Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
A Constituent Institution of Manipal University

VI SEMESTER B.TECH. (AUTOMOBILE ENGINEERING)

END SEMESTER EXAMINATIONS, APRIL/MAY 2017

SUBJECT: COMPUTER INTEGRATED MANUFACTURING [AAE 4008]

REVISED CREDIT SYSTEM
(27/04/2017)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

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

1A. Explain the different types of sensors used in robots **(03)**

1B. Explain the methods of improving accuracy in NC machines **(03)**

1C. Explain the steps involved in production flow analysis. **(04)**

2A. Explain any three types of End-effectors used in industrial robots with proper applications. **(03)**

2B. Write a part program to obtain the component as shown in the Fig. 2B **(05)**

2C. Can NC machines completely replace the conventional machining system? Justify your answer with a suitable reason. **(02)**

3A. Explain the principle of operation of AGV's with an example and mention the advantages of FMS. **(03)**

3B. Write a part program to obtain the component as shown in the Fig. 3B **(04)**

3C. Write a part program to obtain the component as shown in the Fig. 3C **(03)**

4A. Sketch and explain the working of a linear interpolator. **(03)**

4B. Draw the sketch of following robot configuration and show clearly all the movements for body-arm assembly. **(04)**
i. Cartesian
ii. Cylindrical

4C. Explain the meaning of the following with reference to robots **(03)**
(i) Control resolution
(ii) Accuracy
(iii) Repeatability

5A. Write a part program to obtain the component as shown in the Fig. 6A **(07)**

5B. Explain the composite part concept used in group technology with an example. **(03)**

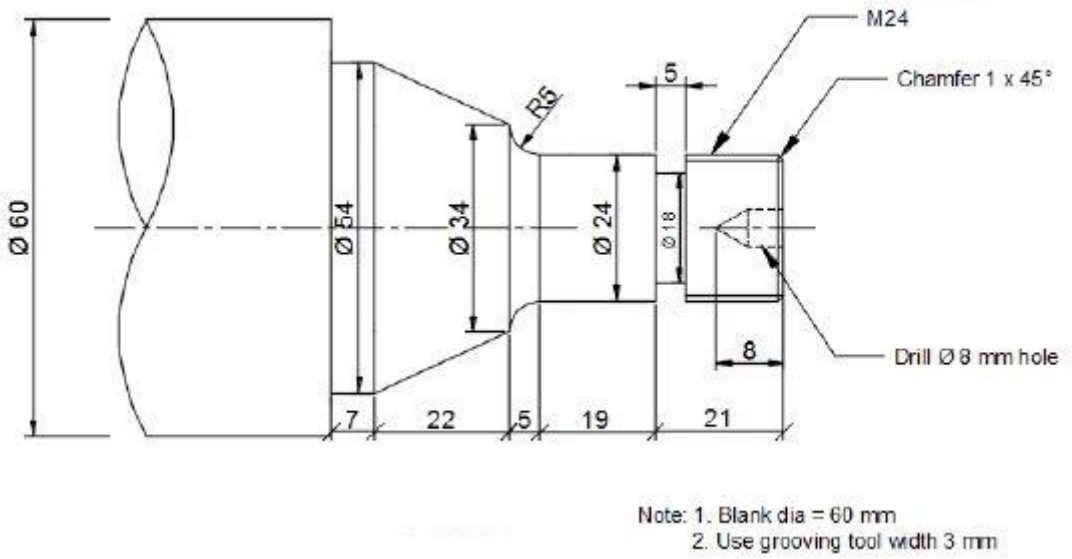

Fig: 2B

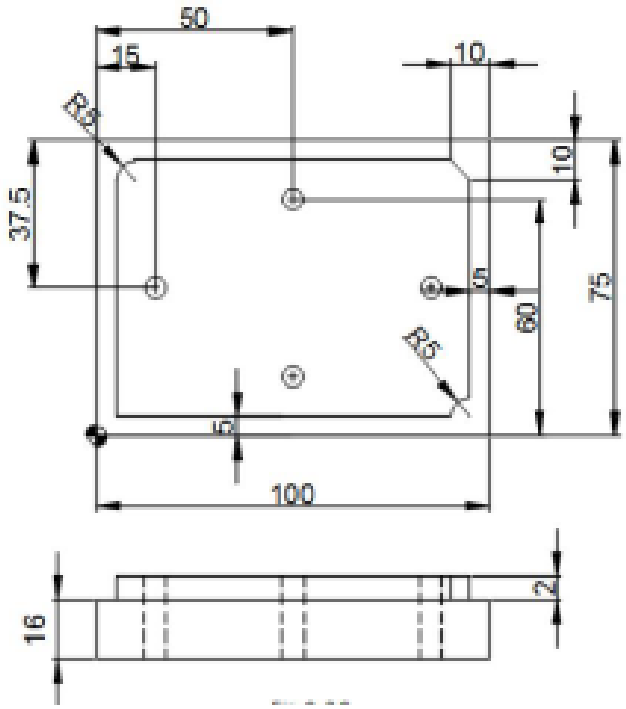

Fig: 3B

Note:

1. Thickness of raw material 20mm

Tools to be used [Diameters]:

1. 50mm face mill
2. 20mm end mill
3. 5mm drill tool

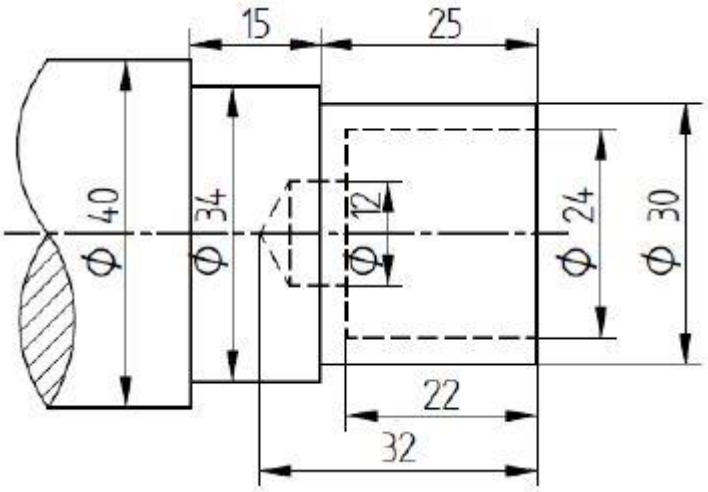
15
25
ϕ 40
ϕ 34
ϕ 12
ϕ 24
ϕ 30
22
32

Fig :3C

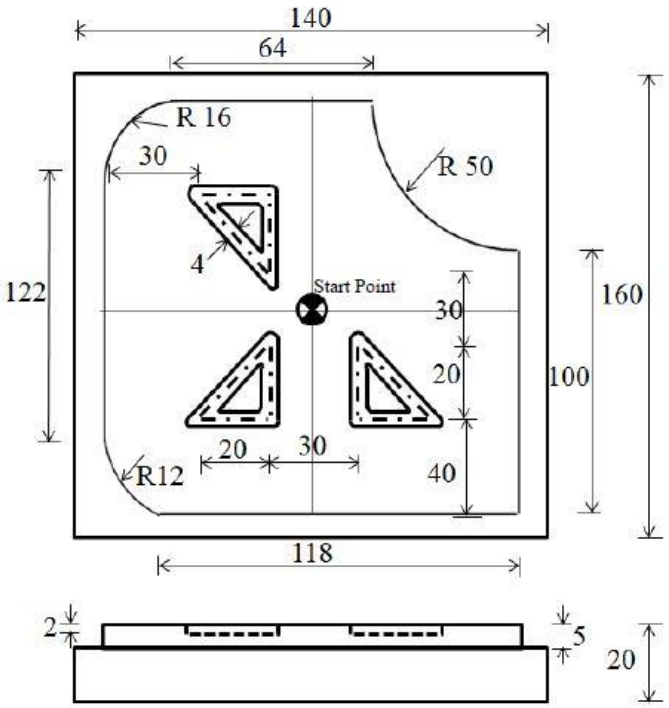
140
64
R 16
30
R 50
4
Start Point
122
160
30
20
100
20
30
R12
40
118
2
5
20

Fig: 6A