Hall Ticket No | | | | | | | | | | | Question Paper Code: AAE005

INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

B.Tech IV Semester End Examinations (Supplementary) - July, 2018

Regulation: IARE – R16

AIRCRAFT MATERIALS AND PRODUCTION

Time: 3 Hours **(AE)** **Max Marks: 70**

Answer ONE Question from each Unit
All Questions Carry Equal Marks
All parts of the question must be answered in one place only

UNIT – I

1. (a) Define an alloy and mention most popular alloys in aircraft manufacturing. **[7M]**
   (b) Define the term Quenching. Quote some of its applications. **[7M]**
2. (a) Define ferrite, pearlite, and austenite. What are their applications? **[7M]**
   (b) Compare annealing with hardening. Explain how the microstructure of a material is varied by it. **[7M]**

UNIT – II

3. (a) What is the permanent mould and die casting mould? **[7M]**
   (b) Classify different types of welding process. Explain any one welding process in detail. **[7M]**
4. (a) Discuss clearly the difference between non-destructive test(NDT) and destructive test. Explain why NDT is so crucial in the production and manufacturing process **[7M]**
   (b) Give a short note and working principle of arc welding equipment and write advantages and disadvantages. **[7M]**

UNIT – III

5. (a) Briefly give a note on operations - Punching and Blanking. Write down the applications and advantages of these. **[7M]**
   (b) Write different types of holding devices. Write down their applications and advantages. **[7M]**
6. (a) What type of hammer is used in riveting technique and why? Write down its applications and advantages **[7M]**
   (b) Discuss what are the advantages of welding operation. Explain the temperatures generated during the welding. **[7M]**

UNIT – IV

7. (a) Explain working principle of thermal material removal. **[7M]**
   (b) What is difference between position of cutting tool in both unconventional and conventional machining operation? **[7M]**

8. (a) Explain clearly about CNC machine and advantages of CNC over manual machining. **[7M]**

   (b) Explain the working principle of electro chemical machining (ECM) with a neat diagram. Write the advantages and applications of ECM. **[7M]**

UNIT – V

9. (a) Define composite material. Explain why metals are to be replaced by composites. **[7M]**

   (b) Explain the role of fiber in composites? Write some of the important fibers. **[7M]**

10. (a) Explain about thermo plastics. Explain their properties. Classify them and give typical applications in aerospace industry and mention their critical issues. **[7M]**

    (b) Elaborate applications of composite materials. Give their properties and load of impacts on them. Elaborate the temperature settings on thermo setting plastics. **[7M]**

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