

**B.Tech. MECHANICAL ENGINEERING  
(BTMEVI)**

**Term-End Examination**

**December, 2014**

**BIMEE-009 : COMPUTER AIDED MANUFACTURING**

*Time : 3 hours*

*Maximum Marks : 70*

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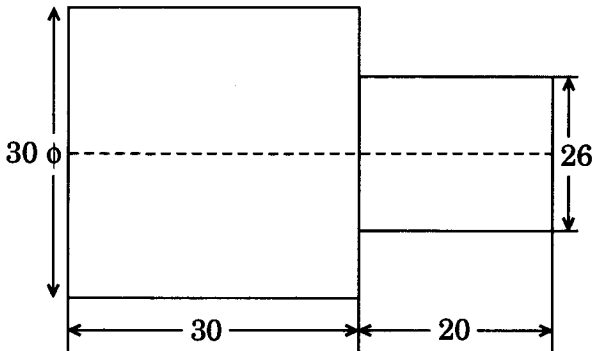
**Note :** Answer any *five* questions. All questions carry equal marks. standard symbols have usual meaning.

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1. (a) Discuss various types of automation. NC machines fall in which type of automation ? Discuss.
- (b) Explain the concepts and strategies for implementing automation. 7+7
2. (a) Describe the various components of an NC machine.
- (b) What are the advantages of NC manufacturing over corresponding conventional manufacturing ? 7+7
3. (a) What are different NC words used in part programming ? Briefly describe their functions. Describe the sequence of using these words in a part program.

- (b) From a shaft of 35 mm diameter, make a part with dimensions as shown in Figure 1. Given feed = 50 mm/min and spindle speed = 2,000 rpm.



*Figure 1*

Write an NC part program to make this part. 7+7

4. (a) What are different NC motion control systems ? Explain point to point (PTP) motion control with suitable examples. 7+7
- (b) What are different types of stepper motors ? List the advantages and disadvantages of stepper motor. 7+7
5. (a) What are the different methods of the development of adaptive control ? Explain any one of them in brief. 9+5
- (b) Describe open loop and closed loop systems used in NC machines. 9+5

6. (a) What do you understand by FMS ? What are the advantages of this system ? Where is it beneficial to be used ?
- (b) Describe the integration of CAD and CAM to obtain CAD/CAM system. 7+7
7. (a) What do you understand from joints and links of a robot ? What are different types of joints in a robot ? What are the symbols used for these joints ?
- (b) Write briefly about various methods for robot programming. 7+7
8. Write short notes on the following :  $4 \times 3 \frac{1}{2} = 14$
- (a) Historical development and future trends of automation
- (b) Artificial Intelligence
- (c) DDA software interpolator
- (d) Group Technology
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