Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

III SEMESTER B.TECH. (AERONAUTICAL ENGINEERING)

END SEMESTER EXAMINATIONS, NOV/DEC 2016

SUBJECT: AIRCRAFT PRODUCTION TECHNIQUES [AAE 2102]

REVISED CREDIT SYSTEM

(28/11/2016)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data may be suitable assumed.
- Draw sketch in Pencil only

1A. Explain the concept of manufacturing? Enumerate objectives for selection of manufacturing process. **(02)**

1B. Classify non-traditional machining process. Explain with neat sketch electron beam machining, process parameters, advantages & disadvantages. **(05)**

1C. What is the need for material science in the field of engineering? Compare features of crystalline & amorphous solids. **(03)**

2A. What is the principle of electro chemical machining? Enumerate four process parameters, advantages and limitations of the process. **(03)**

2B. Explain S-N curve and significance of its study. **(02)**

2C. Explain with neat block diagram powder metallurgy process. What is the significance of density, flow rate, compressibility, shape, size and size distribution, of powder in powder metallurgy process? Discuss changes noticed after compaction. **(05)**

3A. Differentiate dislocation mechanism by slip & twinning. **(03)**

3B. Explain with neat sketch permanent mold casting process, advantages, and limitations. Give reason why mold is coated with refractory material. **(05)**

3C. Explain the following operations on lathe with respect to orientation and movement of the cutting tool: i) facing ii) taper turning iii) cutoff iv) chamfering. **(02)**

4A. Explain with example ductile and brittle fracture **(02)**

4B. Discuss gas tungsten arc welding process. Identify under which group this process is categorized? Why it is called GTAW? Enumerate different gases recommended for this process. **(03)**

4C. Write short notes on heat treatment of aluminum alloy, titanium alloy. **(05)**

5A. Define composite materials. Explain with block diagram pultrusion method of fabrication of composite material, advantages and limitations. **(04)**

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5B. Neatly sketch Iron-Carbon equilibrium phase diagram & mark all regions. Name all the invariant reactions with its basic equation. **(04)**

5C Name all the invariant reactions with its basic equation required for the phase diagram in Q No 5B. **(02)**