Code No: D0405, D3304 **R09**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
M.TECH II - SEMESTER EXAMINATIONS, APRIL/MAY 2012
PRODUCTION AND OPERATIONS MANAGEMENT
(COMMON TO CAD-CAM, ADVANCED MANUFACTURING SYSTEMS)

Time: 3hours **Max. Marks: 60**

Answer any five questions
All questions carry equal marks

\- - -

1.a) State the functions of Production Operations Manager.
b) Explain the role of POM in the present scenario.

2.a) What is meant by Simplification? Explain its importance in product design.
b) Explain various approaches for process selection.

3.a) Explain various phases of value analysis with a suitable example.
b) State the objectives of value analysis.

4. Company wishes to produce 480 units per eight hour a day. The tasks, task times and precedence requirements necessary to produce the toys are given below:

Task	Time(sec)	Predecessors
A	23	-
B	28	A
C	14	B,D
D	20	A
E	15	A
F	17	D,E
G	24	C,F
H	15	G

a) Compute the cycle time it can have if it wants to produce 480 units of product per eight hour a day.
b) Compute the theoretical minimum number of work stations needed.
c) Using the Ranked Positional Weight Method; determine the minimum number of workstations showing which tasks are to be assigned to each work station.
d) Compute the efficiency and delay of the production line.

5.a) Explain various objectives of aggregate planning.
b) Vultex Fibers produces a line of sweat clothes that exhibits a varying demand pattern. Given the following demand forecast, production costs and constraints, design a production plan for Vultes using the transportation model. Also calculate the cost of production plan.

Period	**Demand**
September	100
October	130
November	200
December	300

Max. Regular production 100 units/month
Max. Overtime production 50 units/month
Max.Subcontracting 50 units/month
Regular production costs Rs.10/unit
Overtime production cost Rs.25/unit

Subcontracting cost Rs.35/unit
Inventory holding costs Rs.5/unit/month
Beginning inventory 0.

6. Suppose a company produces a type of desk that has the BOM given below. The desk is made by assembling two drawers, two handles, one drawer frame, and two legs into a drawer module. Then two drawer modules, desk back and a desk top are assembled into a desk.

Level No	**Item description**	**No.Required**	**Lead Time(Weeks)**
00	Desk		1
01	Desk top	1	2
01	Desk back	1	1
01	Leg/drawer module	2	1
02	Drawer frame	1	1
02	Desk legs	2	1
02	Drawers	2	2
02	Handles	2	2

For the following desk requirements, construct
a) the material requirement plans for the desk and b) Desk top and Desk back.

Week	1	2	3	4	5	6	7	8	9	10
Requirement	-	-	-	-	20	0	50	0	0	30

7. Use graphical method to minimize the time required to process the following jobs on the machines i.e for each machine specify the job which should be done first. Also calculate the total elapsed time to complete both jobs

Job 1	Sequence:	A	B	C	D	E
	Time(hrs):	6	8	4	12	4
Job 2	Sequence:	B	C	A	D	E
	Time(hrs):	10	8	6	4	12

8. The time estimates (in weeks) for the activities of a P.E.R.T network are given below:

Activity	Optimistic Time	Most likely time	Pessimistic time
1-2	1	1	7
1-3	1	4	7
1-4	2	2	8
2-5	1	1	1
3-5	2	5	14
4-6	2	5	8
5-6	3	6	15

a) Draw the network.
b) Determine the critical path and expected time to complete the project.
c) If the project due date is 19 weeks , what is the probability of meeting the due date.

****