KG REDDY
College of Engineering
& Technology

DEPARTMENT OF MECHANICAL ENGINEERING

ORGANIZING

A

FIVE DAY

CERTIFICATE COURSE

ON

CNC PROGRAMMING

On

4th - 8th February 2019

Venue @ Seminar Hall

KG REDDY COLLEGE OF ENGINEERING&TECHNOLOGY MOINABAD

Resource Person

S.S Sadat

CNC Programmer & AutoCAD International Freelance Corporate Trainer

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HOD

PRINCIPAL

Principal
KG Reddy College of Engineering & Technology
Chilkur (V), Moinabad (M).
R.R.Dist., Telangana

INAUGURATION

Welcome address by SYED MUZAFFARUDDIN, Assistant Professor, Department Of Mechanical Engineering, on 04-02-2019 at KGRCET-Moinabad

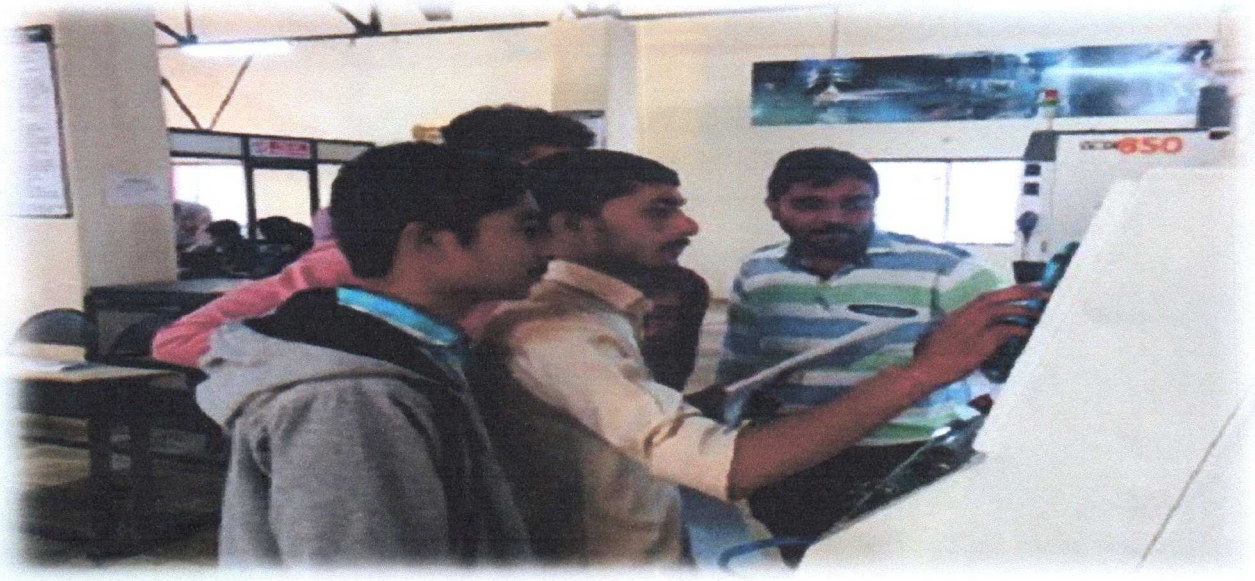
B.Tech-ME, II-Year, II –Semester on 04-02-2019 at Seminar Hall, KGRCET-Moinabad

INTRODUCTION TO CNC PROGRAMMING

Department of Mechanical Engineering arranged skill development workshop on CNC programming mechanical engineering students. Now in a day's use of CNC Machine in all industries is increase day by day so this course introduces the concepts and capabilities of computer numerical control machine tools. Topics include Introduction about CNC technologies. Part Programming, Geometric dimensioning and Tolerances, setup CNC machine for operation and basic practice on CNC machine in context with industrial applications gives real industrial knowledge to the attendees. With completion of this course students should be able to operate CNC machine as well as able to program any industrial component

HIGHLIGHTS OF 4TH AND 6TH FEBRUARY 2019

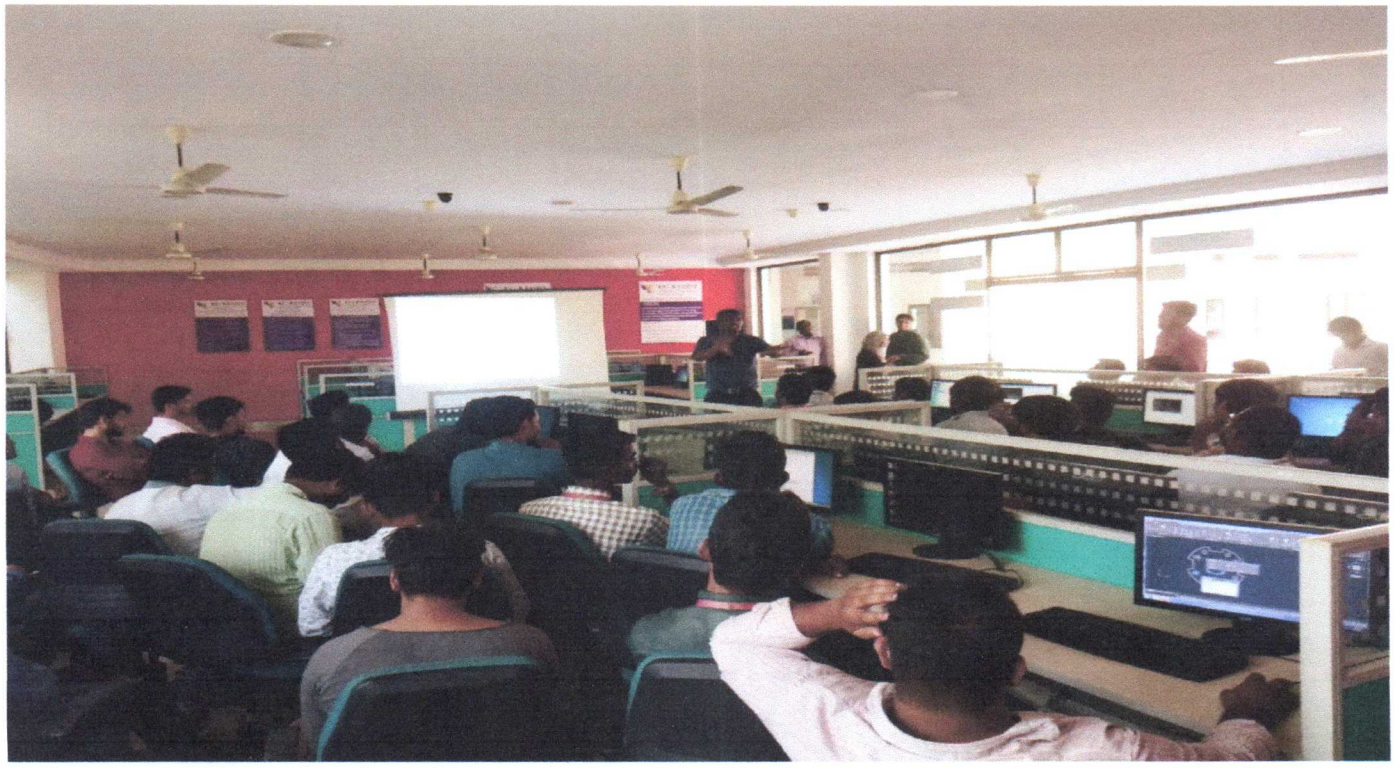
Workshop of CNC programming is divided in two sessions. In first session all students got knowledge about basics of CNC machine and its application. There are many difference of NC and CNC machine and it's more beneficial to work with CNC machine compare to NC machine. In this session giving demonstration of CNC machine as well as CNC classification, advantages, disadvantages and other factors which are related to CNC machine is explained in this session



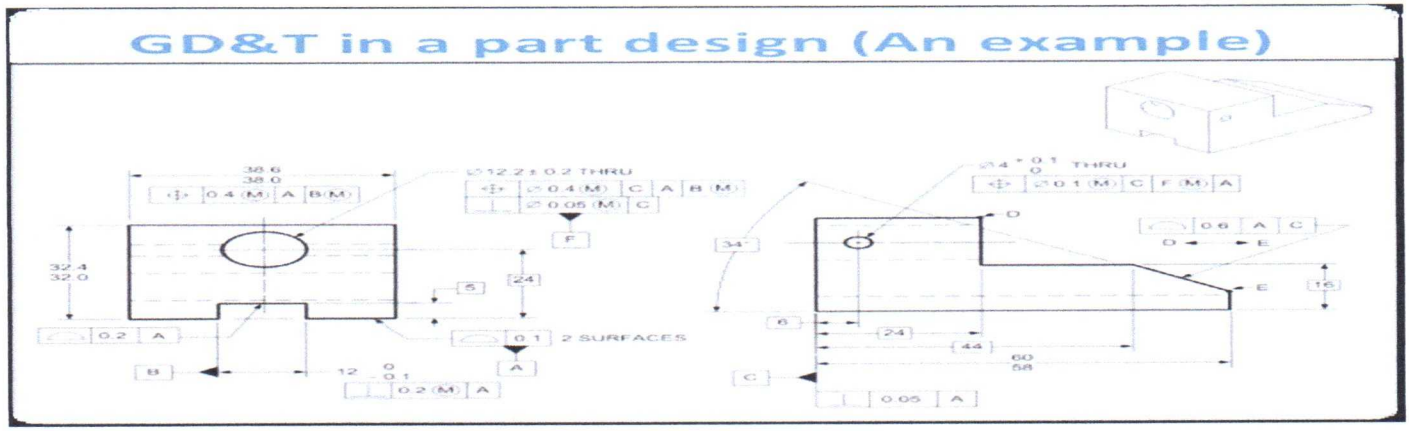
After Completion of this introductory session start with all terminology related CNC machine is explained to students so they will understand all the parameters of CNC part programming easily. The CNC part programming is based on coding so all coding system explain by the respective faculty to student and so that they can understand brief of programming.

After this session conduct another session for cutting parameter, tool selection and insert selection. There are many parameters for cutting which is feed, speed and depth of cut. All parameters consider for CNC machine which is used in manufacturing process. There are different cutting tool which is use differently for straight turning, taper turning, thread cutting etc. processes.

Inserts are used for cutting which is fitted on tool. If any process or at cutting time suddenly change is there so tool will safe if insert is added on the top of tool so inserts are widely used for CNC machine. Inserts are made from different material as per process required.



Practical session conducted By S. S. SADAT on 04-02-2019 at CAD/CAM LAB, KGRCET-Moinabad



Geometric Dimensioning and Tolerance (GD&T) is a system for defining and communicating engineering tolerances. It uses a symbolic language on engineering drawings and computer-generated three-dimensional solid models that explicitly describes nominal geometry and its allowable variation. It tells the manufacturing staff and machines what degree of accuracy and precision is needed on each controlled feature of the part.

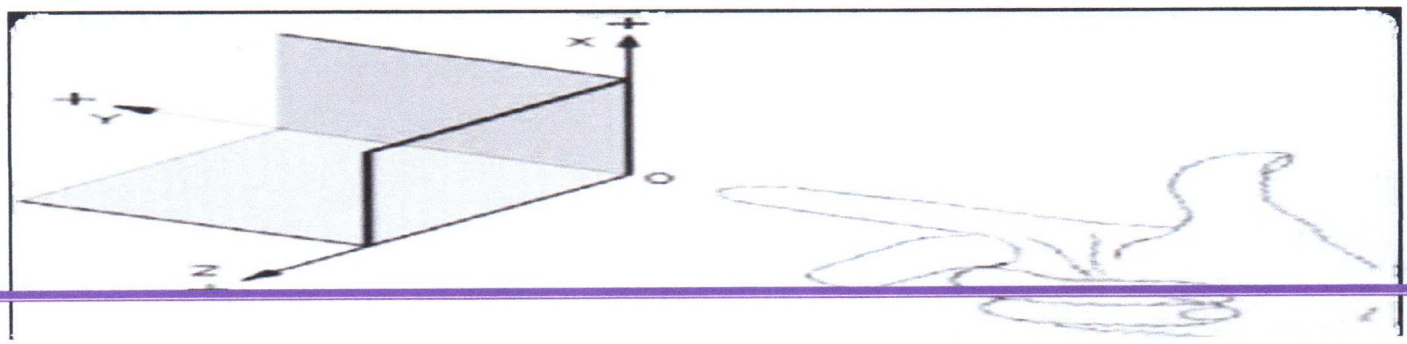
SYMBOL	GEOMETRIC CHARACTERISTIC	TYPE OF TOLERANCE	PRIMARY CONTROL
▱	FLATNESS	Form No relation between features	Controls form (shape) of size and non size features. Datum reference is not allowed
—	STRAIGHTNESS		
⌭	CYLINDRICITY		Controls form (shape) of size features Datum reference is not allowed
○	CIRCULARITY (ROUNDNESS)		
⊥	PERPENDICULARITY	Orientation No relation between features	Controls orientation (tilt) of surfaces, axes, or median planes for size and non-size features Datum reference required *Optional: Angularity symbol may be used for all orientation controls*
//	PARALLELISM		
∠	ANGULARITY		
⌖	POSITION	Location	Locates center points, axes and median planes for size features. Can also control orientation.
⌓	PROFILE OF A SURFACE		Locates surfaces Can also be used to control size, form, and orientation of surfaces based on datum reference
⌒	PROFILE OF A LINE		
⌰	TOTAL RUNOUT	Runout	Controls surface coaxiality Can also control form and orientation of surfaces.
↗	CIRCULAR RUNOUT		
◎	CONCENTRICITY	Location of derived median points.	Locates derived median points of a feature *Not common, consider position, runout, or profile.*
≡	SYMMETRY		

GD&T is used to define the nominal (theoretically perfect) geometry of parts and assemblies, to define the allowable variation in form and possible size of individual features, and to define the allowable variation between features. In this session learn about manufacturing drawing that how to read the drawing and how it is different from basic drawing and manufacturing drawing. The basics of GD&T is that to check circularity, ovality, concentricity and other parameters which is related to drawing reading and manufacturing process.

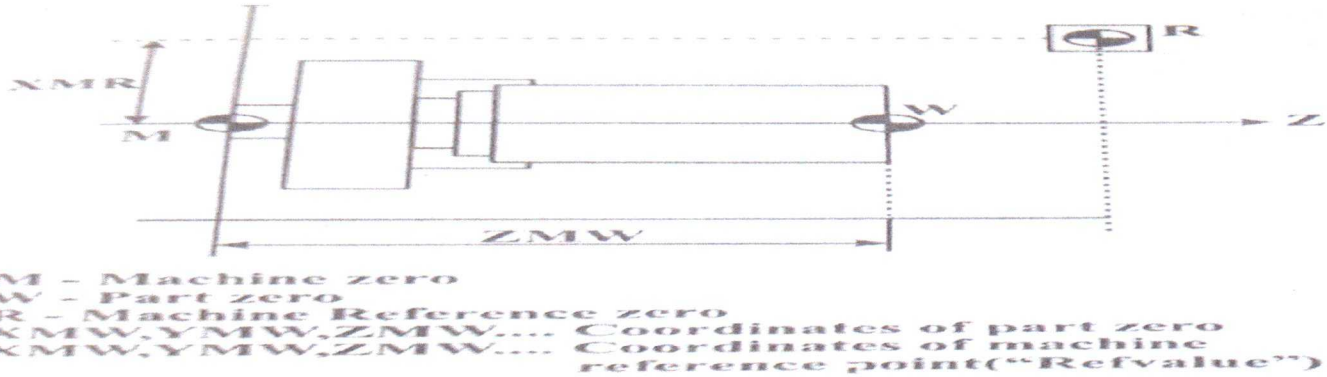
After completion of all theoretical knowledge about CNC machine start with actual part programming which is used for manufacturing in CNC machine. There are many codes used for CNC machine in which G code, M code, N Code, X,Y,Z code, S code etc. which is used for part programming.

- N - Block number - specifies the start of the block
- G - Preparatory functions
- M - Miscellaneous functions
- X - X-axis coordinate
- Z - Z-axis coordinate
- I - X-axis location of arc center
- K - Z-axis location of arc center
- R - Radius of arc
- S - Spindle speed or Cutting speed
- F - Feed rate
- T - Tool number.

CNC machine basically work on thumb rule and for axis designation it is given on that given sign as sown in Image.



❖ Zero Points and Reference Points



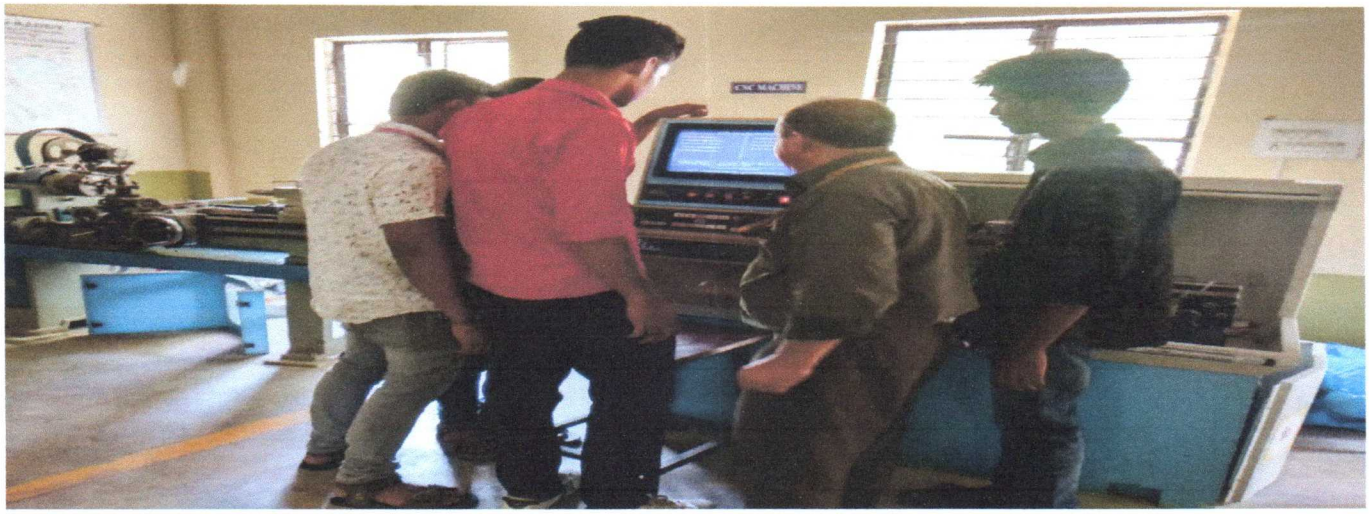
M - Machine zero
W - Part zero
R - Machine Reference zero
XMW,YMW,ZMW.... Coordinates of part zero
XMW,YMW,ZMW.... Coordinates of machine reference point("Refvalue")

There are different G codes and M codes which is generally used for part programming in which following codes are most important for CNC machines like linear interpolation, rapid traverse, spindle rotation etc. codes are used for programming and in M code spindle start, stop coolant on off etc will be done from the M code.

HIGHLIGHTS OF 7TH AND 8TH FEBRUARY 2019

On this date practical work of CNC machine is done by the students and which program is done by student they load on the machine by them self and they see simulation of the part program.

Simulation is need for safety purpose as well as tool life of machine. If simulation is not seen and direct execution of program is done than more chance of accident will occurs on machine so simulation is needed for CNC machine.



Student Working On CNC Machine

After see the simulation of part programming actual machining process is teach to students and they are perform practically as per instruction given by faculty. Moreover they perform practically they seen that this is actual manufacturing on CNC machine and they are quite confident about their learning of part programming. They make 4-5 practical of CNC part programming and manufacturing and program loading on CNC machine.

REVERSE ENGINEERING

Reverse engineering is a process in which we can produce CAD model from the Hard material model. In this process CMM is used for measuring all the dimensions and parameters which is related to based on drawing. From this if we want to manufacture same parts of hard material we can make drawing with reverse engineering and manufacture copy part from this system.

CONCLUSION

After completion of this workshop 64 students of different regions got training about CNC machine and Manufacturing with CNC machine. All parameters which is related to CNC machine is known by the students and they are happy after attending this fabulous program which is conducted by Mechanical Department.

The basic feedback of student is that they want extend this workshop and learn more of CNC and in future if it is possible than they want to learn of VMC machine also. So it is great success of this workshop that students are happy to attending this 5 Days workshop of Skill Development program On CNC Machine.

KG REDDY College of Engineering & Technology

KG Reddy College of Engineering & Technology

Chilkur, Moinabad, RR District

Department of Mechanical Engineering

Ref No: KGRCET/ME/2018-19/08 **Date: 28/01/2019**

CIRCULAR

All the II-Year II-semester B.Tech Mechanical Engineering students are here by instructed to enroll for the certification course on **"CNC programming",** which is conducted by KG Reddy college of Engineering and Technology from 04/02/2019to 8/02/2019. Interested students are instructed to complete their registration before 04/02/2019.

HOD

Principal

Principal
KG Reddy College of Engineering & Technology
Chilkur (V), Moinabad (M).
R.R.Dist., Telangana.

Copy to:

1. Class Rooms
2. Notice Boards
3. Admin Office

KG REDDY COLLEGE OF ENGINEERING&TECHNOLOGY DEPARTMENT OF MECHANICAL ENGINEERING A 5 DAY CERTIFICATE COURSE ON CNC PROGRAMMING

SCHUDLE & TOPICS

DAY-1

Date	Time	Activity
04-02-2019	09:00 AM – 10:00 AM	Registrations
	10:00 AM – 11:30 AM	Inauguration
	11:30 AM – 11:45 AM	Tea beak
	11:45 AM – 01:00 PM	Module -1
	01.00 PM – 02.00 PM	Lunch break
	02.00 PM – 03.45 PM	Module -1

DAY-2

Date	Time	Activity
05-02-2019	10:00 AM – 11:30 AM	Module-2
	11:30 AM – 11:45 AM	Tea Break
	11:45 AM – 01:00 PM	Module-2
	01.00 PM – 02.00 PM	Lunch break
	02.00 PM – 03.45 PM	Hands on Session in Lab

DAY-3

Date	Time	Activity
06-02-2019	10:00 AM – 11:30 AM	Module-3
	11:30 AM – 11:45 AM	Tea Break
	11:45 AM – 01:00 PM	Module-4
	01.00 PM – 02.00 PM	Lunch break
	02.00 PM – 03.45 PM	Hands on Session in Lab

DAY-4

Date	Time	Activity
07-02-2019	10:00 AM – 11:30 AM	Module-5
	11:30 AM – 11:45 AM	Tea Break
	11:45 AM – 01:00 PM	Module-5
	01.00 PM – 02.00 PM	Lunch break
	02.00 PM – 03.45 PM	Hands on Session in Lab & CNC Machine

DAY-5

Date	Time	Activity
08-02-2019	10:00 AM – 11:30 AM	Module-6
	11:30 AM – 11:45 AM	Tea Break
	11:45 AM – 01:00 PM	Module-7
	01.00 PM – 02.00 PM	Lunch break
	02.00 PM – 03.15 PM	Hands on Session in Lab and Test
	03.15 PM - 03.30 PM	Tea Break
	03.00 PM – 04.00 PM	Valedictory

KG REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

Chilkur (Vill) Moinabad (Mdl) R R Dist

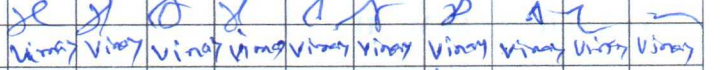
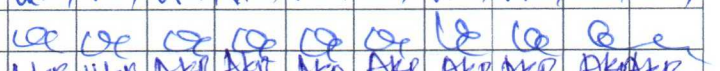
DEPARTMENT OF MECHANICAL ENGINEERING

CERTIFICATE PROGRAM ON CNC PROGRAMMING

ATTENDANCE SHEET

YEAR: II **SEM: II** **DATE: 4/2/2019 TO 8/2/2019**

		DATE	4/2/2019		5/2/2019		6/2/2019		7/2/2019		8/2/2019	
			FN	AN	FN	AN	FN	AN	FN	AN	FN	AN
S.No	Roll No.	Student Name										
1	16QM1A0343	Madi Venkata Sai Yeshwanth Reddy										
2	16QM1A0359	U Banu Chandar										
3	16QM1A0361	V Akhil Devan Sai Raj										
4	17QM1A0301	Azher Ali										
5	17QM1A0302	Bakka Veeresh										
6	17QM1A0303	Challa Kiran Reddy										
7	17QM1A0304	Cheguri Manideep										
8	17QM1A0306	Dosada Mahender Reddy										
9	17QM1A0307	Eragadindla Venkatesh										
10	17QM1A0308	Francis Xavier										
11	17QM1A0309	G Chekridhar Reddy										
12	17QM1A0310	G Lakshmi Krishna Sai Chandu										
13	17QM1A0311	Hemanth Kumar K										
14	17QM1A0313	Hitesh Sahani										
15	17QM1A0314	Kasarla Sai Varun										
16	17QM1A0315	Korada Kranthi Kumar										
17	17QM1A0317	Korimi Prashanth										
18	17QM1A0318	Kura Vivekasai										
19	17QM1A0319	M Chaitanya Krishna										
20	17QM1A0320	M Srimanth Roshan Sai										
21	17QM1A0321	Mohammed Irfan Khan										
22	17QM1A0322	Mokrala Arun Rohit										
23	17QM1A0323	Mothe Raja										
24	17QM1A0324	Sai Ganesh										
25	17QM1A0325	N Vamsi Krishna Reddy										
26	17QM1A0326	Padigela Ganesh										
27	17QM1A0327	Punna Sai Sachin										

28	17QM1A0328	Ajith Reddy	
29	17QM1A0330	Shaik Adil	
30	17QM1A0331	Syed Abdul Ghani	
31	17QM1A0332	Syed Rehan Ali	
32	17QM1A0333	V Shiva Shankara Chary	
33	17QM1A0334	Srikanth Chary	
34	17QM1A0335	Y Shiva Sai Charan	
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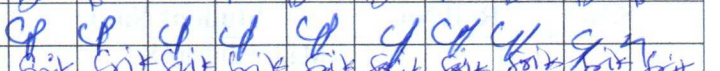
36	18QM5A0301	Anthamgari Venkatesh	
37	18QM5A0302	B Ashok Kumar	
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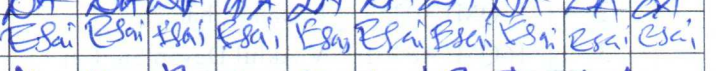
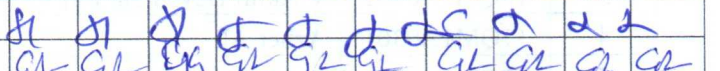
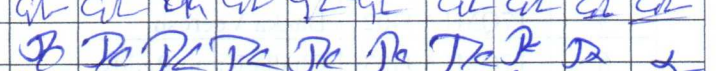
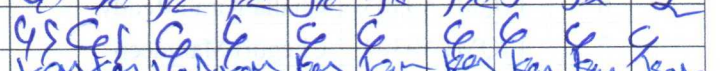
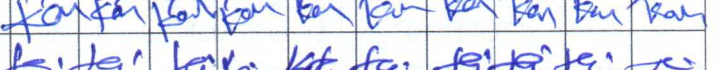
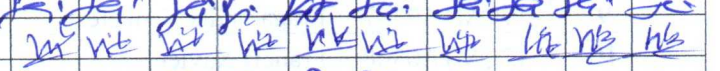
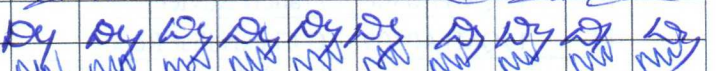
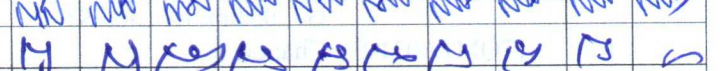
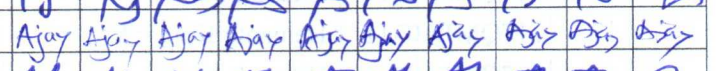
39	18QM5A0304	Boda Harikumar	
40	18QM5A0305	Chenigarapu Puthrasai	
41	18QM5A0306	Chinna Srikanth	
42	18QM5A0307	Dharamkar Akshay	
43	18QM5A0308	Eerla Sai Kumar	
44	18QM5A0309	G Sravan Ramesh	
45	18QM5A0310	Gaddam Likhith	
46	18QM5A0311	Giri Jai Krishna	
47	18QM5A0312	Goundla Abhishek Goud	
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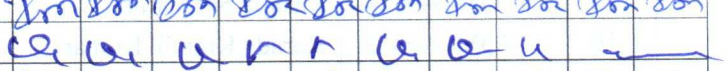
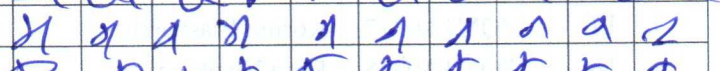
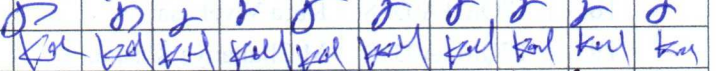
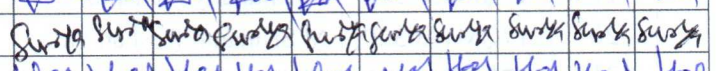
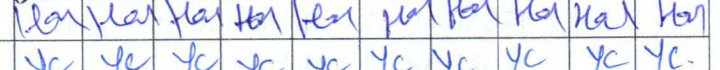
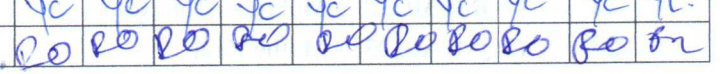
49	18QM5A0314	Kandrapu Saikumar	
50	18QM5A0315	Kolupula Vikram	
51	18QM5A0316	Kummari Dayakar	
52	18QM5A0317	M Naresh	
53	18QM5A0318	Mallepula Sai Kiran	
54	18QM5A0319	Mandadi Ajay Goud	
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58	18QM5A0323	Neeli Sravan Kumar	
59	18QM5A0324	Peddagolla Srikanth	
60	18QM5A0325	Rachuri Pavan Kalyan	
61	18QM5A0326	Shankapally Suryateja	
62	18QM5A0327	Vankudoth Harshavardhan	
63	18QM5A0328	Y Chaitanya	
64	18QM5A0329	Yakari Rohit	

HOD

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Chilkur, Moinabad, RR District

Department of Mechanical Engineering

17QM1A0308

Test

9/10

1) The device, fed to the control unit of NC machine tool which sends the position command signals to sideway transmission elements of the machine, is called as

a. controller
b. tape
c. feedback unit
d. none of the above

2) In NC (Numerical Control) machine tool, the position feedback package is connected between

a. control unit and programmer
b. programmer and machine tool
c. control unit and machine tool
d. programmer and process planning

3) Which of the following options is correct for the control unit and panel of NC (Numerical Control) and CNC (Computer Numerical Control) machine tools?

a. The control unit of NC machine tool works in ON-line mode and the control unit of CNC machine tool works in batch processing mode
b. The control unit of NC machine tool works in batch processing mode and the control unit of CNC machine tool works in ON-line mode
c. The control units of both NC and CNC machines work in ON-line mode
d. The control units of both NC and CNC machines work in batch processing mode

4) In CNC machine tool, the part program entered into the computer memory

a. can be used only once
b. can be used again and again
c. can be used again but it has to be modified every time
d. cannot say

5) Several machine tools can be controlled by a central computer in

a. NC (Numerical Control) machine tool
b. CNC (Computer Numerical Control) machine tool
c. DNC (Direct Numerical Control) machine tool
d. CCNC (Central-Computer Numerical Control) machine tool

6) Part-programming mistakes can be avoided in

a. NC (Numerical Control) machine tool
b. CNC (Computer Numerical Control) machine tool
c. Both a. and b.
d. None of the above

7) The machine tool, in which calculation and setting of the operating conditions like depth of cut, feed and speed are done during the machining by the control system itself, is called

a. Computer Numerical Control System
b. Direct Numerical Control System
c. Machining Centre System
d. Adaptive Control System

8) Which machine tool reduces the number of set-ups in machining operation, time spent in setting machine tools and transportation between sections of machines?

a. Computer Numerical Control machine tool
b. Direct Numerical Control machine tool
c. Adaptive Control Systems
d. Machining centre

9) Encoder is used in CNC machine tool, to sense and control

(A) Spindle speed
(B) Spindle position
(C) Table position
(D) All of these

10) Arrange the below operations in operator controlled machine tool in correct order.

(A) Operator **(B) Process planning**
(C) Machine tool **(D) Component drawing** **(E) Completed component**

a. (A) – (D) – (B) – (C) – (E)
b. (D) – (B) – (C) – (A) – (E)
c. (B) – (D) – (C) – (A) – (E)
d. (D) – (B) – (A) – (C) – (E)

KG REDDY
College of Engineering
& Technology

CERTIFICATE

Name: Challa Kiran Reddy

Registration No: 17QM1A0303

has successfully completed the prescribed requirements for the award of certificate course on " **CNC PROGRAMMING** " conducted by Mechanical Engineering held in month of February from 04/02/19 to 08/02/19 in the academic year 2018-2019.

Date: 08/02/19

Course Coordinator

Principal

KG REDDY
College of Engineering
& Technology

CERTIFICATE

Name: Azher Ali

Registration No: 17QM1A0301

has successfully completed the prescribed requirements for the award of certificate course on " **CNC PROGRAMMING** " conducted by Mechanical Engineering held in month of February from 04/02/19 to 08/02/19 in the academic year 2018-2019.

Date: 08/02/19

Course Coordinator

Principal