Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
MBA– SEMESTER –II-EXAMINATION – WINTER-2023

Subject Code:4529205   **Date: 19-01-2024**
Subject Name: Production & Operations Management
Time: 02:30 PM TO 05:30 PM   **Total Marks: 70**
Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Use of simple calculators and non-programmable scientific calculators are permitted.**

Q.1 (a) Explain the following terms: **14**

    1.ISO

    2. Operation scheduling

    3. JIT

    4. EOQ

    5. Slack time

    6. Capacity planning

    7. Operation strategy

Q.2 (a) Explain product design process.   **07**

(b) If you are appointed as a production manager in a company than which are   **07**
the duties and responsibilities of yours and comment on the emerging role in
POM.

OR

(b) Business writer Tom Peters has suggested that in making process changes, we **07**
should "Try it, test it, and get on with it." How does this square with the
DMAIC/continuous improvement philosophy?

Q.3 (a) Discuss types of layout.   **07**

(b) The following table contains information regarding jobs those are to be   **07**
scheduled through one machine:

Job	Processing Time (Days)	Due Date
A	4	20
B	12	30
C	2	15
D	11	16
E	10	18
F	3	5
G	6	9

1. What is FCFS schedule?
2. What is SOT schedule?
3. What is STR schedule?
4. What is EDD schedule?
5. What are the mean flow times for each of the schedules above?

OR

(a) Explain types of production system in detail. **07**

(b) To complete the wing assembly for an experimental aircraft, Jim Gilbert has **07** laid out the seven major activities involved. These activities have been labeled A through G in the following table, which also shows their estimated completion time (in weeks) and immediate predecessors.
1. Draw network diagram.
2. Calculate ES, LS, EF, LF and slack

Activity	Expected time (in weeks)	Immediate Predecessors
A	2	-
B	3	-
C	5	A
D	9	B
E	5	C, D
F	5	D
G	2	E

Q.4 **(a)** Explain Master Production Schedule (MPS) with appropriate example. **07**

(b) Assume that at a bank teller window the customers arrive in their cars at the **07** average rate of twenty per hour according to a Poisson distribution. Assume also that the bank teller spends an average of two minutes per customer to complete a service, and the service time is exponentially distributed. Customers, who arrive from an infinite population, are served on a first-come-first-served basis, and there is no limit to possible queue length.

1. What value is the utilization factor?
2. What is the expected waiting time in the system per customer?
3. What is the mean number of customers waiting in the system?
4. What is the probability that at least three customers waiting in a queue?

OR

(a) Define PPC. Discuss production & operations management cycle. **07**

(b) For a single sampling plan in acceptance sampling [1000, 100 2], if AQL = 1% **07** and LTPD = 5%. Calculate producer and customer risk.

Q.5 Case study on

RELOCATION OF 'TATA NANO' MANUFACTURING PLANT

Site selection in India is often dominated by tax incentives provided by different State Governments. Many times, political reasons dominate the location decision of Government Projects; for example many Indian Railways Projects are located at a particular place due to political compulsions. One of the most talked about plant re-location problem of recent years is that of shifting of Tata Nano Plant from 'Singur' in West Bengal, India.

Tata Nano, an ambitious family car project from Tata Group, is aimed at providing world's cheapest car to the consumers. Its manufacturing facilities were originally set up in Singur to avail the financial subsidies, tax holidays, etc. Land availability and its low cost, cheap labor, raw material availability, etc. were other governing factors in site selection for the low-cost manufacturing.

Singur, a small village in the state of West Bengal, was selected as the site, which required 1000 acres of land. However, political disagreements started growing up soon from opposition political party and the hostility from local communities became unmanageable for Tata Group. Tata Motors eventually had to pullout its Rs. 2000 crore project from Singur despite the fact that it had already suffered a loss to the tune of about Rs. 500 crore.

Many other state governments came up with lucrative proposals to attract Tata Nano project after its relocation. States of Kerala, Jharkand, Orissa, Andhra Pradesh, Gujarat, and even countries like Sri Lanka came out with their attractive proposals. However, Sanand in Gujarat could make it because of various factors such as political stability, availability of economical land and labor, proximity to ports (benefits for both exports and imports), financial incentives like tax holiday for first 10 years, etc. According to Mr. Ratan Tata, "The group had opted for Gujarat because it had already lost a lot of time (in the Singur controversy) and urgency was the need of the day. We had an urgency to move to a new location; the reputation of Gujarat and the 'speed' at which provisions were made, forced us to opt for Gujarat". Sanand is located at a distance of 40 km from Ahmedabad. It is very close to ports like Rajkot as well as Mundra, which is an advantage for export.

There is no doubt that West Bengal's loss is Gujarat's gain. Tata's decision to relocate was based on minimization of the future losses and the salvation of the existing situation in the best possible manner. Captains of Indian Corporate world have learnt their lesson—without socio-political stability, industrial growth is a distant dream.

QUESTIONS

a) What were the major reasons for Tata's decision to start Nano factory at Singur and why was it relocated?   **07**
b) What is the latest status of Nano's production and distribution system?   **07**

OR

Q.5

a) Pick up five recent industrial projects. What were the criteria for facility location?   **07**
b) Why is Bangalore a preferred location for software companies in India?   **07**

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