2nd Sem Back Examination – 2015-16
COMPUTER AIDED DESIGN & COMPUTER INTEGRATED MANUFACTURING
Q.CODE:W1171x
Time: 3 Hours
Max marks: 70

Answer Question No.1 which is compulsory and any five from the rest.
The figures in the right hand margin indicate marks.

Q1   Answer the following questions: (2 x 10)
- a) What is parts classification coding?
- b) Describe computer aided assembly planning,
- c) What is PFA?
- d) Explain the different parts of PLC.
- e) Explain the FMS workstations.
- f)
- g) What is green manufacturing?
- h) Define accuracy and repeatability of a robot manipulator.
- i)
- j)

Q2 a) Describe in detail with layout, the reasons for adopting group technology in a   (6)
        computer integrated manufacturing unit.
    b) Discuss the benefits of group technology which affects many areas of a company   (4)

Q3 a) Explain about the advanced automated storage and retrieval system with a neat   (5)
        layout of the system.
    b)   (5)
        Consider an operation of unit load AS/RS, which uses an S/R machine for each aisle
        of the system. The length of storage aisle is 300 m and its height is 50 m. Horizontal
        and vertical speeds of S/R machine are 400 m/min. and 75m/min. respectively. The
        S/R require 30 seconds to accomplish pickup and delivery. Determine the single and
        dual command cycle times.

Q4   Define industrial robot. What are the basic components of robotic system? Explain the   (10)
     basic configuration (Cartesian, cylindrical, spherical, articulated, SCARA) of robotic
     arm in detail with neat sketch. Also describe the application of industrial robot.

Q5 a) Four machines belong to a GT machine cell. An analysis of 50 parts which are   (5)
processed on these machines provides the following from-to chart (machines are
identified by number).

To → ↓ From	1	2	3	4
1	0	5	0	25
2	30	0	0	15
3	10	40	0	0
4	10	0	0	0

Additional information is: 50 parts enter the machine grouping at machine 3, 20 parts
leave after processing at machine 1, and 30 parts leave after machine 4. Determine
from-to ratios and suggest a logical machine arrangement.

b) Define FMS. What are the three basic components of FMS? Explain.   (5)

Q6 a) Explain the different types of FMS layout in detail with layout wherever required. Also   (5)
discuss the different factors affecting FMS layout.

b) What is the difference between a hierarchical structure and a chain type structure in a   (5)
classification and coding scheme?

Q7 a) What is CAPP? What are the implementation considerations in the CAPP? Explain   (6)
them in detail.

b) Explain the OPITZ classification system clearly for part families.   (4)

Q8   Answer any two   (5 x 2)
a) Discuss Computer Aided Quality Control and the objectives of CAQC.
b) Give a comparative statement between FMC and FMS
c) Describe CIM technology and the hierarchy of CIM.
d) Explain geometric and solid modelling used in CAD Application.