Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY

MBA Semester –II Examination Dec. - 2011

Subject code: 820006 **Date: 19/12/2011**

Subject Name: Production and Operations Management

Time: 10.30 am – 01.30 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 the following terms: **07**

(i) Enterprise Resource Planning
(ii) Flexible Manufacturing System
(iii) Lean Manufacturing
(iv) 5S Principle of Japanese Management
(v) Kaizen
(vi) TQM
(vii) Poka-yoke method

(b) What do you mean by 'Operations Management'? Explain the history of operations management and how it has evolved to the present state. **07**

Q.2 **(a)** As a project manager of a large petro-chemicals refinery, how will you select the appropriate location of the plant? Discuss the various factors affecting your decision. **07**

(b) Discuss the Kalpan and Norton's Generic strategy model. **07**

OR

(b) Explain in detail the concept of concurrent engineering and how it is better than traditional 'silo' type of engineering. **07**

Q.3 **(a)** Answer the following: **07**

(i) What do we mean by the term 'JIT'? Explain the concept.
(ii) What is MRP? Explain its application.

(b) What are the techniques of Inventory Management under the independent demand scenario? **07**

OR

Q.3 **(a)** Discuss the difference between Intermittent and Continuous Manufacturing. **07**

(b) Discuss the concept of FMS in detail. **07**

Q.4 **(a)** Assume that the BRTS extension project in Chandkheda area of Ahmedabad has been defined to contain the following major activities, along with their time estimates for completion: **07**

Activity	Time estimates (months)			Immediate predecessor
	a	m	b	
A – Tender approval	1	4	7	-
B – Allocation of contractors	2	6	7	A
C – Demolition of illegal structures	3	4	6	A,D
D – Relocating sewage pipes and other utilities	6	12	14	A
E – leveling and preparation of main roads	3	6	12	D
F – Construction of BRTS corridor and bus stands	6	8	16	B,C
G – Installation of Lamps and other utilities	1	5	6	E,F

a. Calculate the expected time and variance for each activity
b. Draw the network diagram
c. Calculate the early start, early finish times and late start, late finish times
d. Show the critical path
e. What is the probability that the BRTS buses can start running in 34 weeks?

(b) What do you mean by job sequencing? Explain any 5 methods of job sequencing with examples. **07**

OR

Q.4 **(a)** For the following project, draw the network diagram, show the critical path and crash the project by three weeks. **07**

Activity	Required Time (Weeks)		Cost		Immediate predecessor
	Normal	Crash	Normal	Crash	
A	4	2	10000	11000	-
B	3	2	6000	9000	A
C	2	1	4000	6000	A
D	5	3	14000	18000	B
E	1	1	9000	9000	B,C
F	3	2	7000	8000	C
G	4	2	13000	25000	E,F
H	4	1	11000	18000	D,E
I	6	5	20000	29000	H,G

(b) Explain the concept of "Demand Forecasting". **07**

Q.5 **(a)** The Continental Bank is considering opening a drive-through window for customer service. Management estimates that customers will arrive at the rate of 15 per hour. The teller who will staff the window can service customers at the rate of one every four minutes. **07**

Assuming Poisson arrivals and exponential service, find:

(i) Utilization of the teller
(ii) Average number in the waiting line
(iii) Average number in the system
(iv) Average waiting time in line
(v) Average waiting time in the system, including service

(b) Explain the queuing system in detail. Write the formulae for the two major types of distribution of arrivals. **07**

OR

Q5 **(a)** Oriental Bank has a single automated teller machine (ATM) located in a shopping mall. Data were collected during a period of peak usage on Saturday afternoon, and it was found that the average time between customer arrivals is 2.5 mins with a standard deviation of 0.8 mins. It also was found that it takes an average of 1.9 mins for a customer to complete a transaction with a standard deviation of 2 mins. Approximately how long will customers need to wait in line during the peak usage period? **07**

(b) What is supply chain management? Explain the two concepts of measuring the supply chain performance viz. 'Inventory turnover' and 'weeks of supply' with relevant examples. **07**

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