

**IV B.Tech I Semester Supplementary Examinations, November 2005**  
**PRODUCTION DESIGN AND ASSEMBLY AUTOMATION**  
**(Mechatronics)**

**Time: 3 hours**

**Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

\*\*\*\*\*

1. (a) Discuss the applications of the following feeding devices:
  - i. Balanced feeders
  - ii. Vibratory feeders(b) What is mean conveying velocity ? How it is estimated ? Explain briefly .[8+8]
2. (a) Explain the principle and working of reciprocating tube hopper type mechanical feeder with the help of neat sketch.  
(b) Explain the purpose of using orienting devices in the automated assembly system.[10+6]
3. (a) Explain the factors which decides the selection of most appropriate type of transport system.  
(b) Distinguish between synchronons and asynchronons transfer mechanisms. [8+8]
4. (a) Discuss the general rules to be followed while designing the parts for high speed feeding and orienting systems.  
(b) How do we analyse the automatic assembly system ? Briefly explain. [8+8]
5. (a) Discuss the different assembly fits used in the design of manual assembly process.  
(b) Explain the various systems used for handling the parts in the manual assembly system.[8+8]
6. (a) Explain the development of DFA methodology and discuss the applications of DFA methodology.  
(b) What are the difficulties of parts insertion and fastening in the manual assembly system?[10+6]
7. (a) What is indexing machine ? How they are classified ? Explain any one indexing machine with the help of neat sketch.  
(b) Explain the factors to reduce the machine downtime.[10+6]
8. Write short notes on the following:
  - (a) Load sensitivity
  - (b) Indexing mechanism

(c) Product design for robot assembly

[5+5+6]

\*\*\*\*\*