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B.E./B.Tech. (FT) DEGREE END SEMESTER EXAMINATION APRIL /MAY 2011

INDUSTRIAL ENGINEERING BRANCH

VII SEMESTER

IE471 –Advanced Manufacturing Systems

(REGULATION 2004)

Time: 3 hr

Max Marks: 100

Answer All Questions

PART 'A' (10 x 2 = 20 Mark)

1. What are the applications of transformations?
2. What is meant by homogeneous transformation?
3. Give some applications of rapid prototyping.
4. Compare sequential and concurrent engineering.
5. What are seven elements that address the elimination of waste?
6. Give difference between pull and push production system
7. What are the advantages of forming part families?
8. Write down the attributes of part classification and coding system?
9. What do you mean by virtual manufacturing?
10. What is difference between virtual environment and computer centered systems?

PART 'B' (5 x 16 = 80 Marks)

11. (a). Use Bresenham's algorithm to develop a circle of radius 9. Generate all the points on the circle.
12. (a). Explain in detail the variant and generative approaches of process planning.
Or
(b). What are the various product design objectives available. Give the guidelines and advantages of design for manufacturing and assembly.
13. (a). Explain implementation of pull production system using Kanban with neat sketch
Or
(b). How should one reorganize his/her production operation for Agility
14. (a). Explain the steps involved in production flow analysis in detail.
(Or)
(b). An FMS consist of 4 stations and load/unload station. Station 1 loads and unloads part from the FMS using two servers. Station 2 performs milling operation with 3 servers. Station 3 performs drilling operation with 2 servers. Station 4 is inspection station with 1 server. The machines are connected by a part handling system that has two servers and a mean transport time of 3.5 min. The FMS produces 4 parts A, B, C, D whose part mix

and operation times are given in the table. Determine the bottle neck stations and performances measures.

Part	Part Mix	Operation	Description	Station	Process time	Frequency
A	0.1	1	Load	1	4	1
		2	Mill	2	20	1
		3	Drill	3	15	1
		4	Inspect	4	12	0.5
		5	Unload	1	2	1
B	0.2	1	Load	1	4	1
		2	Drill	3	16	1
		3	Mill	2	25	1
		4	Drill	3	14	1
		5	Inspect	4	15	0.2
		6	Unload	1	2	1
C	0.3	1	Load	1	4	1
		2	Drill	3	23	1
		3	Inspect	4	8	0.5
		4	Unload	1	2	1
D	0.4	1	Load	1	4	1
		2	Mill	2	30	1
		3	Inspect	4	12	0.333
		4	Unload	1	2	1

15. (a). Explain in detail the representative applications of virtual reality in modern manufacturing world.

(Or)

(b). Describe the simulation techniques available for generating the Virtual Environment.