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BIMEE-009

B.Tech. – VIEP – MECHANICAL ENGINEERING (BTMEVI)

00686

Term-End Examination

June, 2016

BIMEE-009 : COMPUTER AIDED MANUFACTURING

Time : 3 hours *Maximum Marks : 70*

Note : *Answer any* ***five*** *questions. All questions carry equal marks. Standard symbols have usual meaning.*

1. (a) Explain the function of MCU in an NC machine tool. What is the purpose of a part program ? 7

(b) List the methods by which a part program can be fed into the controller unit of a machine tool. Explain with an example. 7

2. (a) Identify the difference between the EIA and ISO systems of coding. What is meant by a qualified tool ? 7

(b) Explain the principles of designating the axes of NC machines. Discuss with an example why an NC machining centre is considered to be a highly productive machine. 7

3. (a) What are the advantages of using recirculating ball screws and LM systems in NC machine tools ? 7

(b) Explain the principle of operation of NC feedback devices. Explain the steps for automatic tool changing in an NC machining centre. 7

4. (a) What is meant by Interpolation ? How is it implemented on an NC machine tool ? 7

(b) How many axes need to be simultaneously controlled for cutting a sphere out of a cubical blank ? Explain in detail. 7

5. (a) Make a sketch of the operator's panel of the NC machine tool in your laboratory and list down the steps for using this machine for NC manufacturing. 7

(b) Identify the various applications of force and torque transducers in robots, with suitable examples. 7

6. What is meant by the tooling of a robot ? Illustrate with the help of sketches the functions of five types of tooling commonly used in an Industrial Robot. 14

7. (a) What should be the essential features of any high level robot language ? Make a list of robot languages currently in use in the industry. 7

(b) Identify five manufacturing situations which are suitable candidates for robot applications. Give your reasons. 7

8. (a) What is meant by AS/RS ? How is it implemented in Flexible Manufacturing System ? Explain with examples. 7

(b) Explain the advantages of FMS with examples of components which can be manufactured using this technology. What are the limitations of FMS ? 7