Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

(A constituent unit of MAHE, Manipal)

III SEMESTER B.TECH. (AERONAUTICAL ENGINEERING)

END SEMESTER EXAMINATIONS, NOV/DEC 2018

SUBJECT: AIRCRAFT PRODUCTION TECHNIQUES [AAE 2102]

REVISED CREDIT SYSTEM
(27/12/2018)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data may be suitable assumed.

1A. Explain why deionized water is used in wire EDM **(02)**

1B. With a neat sketch abrasive jet machining process with its merits and demerits **(05)**

1C. Sketch the different techniques involved in flushing of dielectric fluid in electrical discharge machining **(03)**

2A. Write the part program for the component shown in figure 1 **(03)**

2B. List and explain the factors affecting the diffusion process **(04)**

2C. Explain the design considerations in chemical machining process **(03)**

3A. Two metals A and B have their melting points at 600^0C and 400^0C respectively. These metals do not form any compound or intermediate phase. The maximum solubility in each other is 4%, which remains the same until 0^0C. A eutectic reaction takes place between 65%A and 35%B at 300^0C. **(05)**

a) Draw the phase diagram of A-B and label all the important points and fields.

b) Find the temperature at which a 20%A-80%B alloy starts and completes solidification.

c) Find the temperature at which the same alloy is composed of 50% liquid and 50% solid.

d) Draw the cooling path of alloy which undergoing invariant reaction.

3B. Write a part program for the component shown in figure 2 **(05)**

4A. Sketch peritectic phase diagram and mark all the regions. List the different basic reactions in the Iron carbon phase diagram and write the equations for the same. **(05)**

4B. With a neat sketch explain the twin boundaries **(02)**

4C. With a neat sketch explain Frenkel and Schottky's defects **(03)**

5A. Explain the process parameters in powder metallurgy process **(04)**

5B. With a neat sketch explain the screw dislocation **(03)**

5C. With a neat sketch explain the spark sintering process **(03)**

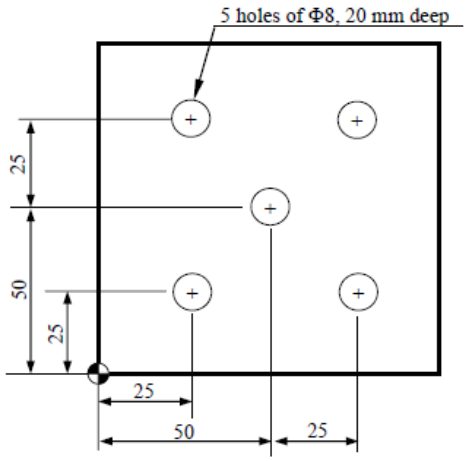

Figure: - 1

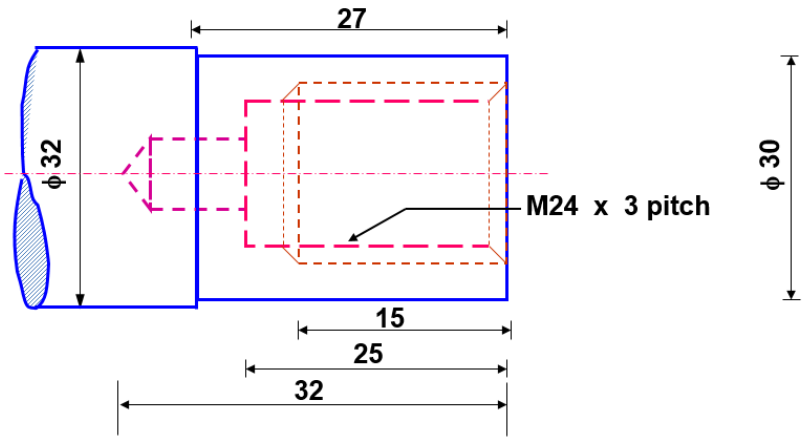

Figure: - 2