

**End Semester Examinations - 2015-16 Even Semester - May 2016**

**14ME3034 Control of CNC Machine Tools**

**Set B**

**Time : 3 hrs**  
**Total Marks: 100**

- 
- |           |  |            |
|-----------|--|------------|
| 1.        | (a) Discuss in detail the economy of NC machine tools.   | (10 Marks) |
|           | (b) Discuss in detail the classification of NC systems.  | (10 Marks) |
| <b>OR</b> |  |            |
| 2.        | (a) Explain different kinds of control loops used in CNC.  | (10 Marks) |
|           | (b) Explain feed, tool and spindle functions.  | (10 Marks) |
| 3.        | (a) With neat sketches explain the general structure and components of a hydraulic system used in CNC machines tools. (10 Marks)           |            |
|           | (b). What are the fundamental characteristics required for servo motors of machine tools? (10 Marks)                                       |            |
| <b>OR</b> |  |            |
| 4.        | (a). Explain the conceptual architecture of CNC machine tools from the hardware and software points of view with block diagram. (10 Marks) |            |
|           | (b). Explain briefly CNC driving system components. (10 Marks)   |            |
| 5.        | (a) Explain Acceleration/Deceleration Control after Interpolation.   | (10 Marks) |
|           | (b) Explain principle of operation of DDA Integrator.  | (10 Marks) |
| <b>OR</b> |  |            |
| 6.        | (a) Explain the basic concepts of an interpolation with neat sketch.   | (10 Marks) |
|           | (b) Explain the NURBS interpolation in detail.   | (10 Marks) |
| 7.        | (a) Discuss in detail the CNC system architecture with block diagram. (10 Marks)   |            |
|           | (b) Explain the elements of PLC system with block diagram. What are the advantages of PLC? (10 Marks)                                      | (10 Marks) |
| <b>OR</b> |  |            |
| 8.        | (a) Explain the servo controller in detail with a neat sketch.   | (10 Marks) |
|           | (b) Discuss the Ziegler-Nichols Gain tuning method in detail.  | (10 Marks) |
| 9.        | 9. Explain Open CNC architecture with neat block diagram.  | (20 Marks) |
- 

**Wishing you All the Best**

---