C. U. SHAH UNIVERSITY
Summer Examination- 2022

Subject Name: Computer Aided Manufacturing

Subject Code: 4TE07CAM1   **Branch: B.Tech (Mechanical)**

Semester: 7   **Date: 21/04/2022**   **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) Numerical Control can be applied to
   (a) Lathe   (b) Drilling Machine
   (c) Milling Machine   (d) All of these
(b) The phenomenon of stick- slip is predominant
   (a) At low speed(b) At high speed
   (c) When the sliding speed is zero
   (d) When the sliding speed exceeds cutting speed
(c) The machine tool in which the system of continuous path numerical control is applied is the
   (a) Drilling Machine   (b) Grinding Machine
   (c) Milling Machine   (d) Shaping Machine
(d) G91 Code is used for
   (a) Feed rate mm/rev.   (b) Canned cycle
   (c) Absolute Dimensioning   (d) Incremental Dimensioning
(e) 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
(f) If all the processing equipment and machines are arranged according to the sequence of operations of a product, the layout is known as
   (a) Product Layout(b) Process layout
   (c) Fixed position layout(d) GT layout
(g) In Optiz Classification system the form code is made of
   (a) 9 digits   (b) 3 digits   (c) 4 digits   (d)5 digits
(h) Bill of material structure is used to
   (a) calculate net requirements   (b) calculate due dates
   (c) calculate manpower requirements   (d) all of the mentioned
(i) CAQC stands for
   (a) Computer aided quantity control(b) Computer aided quantity center
   (c) Computer aided quality control   (d) Computer aided quality center

(j) The _____ is used for connecting different computers in CIMS.
(a) SLS   (b) LAN   (c) WWW   (d) CAE

(k) What happens to labour workforce when FMS concept is used?
(a) increases   (b) decreases
(c) remains same   (d) gradually increases with time

(l) Flexibility in manufacturing means the ability to deal with
(a) variation in parts assembly and variation in process sequence
(b) change the design of certain product
(c) change the production volume
(d) all of the above

(m) The CPU module in the PLC is used to:
(a) control the outputs only
(b) execute the control program only
(c) read inputs only
(d) read inputs, execute the control program and update output

(n) Computer Integrated Manufacturing is _____.
(a) Extension of CAM   (b) Management philosophy
(c) A type of automation   (d) link between CAD and CAM

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

Q-2   **Attempt all questions**
(a) What are the different types of CNC systems? Discuss the relative merits and demerits of open loop and closed loop control systems.   **(07)**
(b) What is cutter radius compensation? Why it is required? Explain by taking a suitable example.   **(07)**

Q-3   **Attempt all questions**
(a) Why feedback necessary in machine tools? Discuss the methods used for position and velocity feedback in CNC machines.   **(07)**
(b) Prepare the part programme to cut threads on *60 mm* length having *20 mm* diameter bar with pitch= *0.75 mm* and depth of thread = *0.46 mm*. Depth of cut is *0.2 mm* per pass, except in last pass where depth of cut is *0.06 mm*. The starting tool position is *X= 0* and *Z= 10*.   **(07)**

Q-4   **Attempt all questions**
(a) Explain OPTIZ system of coding.   **(07)**
(b) Explain the functions of Shop Floor Control.   **(07)**

Q-5   **Attempt all questions**
(a) Explain advantages of CAPP over conventional process planning.   **(07)**
(b) Explain the role of CMM in Computer Aided Quality Control. What are different elements of a CMM?   **(07)**

Q-6   **Attempt all questions**
(a) Describe with neat sketch AS/RS system used in FMS.   **(07)**
(b) Define PLC. Explain the basic components of PLC with schematic diagram.   **(07)**

Q-7   **Attempt all questions**
   (a)   Explain the types of flexibilities in FMS and discuss the factors on which these flexibilities depend.   **(07)**
   (b)   Discuss Role of Management in CIM.   **(07)**

Q-8   **Attempt all questions**
   (a)   What is the role of collaborative engineering in CAM?   **(07)**
   (b)   With the help of suitable figure, explain the following with reference to CNC machines.   **(07)**
         (a) Absolute and incremental dimensioning
         (b) Axis identification for lathe and milling machine.