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181755/171755/121755

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**5th Sem./ Mech. Mecatronics, Prod, T&D, CAD/CAM,
Mech. Engg. (Fabrication Tech), Mechanical Engg.
(CAD/CAM Design & Robotics)
Subject : CNC Machines & Automation**

Time : 3 Hrs.

M.M. : 100

SECTION-A

Note: Multiple type Questions. All Questions are compulsory. (10x1=10)

Q.1 Binary Equivalent of 27 is _____.

- a) 1011
- b) 11011
- c) 101
- d) 11101

Q.2 Design of CNC structure which dissipate equal heat in all directions is known as

- a) Aerodynamic
- b) Thermosymmetrical
- c) Air Conditioned
- d) all of the above

Q.3 The motor which has feedback as well control wires is

- a) AC servo motor
- b) DC Servo motor
- c) Stepper motor
- d) Only A & B

Q.4 The component which eliminates Backlash is _____.

- a) Recirculating ball screw
- b) Sliding table
- c) Hydrodynamic slide way
- d) None of the above

Q.5 Normally _____ type of ATC is used in CNCs.

- a) Spindle direct
- b) 180 Degree
- c) Magazine
- d) Swing around

Q.6 ASRS means

- a) Auto start rest stop
- b) Automatic storage and retrieval system
- c) Auto sensor and range sensor
- d) None of the above

Q.7 LVDT sensor measures _____ quantity.

- a) Scalar
- b) Vector
- c) Directional
- d) All of the above

Q.8 Painted line AGV sense direction from _____ color paint

- a) Red
- b) Orange
- c) White
- d) Fluroscent

Q.9 Best production suited for automation is

- a) Hi volume lo variety
- b) LO volume Lo variety
- c) Mid volume Mid variety
- d) Lo volume Hi variety

Q.10 G03 stands for

- a) Circular interpolation
- b) Circular interpolation clockwise
- c) Circular interpolation anticlockwise
- d) Both A & C

Section-B

Note: Objective type questions. All questions are compulsory. (10x1=10)

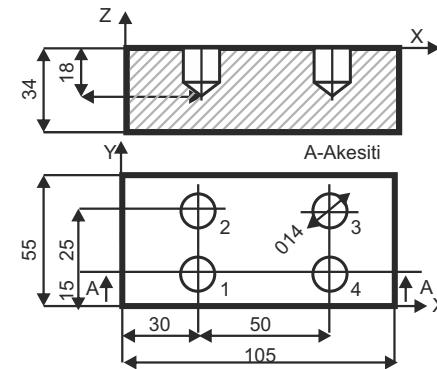
Q.11 _____ machine can control many machines at same time.

- Q.12 CNC machine _____ (increase/decrease) the lead time.
 Q.13 Expand AGV.
 Q.14 Define Transducer.
 Q.15 Expand LVDT.
 Q.16 Define sensor.
 Q.17 Expand MCU.
 Q.18 Define the term CIM.
 Q.19 Which type of production is best suited for CNC (job/batch/mass)
 Q.20 What the G code G90 stands for?

Section-C

Note: Short answer type Question. Attempt any twelve questions out of fifteen Questions. (12x5=60)

- Q.21 Explain the types of CNC.
 Q.22 Describe the types of MCU.
 Q.23 Enlist any 5 design features of CNC.
 Q.24 Write short note on type of slideways.
 Q.25 Give a few specifications of CNC Lathe.
 Q.26 What are various types of cutting tools of CNC?
 Q.27 Explain the working of digital tachometer with diagram.
 Q.28 Write short note on working and application of opto interrupter.
 Q.29 Explain the working of stepper motor.
 Q.30 Write short note on swarf removal.
 Q.31 Write a part program for drilling following, assume all machining parameters.

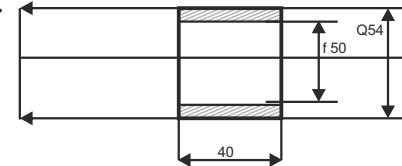


- Q.32 What is tool wear compensation? Explain.
 Q.33 Write short note on FMS.
 Q.34 What are the various basic robot motions?
 Q.35 Explain three types of part programming formats.

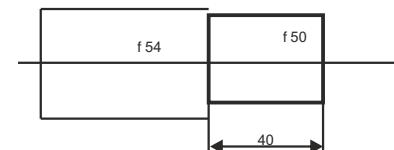
Section-D

Note: Long answer questions. Attempt any two question out of three Questions. (2x10=20)

- Q.36 Explain CNC machine. Give its advantages, disadvantages and applications.
 Q.37 Explain the following :
 a) LVDT
 b) open loop and closed-loop control systems
 Q.38 Write a part program for following component, in steps as shows:



PLAIN TURNING (CNC LATHE)



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