

**B.Tech. – VIEP – MECHANICAL ENGINEERING  
(BTMEVI)****Term-End Examination****December, 2015****BIMEE-009 : COMPUTER AIDED MANUFACTURING***Time : 3 hours**Maximum Marks : 70*

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

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1. (a) What is meant by Numerical Control of machine tools ? List the nature of jobs which are suitable for NC manufacturing. 7
- (b) How does Numerical Control increase the precision of a machine tool ? Describe the advantages of NC manufacturing. 7
2. (a) Distinguish between NC Tooling and Conventional Tooling. What is the need of tool off-set/compensation sheets ? Explain with example. 7
- (b) Explain the purpose of Automatic tool changing, Table and Pallet indexing on machining centres. 7

3. (a) In what way is the structure of NC machine tool different from Conventional machine tool ? Why ? 7
- (b) List the types of drives used for stepless control of NC machine tools' spindles. Compare the open loop and closed loop types of NC systems. 7
4. (a) What are the advantages of using a pallet shuttle in an NC machining centre ? Explain. 7
- (b) Explain the various types of controllers on the basis of their slide control capabilities. 7
5. (a) Describe the stepwise operation of an MCU of an NC machine to convert a part program into suitable command signals for actuation systems. 7
- (b) Explain the various stages involved in NC manufacturing. How do they differ from traditional manufacturing ? 7
6. (a) Describe the various functions performed by the controller of an Industrial Robot, with the help of a suitable example. 7
- (b) How are the axes of robots defined ? Show with the help of sketches the working volume of various types of robots. 7

7. (a) Distinguish clearly with the help of examples between accuracy and repeatability of a robot. 7
- (b) Describe the methods of programming robots. What are the advantages and limitations of each method? 7
8. (a) What are the various components of FMS? Explain their functions with the help of example. 7
- (b) Explain the advantages of modular construction of machining centres. 7
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