

DT- 16.5.2017

Time : 3 Hours

Total marks : 80

Note:

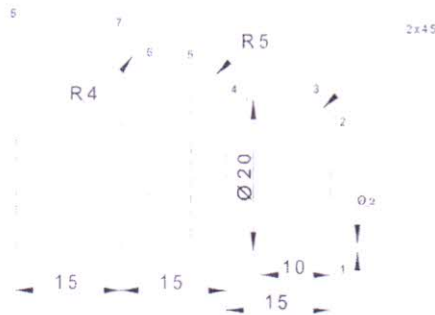
- 1) Question no 1 is **COMPULSORY**
- 2) Attempt any **THREE** questions from remaining five questions
- 3) Draw **NEAT SKETCHES** wherever applicable
- 4) Clearly mention **ASSUMPTIONS** if any

Q1. Solve any five

- | | |
|--|---|
| A. Explain basic components of numerical control system. | 4 |
| B. Explain Rotary/ Angular position measuring transducers | 4 |
| C. Explain importance of cutting tool in CNC | 4 |
| D. What is mean by following M-Codes
M03, M02, M09, M05 | 4 |
| E. Explain different types of machine tool maintenance. | 4 |
| F. Explain APT Language. | 4 |

Q2.A] Write a program for following profile use multi cut canned cycle for every operation.

Also write G90 co-ordinates. 10



B] Write part programming for following profile using APT language

10



Q3.

A] Explain adaptive control system with its block diagram.

Draw block diagram of ACO system.

10

B] List out different CAPP languages.

5

C] What is program reader? Explain punched tape reader.

5

Q4.

A] What is mean by Encoder? Explain its applications.

10

Write short note on MCU.

B] Explain advantages and disadvantages of CNC machine

5

C] What is low cost automation? Write criteria for low cost automation?

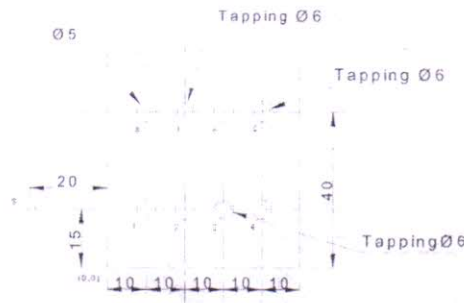
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Q5.

A] Write a program using canned cycles for following milling profile

10

Assume suitable data.



Operations to be perform

1. Face milling
2. Drilling
3. Tapping

B] Write short note on threading insert & draw its insert diagram.

5

C] What are the factors that should be considered while selecting components for machining on CNC machine? Explain in detail.

5

Q6.

A] Explain CNMG120408 TR 10 turning insert specification in detail.

8

B] Draw diagram of standard tool holder for milling machine & Explain.

4

C] Write a syntax of G00, G01, G02, G03 command & Explain it for CNC Lathe.

4

D] What is backlash? How to measure & compensate the backlash error?

4

Q.P. Code : 16301

[Time: Three Hours]

[Marks:80]

Please check whether you have got the right question paper.

- N.B:
1. Question No.1 is compulsory.
 2. Solve any three out of remaining questions.
 3. Assume suitable data if necessary.
 4. Figures to right indicate marks.

- Q. 1 a) Write a short note on Roughness & Waviness. (05)
 b) Explain Profile projector with suitable sketch. (05)
 c) Write a short note on p-Charts & np-Charts. (05)
 d) Explain the term Quality Planning. (05)
- Q. 2 a) What do you mean the Quality of Design and Quality of Conformance? (10)
 b) Explain different types of fits. And also explain the Taylor's principle of gauge design. (10)
- Q. 3 a) Explain various modern SQC tools. (10)
 b) Explain principle, construction and working of optical comparator with neat sketch. And also write advantages and disadvantages of optical comparator. (10)
- Q. 4 a) The following data refer to the production and number of rejects for 15 consecutive days. (10)

Day	Number Inspected	No. of rejects
1	400	2
2	400	5
3	400	0
4	400	14
5	400	3
6	400	0
7	400	1
8	400	0
9	400	18
10	400	8
11	400	6
12	400	0
13	400	3
14	400	0
15	400	6

Plot the percent rejected control charts. Suppose the reasons for out of control point on 9th day is found and it's effect on future production is eliminated. What control limits will you adopt for future production?

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- Q. 4 b) Explain principle, working and construction of Parkinson's gear tester with suitable diagram. (10)
- Q. 5 a) Explain briefly OC curve with suitable curve. And also explain single sampling and double sampling plans. (10)
b) Explain construction and working of Laser interferometer with neat diagram. Also write advantages and (10)
disadvantages of Laser interferometer.
- Q. 6 a) Explain three wire method used in screw thread measurement. (10)
b) Explain the random sampling techniques and statistical sampling techniques. (05)
c) Difference between precision and accuracy. (05)

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Q.P. Code :13527

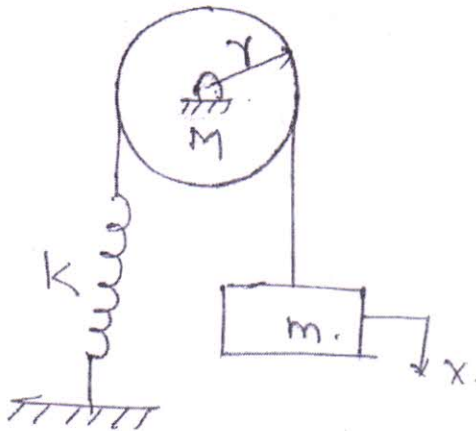
[Time: Three Hours]

[Marks:80]

Please check whether you have got the right question paper.

- N.B:
1. Question.No.1 is compulsory.
 2. From Question No.2 to 6 attempt any three Questions.
 3. Figures to the right indicate full marks.
 4. Draw a suitable diagram wherever necessary.
 5. Assume suitable data if necessary and mention clearly.

- Q.1
- a) Explain the terms sensitiveness, hunting and stability relating to governors. 04
 - b) Explain the gyroscopic effect on four wheeled vehicle 04
 - c) What do you mean by degree of freedom? Explain with examples. 04
 - d) Draw the plot of magnification factor Vs. frequency ratio for various damping ratio. 04
 - e) A mass of 1 Kg is attached to a spring having stiffness of 3920 N/m. The mass slide on horizontal surface, the coefficient of friction between mass and surface being 0.1. Determine the frequency of vibration of the system and amplitude after one cycle. If the initial amplitude is 0.25 cm. Determine final rest position. 04
- Q.2
- a) Each ball of a porter governor has a mass of 6 Kg and the mass of the sleeve is 40 Kg. The upper arm are 300 mm long and are pivoted in the axis of rotation whereas the lower arm are 250 mm long and are attached to the sleeve at a distance of 40 mm from the axis. Determine the equilibrium speed of the governor for a radius of rotation of 150 mm for 1% change in speed Also, find the effort and the power for the same speed change. 10
 - b) Find the natural Frequency of system shown in Fig(I) 06



Fig(I)

- c) A Spring-mass system has spring stiffness K N/m and mass of M kg. It has Natural frequency of vibration as 12Hz. An extra 2kg mass is coupled to M and the natural frequency reduced by 2Hz. Find K & M . 04

