Seat No.: _____ Enrolment No._____

Kadi Sarva Vishwavidyalaya

M.E.SEM. Ist PRODUCTION ENGG. EXAMINATION JAN 2013

Subject code: **Time: 3 Hours**

Subject Name: Product Automation & CNC Technology **Total Marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Illustrate your answer with neat sketches wherever required.**

SECTION - I

Q.1 (a) Define automation. List the types of automation and explain their characteristics stating illustrations. **05**

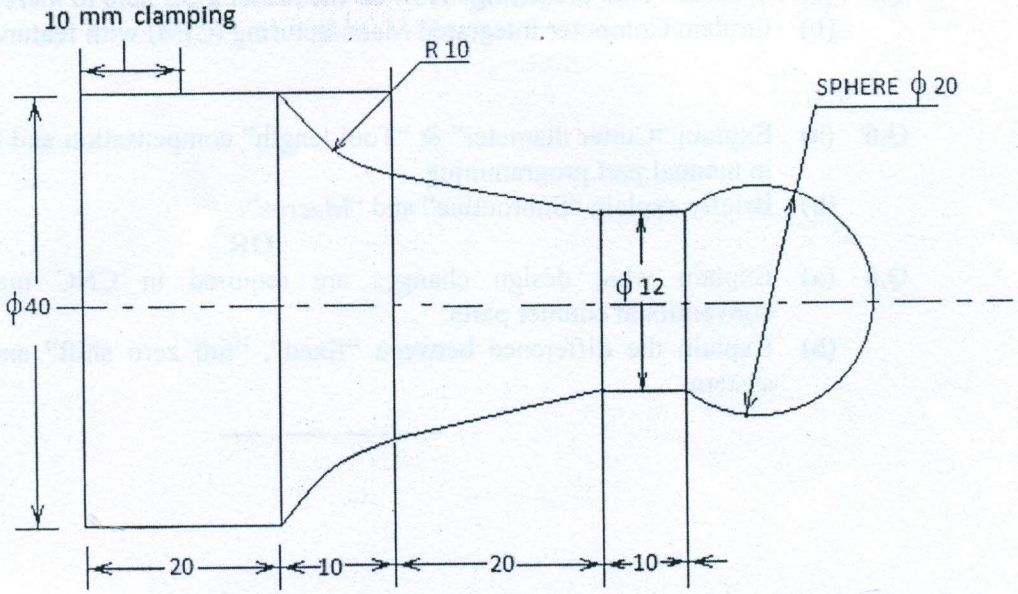
(b) List and explain the factors affecting the choice of indexing mechanism for an assembly machine. **05**

(c) Explain the evolution NC/CNC controller stating characteristics, merits and demerits. **05**

OR

(c) Explain Computer Integrated Manufacturing, with advantages, disadvantages and applications. **05**

Q.2 A component as shown in Figure – 1 is to be profile turned on T – 70 Lathe. Decide work piece zero and explain presetting function. Write a manual part program. **10**



Profile Turning
Material : Aluminium Cold Drawn
Bar ϕ40 mm X L 78 mm

Figure No. 1 (Q-2)

OR **[P.T.O.**

Q.2 (a) Explain axes designation in CNC machine tool stating illustration of a Vertical Milling Machine. 05

(b) Explain Canned Cycles stating illustrations with the help of sketches. State its objective and use. 05

Q.3 (a) Sketch and explain 3 axes and 5 axes CNC machining stating illustrations. 05

(b) Explain wire cut EDM in details. 05

OR

Q.3 (a) Explain APT computer assisted programming citing illustrations. Show tool path. 05

(b) State and explain presetting and tool length offset stating illustration for each of them. 05

SECTION - II

Q.4 (a) Write short note on "Computerised Machinability Data System". 05

(b) Explain "Computer Aided Process Planning". 05

(c) Explain mathematical model system of computerised machinability data system giving example. 05

OR

(c) Write short note on "Computer generated time standards". 05

Q.5 (a) State characteristics of parts which make them suitable for machining on NC/CNC machine tools. 05

(b) How are the axes of NC/CNC machine designated? Sketch and designate the axes of CNC milling machine. 05

OR

Q.5 (a) What is "Tool presetting? How do the preset tools help to increase the productivity? 05

(b) Explain Computer Integrated Manufacturing (CIM) with features and applications. 05

Q.6 (a) Explain "Cutter diameter" & "Tool length" compensation and how they are take care in manual part programming. 05

(b) Briefly explain "Subroutine" and "Macros". 05

OR

Q.6 (a) Explain what design changes are required in CNC machines compared to conventional counter parts. 05

(b) Explain the difference between "fixed", "full zero shift" and "full floating zero" system. 05
