Register Number……

B.E., DEGREE EXAMINATIONS: NOV/DEC 2012

Fifth Semester

MECHATRONICS ENGINEERING

MCT110: CNC Technology

Time: Three Hours **Maximum Marks: 100**

Answer All Questions:-

PART A (10 x 1 = 10 Marks)

1. Mass production involves _____ machines

a) Conventional b) Dedicated c) CNC d) Unconventional

2. _____ is a method of controlling the movements of machine components by directly inserting coded instructions.

a) NC b) CNC c) DNC d) Adaptive control

3. Rotary encoders convert _____

a) rotary motion to translation motion b) rotary to rotary motion

c) translation to rotary motion d) translation to translation motion.

4. Backlash in modern CNC machines are eliminated by using _____

a) Screws b) Preloaded ball screws c) Balls d) Guide ways

5. For five axis CNC machines _____ interpolation is preferred.

a) Linear b) Circular c) Parabolic d)spherical

6. _____ is the smallest increment of motion of the machine components.

a) Resolution b) Repeatability c) Stiffness d)Precision

7. APT stands for;

a) Adaptive part programming b) Automatically programmed tools

c) Automatic part tooling d) Advance programmed tooling

8. _____ is a logical extension of CNC systems

a) NC b) DNC c) Tooling d) Adaptive control

9. In introducing CNC machine in industry, the tooling cost will _____

a) Not change b) Decrease c) Increase d) Cannot be predicted

10. Preventive maintenance involves with the objective of

a) Increase in setup times b) decreasing productivity

c) improvement of effectiveness d) increasing product defects

PART B (10 x 2 = 20 Marks)

11. Mention the different types of CNC machines
12. List the disadvantages of CNC machines
13. What are the different types of drive systems used in CNC machines?
14. What is Backlash?
15. Differentiate between an open loop and closed loop control system.
16. Name some of the work holding devices used in CNC machines.
17. Name the importance of miscellaneous code in part programming.
18. Describe the function of canned cycles
19. Why maintenance is required for CNC machines.
20. Explain Preventive maintenance.

PART C (5 x 14 = 70 Marks)

21. a) (i) Explain the fundamental aspects of CNC machine control in detail. (7)

(ii) Explain in detail the different types of CNC machines with neat sketches in detail. (7)

(OR)

b) Explain the following in detail;

(i) DNC Machines (7)

(ii) Adaptive control (7)

22. a) Explain the various features of CNC machines in detail

(OR)

b) Discuss the importance and working of Tool magazines, ATC and APC in CNC machines in detail.

23. a) Write short notes on ;

(i) Incremental and absolute rotary encoders (7)

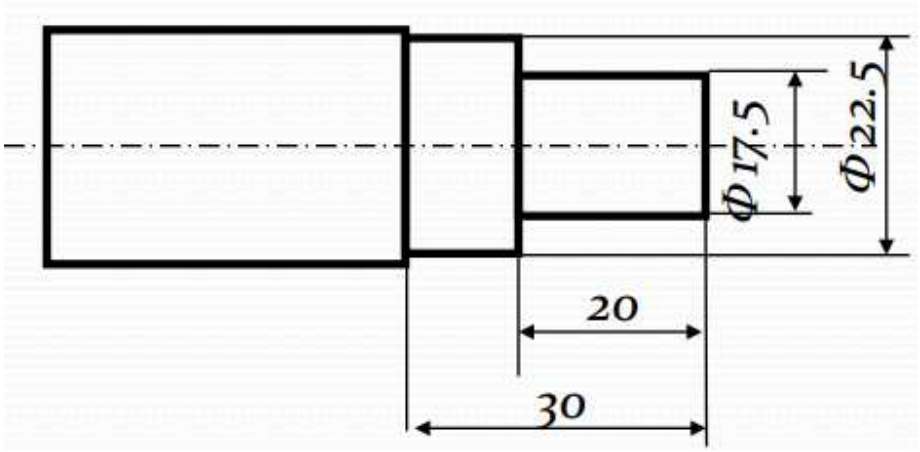
(ii) Linear inductosyn (7)

(OR)

b) (i) Explain 3-2-1 Location principle in detail (7)

(ii) Explain the various principles involved in clamping systems. (7)

24. a) Prepare a NC part programming for the bar stock of 25mm diameter and 75mm in length to machine as per the dimension shown below.



(OR)

b) Explain the following in detail

(i) Computer assisted part programming (7)

(ii) Computer Automated part programming (7)

25. a) Explain the various factors influencing the selection of CNC machines in detail.

(OR)

b) Explain the various features and various methods of maintenance of CNC machines in detail.

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