

C. U. SHAH UNIVERSITY

Winter Examination-2021

Subject Name: Computer Aided Manufacturing

Subject Code: 4TE07CAM1

Branch: B.Tech (Mechanical)

Semester: 7

Date: 13/12/2021

Time: 02:30 To 05:30

Marks: 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

Q-1

Attempt the following questions:

(14)

- (a) The instruction on the tape of the NC machine is prepared in
 - (a) Numeric form
 - (b) Coded form
 - (c) Binary coded decimal form
 - (d) None of these
- (b) Direct numerical control (DNC) means
 - (a) Using several computers to control one large CNC machine.
 - (b) Using one computer to control several CNC machines
 - (c) Elimination of computers from the manufacturing process altogether
 - (d) Complete elimination of a need for a machine operator.
- (c) The machine tool in which the point to point numerical control system is applied is the
 - (a) Drilling Machine
 - (b) Grinding Machine
 - (c) Milling Machine
 - (d) Shaping Machine
- (d) G94 Code is used for
 - (a) Feed rate mm/min
 - (b) Canned cycle
 - (c) Absolute Dimensioning
 - (d) Incremental Dimensioning
- (e) The vertical movement of the worktable on a conventional milling machine is represented in the Cartesian coordinate system as a movement parallel to
 - (a) The X- axis
 - (b) The Y- axis
 - (c) The O- axis
 - (d) The Z- axis
- (f) CAPP stands for____.
 - (a) Computer Aided Progress Panning
 - (b) Computer Added Process Planning
 - (c) Computer Aided Process Planning
 - (d) Computer Aided Product Planning
- (g) In this type of code structure, the interpretation of each symbol in the sequence is fixed and does not depend on the value of preceding digits.
 - (a) Mono Code
 - (b) Hybrid Code
 - (c) Poly Code
 - (d) None of these
- (h) Material Requirement Planning is driven by
 - (a) total quality measurement
 - (b) overall production planning
 - (c) overall inventory planning
 - (d) master production schedule
- (i) Which of the following is a contact type of automated inspection method?
 - (a) inspection probe
 - (b) laser scanning
 - (c) electric field
 - (d) all of the these



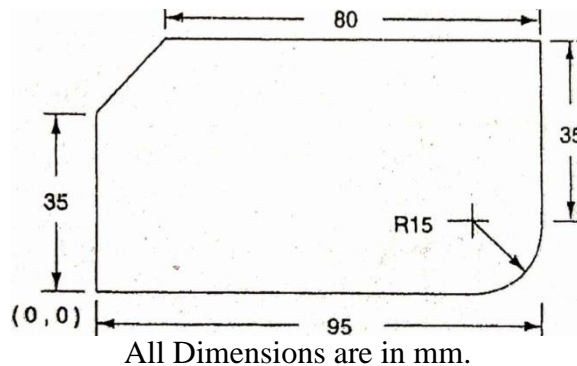
- (j) "Automatic placement and withdrawal of parts and products into and from designated places in a warehouse" describes
 (a) AGV (b) CAD/CAM (c) CIM (d) ASRS
- (k) A system using an automated work cell controlled by electronic signals from a common centralised computer facility is called
 (a) adaptive control system (b) robotics
 (c) flexible manufacturing system (d) automatic guided vehicle system
- (l) Which of the following is not an example of changing customer expectations which essentially leads us to focus on agile manufacturing?
 (a) Product customization (b) Slow delivery
 (c) Fast delivery (d) Cheaper production
- (m) The PLC is used in _____.
 (a) machine tools
 (b) automated assembly equipment
 (c) moulding and extrusion machines
 (d) all of the above
- (n) _____ is the complete integration and automation of all functions of factory.
 (a) Computer Aided Manufacturing (b) Computer Integrated Manufacturing
 (c) Flexible Manufacturing System (d) Computer Aided Engineering

Attempt any four questions from Q-2 to Q-8.

Q-2

Attempt all questions

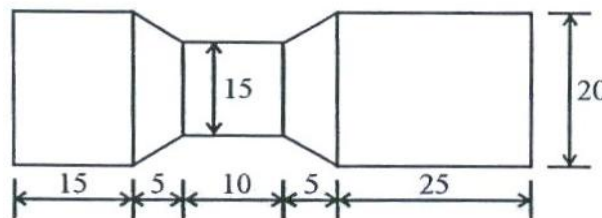
- (a) Explain DNC machine tool system with its advantages and limitations. (06)
- (b) Prepare the part programme for the component shown in figure with cutter radius compensation and direction of cut programmed in anticlockwise direction. Z= 00 is at the top surface of the work piece. Feed = 200 mm/minute, Speed= 1000 rpm, Depth of cut= 10 mm. (08)



Q-3

Attempt all questions

- (a) Discuss how sliding friction is converted into rolling friction in CNC machines? (06)
- (b) What is do loops? Discuss the Do loops in detail and write a program for the component shown below. (08)



All dimensions are in mm.



- Q-4** **Attempt all questions**
- (a) Explain the variant type CAPP system. State the benefits and limitations of variant type CAPP systems. (07)
- (b) Explain the different Nonoptical Noncontact Inspection Techniques. (07)
- Q-5** **Attempt all questions**
- (a) Explain OPTIZ system of coding. (07)
- (b) Discuss in brief the three phases of shop floor control. (07)
- Q-6** **Attempt all questions**
- (a) Explain different types of FMS layouts with neat diagram. (07)
- (b) Discuss the concept of CIM wheel and explain the importance of it. (07)
- Q-7** **Attempt all questions**
- (a) What is an AGV? What are the different types of AGVs? Give benefits of using AGVs. (07)
- (b) Define PLC. Explain the basic components of PLC with schematic diagram. (07)
- Q-8** **Attempt all questions**
- (a) Describe how World Wide Web can help to shorten the product development cycle time. (07)
- (b) What are the different statements used to write a part programme using APT? Discuss each statement with suitable examples. (07)

