

**III B.Tech I Semester Regular Examinations, November 2006**  
**AIRCRAFT PRODUCTION TECHNOLOGY**  
**(Aeronautical Engineering)**

**Time: 3 hours**

**Max Marks: 80**

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

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1. (a) Explain “Dendritic” Solidification in sand castings.  
(b) Describe the need of investment casting process in Aircraft industry. Explain the investment casting process [16]
2. (a) What is weld ability? Explain in detail on ELECTRO-SLAG WELDING processes.  
(b) Explain briefly about the different ways of metal transfer in arc welding? [16]
3. Define taper? How is the amount of taper expressed? Name different methods of taper turning done on a center lathe giving a neat sketch? How is taper angles measured? [16]
4. (a) Enumerate different operations that can be done on a drilling machine  
(b) List various work holding and tool holding devices used in drilling machines [16]
5. (a) What are the advantages and disadvantages of CNC machine over conventional machines?  
(b) Explain the distinct features of CNC machines? [16]
6. (a) Explain Abrasive jet machining process in detail with a neat sketch?  
(b) Write a short note on the accuracy of AJM? [16]
7. (a) Explain with neat diagram the “ECM” process.  
(b) What are differences between “ECM” and “ECG”?  
(c) What is “LASER Beam” machining? Explain the principle of production of “LASER-Beam” and its applications and limitations. [16]
8. (a) Explain the differences between fullering, and edging?  
(b) Explain the differences between piercing and punching? [16]

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1. Name different methods of making sand moulds and state their applications. [16]
2. (a) How are neutral, oxidizing and reducing flames obtained in a welding torch? Explain?  
(b) What is the principal of operation of electric arc welding? What are the equipments used in this? [16]
3. With reference to relative motion between cutting tool and work piece, classify the different machining operations? [16]
4. Write short notes on following
  - (a) Broaching method to generate internal teeth?
  - (b) Slotting operation
  - (c) Gear cutting [16]
5. (a) Explain the superior features of CNC Machines over conventional machines  
(b) Explain with sketch the basic working CNC machines  
(c) Enumerate different ?G-codes and M-codes? used in CNC part programming [16]
6. (a) Differentiate between manual production and Automation?  
(b) Explain Ultrasonic-machining processes. Specify some of its process characteristics? [16]
7. (a) Write a short note on the accuracy of LBM process?  
(b) What are the advantages and disadvantages of LBM process? Give its applications? [16]
8. Write short notes on the following
  - (a) Rolling
  - (b) Forging
  - (c) Extrusion [16]

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1. How are the patterns classified? Describe them with neat sketches and state the uses of each of them? [16]
2. (a) What is weld ability? Explain in detail on ELECTRO-SLAG WELDING processes.  
(b) Explain briefly about the different ways of metal transfer in arc welding? [16]
3. (a) Discuss the basic properties of cutting tool materials  
(b) List the various types of cutting tool materials and briefly indicate there properties [16]
4. (a) Enumerate different operations that can be done on a drilling machine  
(b) List various work holding and tool holding devices used in drilling machines [16]
5. (a) Briefly explain the basic components of CNC systems? Bring out the general relationship among these basic components with a neat figure?  
(b) Explain the applications and economics of usage of CNC machines?  
(c) Bring out the advantages and disadvantages of CNC? [16]
6. (a) Differentiate between manual production and Automation?  
(b) Explain Ultrasonic-machining processes. Specify some of its process characteristics? [16]
7. (a) Write a short note on the accuracy of PAM process?  
(b) What are the advantages and disadvantages of PAM? Give its applications? [16]
8. (a) Define powder metallurgy? List out various methods employed for production of metal powders?  
(b) Distinguish between shooting and atomizing in case of powder metallurgy? [16]

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1. (a) Write the short notes on the following:
  - i. Pouring basin
  - ii. Sprue
  - iii. Runner
  - iv. Gate(b) Explain the functions of gating system? [16]
2. What are the principles of operation of resistance welding? Describe commonly used resistance welding processes. [16]
3. Classify milling machines and list them accordingly? How milling differs from turning in lathes? [16]
4. Write short notes on following
  - (a) Broaching method to generate internal teeth?
  - (b) Slotting operation
  - (c) Gear cutting [16]
5. (a) Briefly explain the basic components of CNC systems? Bring out the general relationship among these basic components with a neat figure?
  - (b) Explain the applications and economics of usage of CNC machines?
  - (c) Bring out the advantages and disadvantages of CNC? [16]
6. (a) Discuss abrasive jet machining (AJM) with a neat sketch.
  - (b) What are the advantages, and disadvantages of AJM.
  - (c) What are the applications and limitations of AJM Process. [16]
7. (a) Differentiate LBM and EBM?
  - (b) What is machining rate in LBM? Explain. [16]
8. Give the classification of forming process? What are the general characteristics of forming? Explain them. [16]

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