2.10 30270 CNC MACHINE

UNIT-1 LITERATURE SURVEY

1.1.1 Introduction
1.1.2 Fundamental of numerical control
1.1.3 Advantage of NC systems
1.1.4 CNC concepts
1.1.5 Advantages of CNC

UNIT-2 INTRODUCTION TO CNC MACHINES

2.1.1 Introduction
2.1.2 Fundamentals of numerical control
2.1.3 NC system
2.1.4 Classification based on feedback control
2.1.5 Feedback devices
2.1.6 Classification based on motion control system
2.1.7 Classification based on circuit technology
2.1.8 NC co-ordinate system
2.1.9 Axis identification
2.1.10 Procedure for developing manual part program
2.1.11 The punched tape in NC
2.1.12 Tap coding and format
2.1.13 Comparison of ordinary and NC machine tools
2.1.14 Methods of improving accuracy
2.1.15 Methods of reducing production time

UNIT-3 CONSTRUCTION FEATURES OF CNC MACHINE

3.1.1 Introduction
3.1.2 Control system design
3.1.3 Mechanical system design
3.1.4 Drive system
3.1.5 Location of transducers
3.1.6 Swarf removal

UNIT-4 CNC MACHINE OPERATING SYSTEM

4.1.1 Introduction
4.1.2 Part programming
4.1.3 Method of writing a part program
4.1.4 Computer numerical control (CNC)

UNIT-5 PROGRAMMABLE LOGIC CONTROLLER (PLC) CHARACTERISTICS

5.1.1 Introduction
5.1.2 Procedure for developing manual part program

5.1.3 Tape programming format
5.1.4 Method of writing A part program

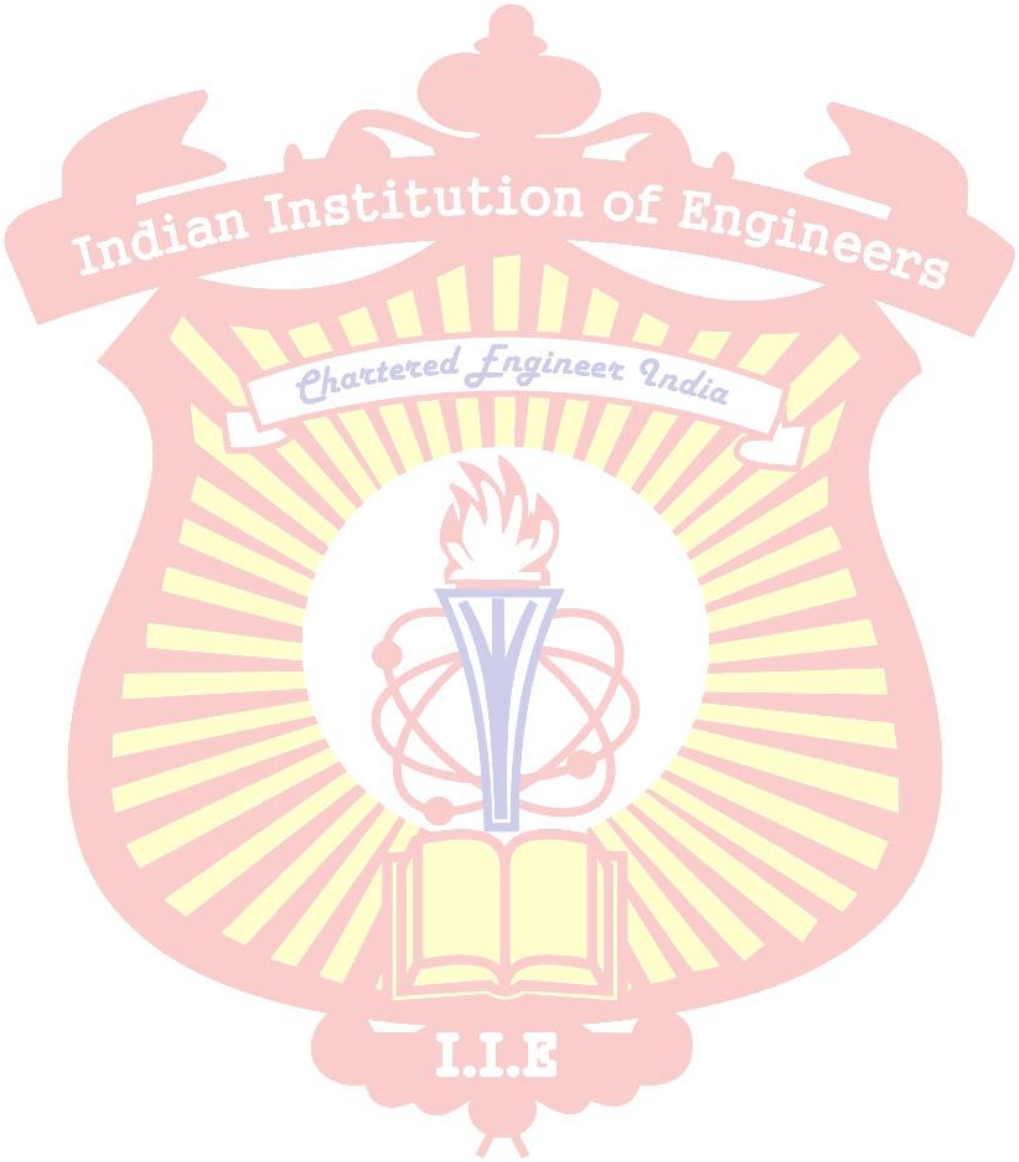
UNIT-6 SETTING THE MACHINE
6.1.1 Introduction
6.1.2 Part programming point to point machining
6.1.3 Part programming point to point machining along straight line
6.1.4 Part programming point to point machining along curved surface
6.1.5 Part program for lathe operation
6.1.6 Part program for milling machine operations
6.1.7 Part programming of drilling operation (point to point)

UNIT-7 CNC PROGRAMMING
7.1.1 The APT language
7.1.2 Geometry statements
7.1.3 Motion statements
7.1.4 Post processor statement
7.1.5 Auxiliary statements
7.1.6 The macro statement in APT
7.1.7 APT word definitions

UNIT-8 CNC METAL CUTTING TOOLS
8.1.1 Introduction
8.1.2 Cutting tool for CNC machines
8.1.3 Types of motions in machining
8.1.4 Turning and boring 8.1.5 Milling

UNIT-9 TROUBLE SHOOTING OF MACHINING PROCESSES
9.1.1 Introduction
9.1.2 Types of motions in machining
9.1.3 Turning and boring
9.1.4 Drilling and reaming
9.1.5 Milling

UNIT-10 INTRODUCTION TO FMS, CIM SYSTEM AND ROBOTS
10.1 Introduction
10.2 Depending on peripherals present in FMS, we can have different types of FMS
10.3 Types of flexibility
10.4 Design of FMS
10.5 Problems faced in implementation of FMS
10.6 Computer integrated manufacturing (CIM)
10.7 Basic concepts in robotics
10.8 The manipulator

10.9 Programming
10.10 Applications of robots

Reference Book: Introduction to NC/CNC Machines by Vishal