

GUJARAT TECHNOLOGICAL UNIVERSITY**MBA. Sem-II Remedial Examination December 2010****Subject code: 820006****Subject Name: Production and Operations Management****Date: 23 /12 /2010****Time: 10.30 am – 01.00 pm****Total Marks: 70****Instructions:**

- 1. Attempt all questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**

- Q.1 (a)** Define operations management. Describe input-transformation-output relationship in an automobile factory, a restaurant, and a super market. **07**
- (b)** List the major reasons for and against locating a new apparel manufacturing plant into a city. **07**

- Q.2 (a)** Define costs associated with inventory. **07**
Consider the data pertaining to purchase of a component as given below for a small manufacturing organization:
- Annual demand- 1200 units
 - Cost of ordering- Rs.15 per order
 - Cost of holding inventory- Rs.2.5per unit per year
 - Price- Rs. 25 per unit
 - Average working days in year- 365
 - Lead time- 7 days

Calculate (i) EOQ, (ii) reorder point, and (iii) total annual cost associated to inventory.

- (b)** State the advantage of exponential smoothing method of forecasting. **07**
Consider following data for a product having trends in demand given as under:
- Initial exponentially smoothed forecast for period t- 120 units
 - Exponentially smoothed trend for period t- 12 units
 - Alpha- 0.2 and Delta- 0.28

If actual demand was observed to be 145 against the forecast of 120, calculate (i) the forecast and (ii) trend for next period.

OR

- (b)** Explain the three strategies in aggregate planning. Distinguish between pure and mixed strategies. What are the four major costs associated with these strategies? **07**

- Q.3 (a)** “Project control should always focus on the critical path”- critically examine the statement. **07**
- (b)** Define sequencing. State ‘shortest processing time’ and ‘earliest due date’ priority sequencing rules. **07**
For the data given as under, calculate (i) flow time, (ii) total flow time and (iii) mean flow time using above sequencing rules.

Job (as per arrival if the orders)	Processing Time (days)	Due Dates (day)
A	5	10
B	6	8
C	4	9

OR

Q.3 (a) The data for a project is collected as shown here under: 07

Activity	Preceding activities	Time (days) required		Cost Rs.	
		Normal	Crash	Normal	Crash
A	-	6	4	13000	14000
B	A	4	3	10000	11000
C	A	5	3	11000	12000
D	B	7	5	13000	16000
E	B,C	2	2	8000	8000
F	C	4	3	10000	13000
G	E, F	5	4	14000	19000
H	D, E	6	4	12000	17000
I	H, G	8	5	18000	24000

(i) Draw the project network and show critical path. (ii) Calculate estimated project completion time. (iii) To crash the project by three weeks, which activities should be crashed and what shall be the cost of crashing?

(b) What do you understand by 'shop floor control'? What are its functions? Explain Gantt chart as a tool for shop floor control. 07

Q.4 (a) What is 'line structure' in waiting lines? Explain single channel- single phase, multi channel- single phase and multi channel- multiphase line structures. 07

(b) Define supply chain management. Explain the recent changes in business environment which made supply chain management highly important. 07

OR

Q.4 (a) With reference to supply chain strategy, explain the concept of 'Bull Whip Effect'. Compare the efficient supply chains v/s responsive supply chains. 07

(b) List the applications of waiting line management techniques. Consider following data regarding a waiting line problem. 07

A university is considering opening a fee collection counter at university canteen. The student's arrival rate is estimated as 12 per hour. The estimated average service time per student is 4 minutes. Assume arrival according to Poisson and service according to Exponential distribution. Calculate

- Average utilization of counter clerk
- Average number of students in waiting line
- Average number of students in the waiting line system
- Average time for which a student will wait in waiting line
- Average waiting time in the system, including service time.

Q.5 (a) Discuss the contribution of Deming, Juran and Crosby in the field of quality. 07

(b) Explain the pull approach of JIT manufacturing. Compare it with conventional push approach. 07

OR

Q.5 (a) Briefly explain the seven elements to achieve waste elimination in JIT. 07

(b) Draw the 'operating characteristics' curve and explain 'producer's risk' and 'consumer's risk'. 07
