Veer Surendra Sai University of Technology, Burla
Mid-term Examination-2016
B.Tech 6th Semester, Production Engineering
Subject: Production and Operations Management (POM)

(Answer any Four including Q. No 1 which is compulsory)

Full Marks: 20 **Time: 2 Hours**

1. a) Distinguish between manufacturing operations and service operations.
   b) Mention the different types of production system with appropriate plant layout.
   c) When causal forecasting method is used?
   d) What is the importance of dummy activity in project network analysis?
   e) How to select smoothing coefficient for exponential smoothing? (5x1)

2. a) What is meant by product life cycle and value engineering? Explain briefly.
   b) What is job shop production? Discuss its characteristics, advantages and limitations. (2.5+2.5)

3. a) Why seasonal variations are important for sales forecast? Compare moving average and exponential smoothing method for sales forecasting.
   b) An electrical contractor's records during the last five weeks indicate the number of job requests:

Week:	1	2	3	4	5
Requests:	20	22	18	21	22

Predict the number of requests for week 6 using each of these methods:
   i) A four-period moving average
   ii) Exponential smoothing with a smoothing constant of .30. Use 20 for week 2 forecast.
   iii) A weighted moving average using weights of 0.6 for the latest month, 0.3 and 0.1 for the other months respectively. (2.5+2.5)

4. a) A small project composed of time activities whose time estimates are given below.

Activity	A	B	C	D	E	F	G	H	I
Optimistic time (min)	2	2	4	2	2	3	2	5	3
Most likely time (min)	2	5	4	2	5	6	5	8	6
Pessimistic time (min)	8	8	10	2	14	15	8	11	15

Activity A, B and C can start simultaneously. Activity D follows activity A, while E follows B. Activity D & E are followed by activity G, while F depends on C. H depends

on D & E, while I depend on F & G. Construct the network using AOA method. Find the expected duration and variance of each activity. Calculate the slack of each event. Find critical path and expected project duration.

b) If the project due date is 28 days, what is the probability of that meeting due date? What should be the project duration for the probability of completion of 95%? (Take Z=1.65 at 95% probability) (2.5+2.5)

5. a) What do you understand by project crashing? Develop the network using activity on arrow (AOA) method for a project with following activities and immediate predecessors. Assume indirect cost per day as Rs.70.

Activity	Immediate predecessor	Normal time (day)	Normal cost (Rs.)	Crash time (day)	Crash cost (Rs.)
A	--	8	100	6	200
B	--	4	150	2	350
C	A	10	50	1	90
D	A	2	100	5	400
E	B	5	100	1	200
F	D,E	3	80	1	100

Find the critical path, normal project duration and project cost.

b) Determine the optimum project duration and corresponding total project cost. (2.5+2.5)

6. Write short notes on (any Two)

a) Role of GT in FMS

b) Make or buy Decision

c) Forecasting errors

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