Department of Mechanical Engineering, NIT Srinagar

**B.Tech. (4th Semester), Spring 2020**   **CAM & Industrial Automation (MEC405)**

Assignment-I

Last Date for submission: **3rd May, 2020**

1   How does numeric control (NC) machine differ from computer numerical control (CNC) machine? Discuss.

2   Draw schematic for closed loop system and discuss its advantages over open loop system.

3   Briefly describe various types of flexible manufacturing systems (FMSs).

4   Given the AGVS layout shown in below Figure (dimensions are in "metre"). Vehicles travel counter clockwise around the loop to deliver loads from the loading station to the unloading station. Loading time at the loading station = 0.70 min, and unloading time at the unloading station = 0.45 min. It is desired to complete a total of 40 del/hr by the AGVS. The following performance parameters are given: vehicle velocity = 50 m/min, availability = 0.95, traffic factor = 0.92.
Determine:
(a) Travel distances loaded and empty,
(b) Ideal delivery cycle time,
(c) Number of vehicles required to satisfy the delivery demand.
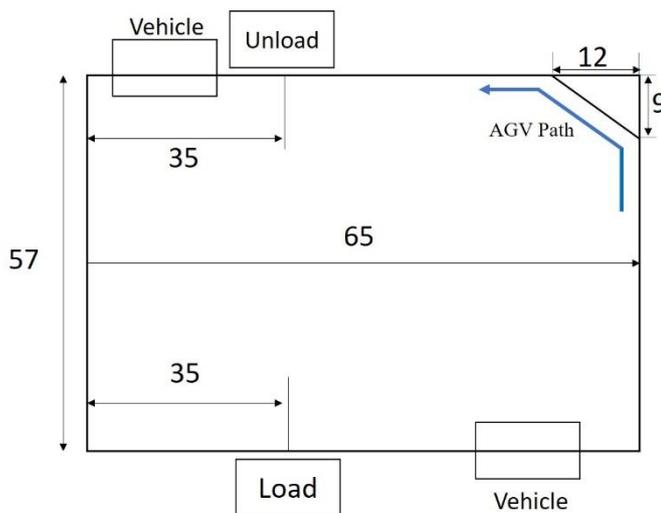
(All dimensions are in "metre")

5   Justify the use of Robots in manufacturing industries.

6   Why CNC machines are preferred over conventional machines? Draw a neat diagram to show different motions of robotic end effector.

7   Apply the knowledge of CNC programming to write a part program for producing last digit of your enrolment number on a block (100mm x 100mm x 10mm). Feed rate = (200 – enrolment number) mm/min and tool diameter is 4 mm. Use incremental coordinate system.

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- **Submit the scan copy of your assignment via mail to noorzaman@nitsri.ac.in on or before the date of submission and retain the hard copy with you.**