

Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)



III SEMESTER B.TECH (AERONAUTICAL ENGINEERING) END SEMESTER MAKE UP EXAMINATIONS, DEC-15/JAN-2016

SUBJECT: AIRCRAFT PRODUCTION TECHNIQUES [AAE 2102]

REVISED CREDIT SYSTEM

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ✤ Answer ALL the questions.
- Missing data may be suitable assumed.
- Draw sketches in PENCIL only

1A. 1B.	Differentiate between amorphous solids & crystalline solids Explain the following a) Phase rule	2 3
1C.	Explain with neat sketch Pultrusion process, process features, its advantages over filament winding process and limitations	5
2A.	What is quenching? Explain various quenching media used commercially	2
2B.	Define Extrusion and explain with neat sketch Hydrostatic Extrusion, advantages and limitations	3
2C.	Explain the steps associated with the construction of TTT diagram. Also draw the diagram for an eutectoid steel.	5
3A.	List and explain the different types steels	2
3B.	Classify milling process and explain with neat sketch one from each category	3
3C.	Explain with neat sketch electron beam machining process, process characteristics, process parameters, advantages, limitations, applications	5
4A.	Explain Roult [®] s Law	2
4B.	With a neat sketch explain the resin transfer molding process.	3
4C.	What is the Principle of Casting? Identify a casting process which uses thermosetting resin for the preparation of mold and explain with neat sketch the casting process, its features, advantages, limitations, applications	5
5A.	What is nitriding? Explain three different methods of nitriding process	3
5B.	Why powder metallurgy is recommended in the field of engineering?	2

- 5C. Melting temperatures of Copper (Cu) and Silver (Ag) are 1080 degree 5 centigrade and 960 degree centigrade respectively. The metals Copper and Silver are mutually soluble in the liquid state and partly soluble in the solid state. A liquid phase alloy containing 70% Silver completely transforms into a mixture of two solid solutions at 780 degree centigrade. Maximum solubility of Ag in Cu and Cu in Ag are 8% and 10% respectively at 780 degree centigrade. Solubility is negligible in room temperature. Assuming the curves to be linear, draw phase diagram to scale and label the regions. For 40% Ag alloy determine the following:
 - a) Weight percentage of eutectic formed.
 - b) Temperature where equal proportions of liquid and solid phases exists