goals of manufacturing processes?
4. What are the effects of manufacturing processes on the properties of materials?
5. What are the different types of welding processes?
6. What are the goals of welding processes?
7. What are the similarities and differences between TIG and MIG welding?

8. What are the different types of forming processes?
9. What are the safety precautions that need to be taken when performing forming processes?
10. What are the different types of casting processes?
11. What are the different types of casting processes?
12. What is a gating system in casting?

Module V/ Machining Processes

1. What is the primary purpose of conventional machining processes?
2. What are the common types of conventional machining processes?
3. What is the difference between turning and milling?
4. What are the main components of a lathe machine?
5. What is the purpose of a cutting tool in machining processes?
6. What is the role of coolant in conventional machining?
7. What is the difference between drilling and boring?
8. What are the advantages of conventional machining over non-conventional methods?
9. What are some common materials that can be machined using conventional processes?
10. How does surface finish affect the performance of machined components?
11. What are unconventional machining processes?
12. What are the advantages of unconventional machining processes over conventional methods?
13. What is the principle behind electrical discharge machining (EDM)?
14. What is the purpose of abrasive water jet machining?
15. What are the applications of electrochemical machining (ECM)?

Module VI/ Process Planning

1. What is process planning in manufacturing?
2. What are the key objectives of process planning?
3. What are the steps involved in the process planning process?
4. What is the role of process sheets in process planning?
5. How does process planning impact production efficiency and cost?
6. What are the factors to consider when selecting a machining process for a particular component?
7. How does process planning ensure quality control in manufacturing?
8. What is the importance of considering tooling and equipment availability during process planning?
9. How can computer-aided process planning (CAPP) assist in the process planning process?
10. What are some common challenges faced in process planning and how can they be overcome?

Module VII/ Process Planning

1. What is Computer-Aided Production Management (CAPM)?
2. How does CAPM improve production efficiency?
3. What are the key features of CAPM software?
4. How does CAPM assist in production scheduling and resource allocation?
5. What are the benefits of integrating CAPM with other manufacturing systems?
6. How does CAPM help in real-time monitoring of production processes?
7. What role does data analytics play in CAPM implementation?
8. How does CAPM contribute to quality control and defect reduction?
9. What challenges can be encountered while implementing CAPM, and how can they be addressed?
10. What industries or sectors commonly adopt CAPM, and why?