Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MBA – SEMESTER 2 – EXAMINATION – SUMMER 2019

Subject Code:3529206 Date:16/05/2019

Subject Name: Production and Operations Management

Time: 10:30 AM To 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 Explain in brief / Define shortly . (14)

1. Explain term Six Sigma
2. Define Project Management
3. Define Robust Design
4. Differentiate between PERT Vs. CPM
5. Define Optimistic and Pessimistic time with reference to Project Management
6. Explain Usages of Gantt Chart
7. Define Total Quality Management , TQM

Q.2 **(a)** What is line balancing in Operations Management? Write a note on that with suitable examples. **(7)**

(b) Write a note on various Process design concepts involved with Manufacturing plants with suitable examples.

OR

Q.2 **(b)** Write a note on Various Key ISO standards being used in Indian Manufacturing systems specifically with respect to EHS . **(7)**

Q.3 **(a)** What is SQC (Statistical Quality Control) , explain role of control charts in Quality Controls . **(7)**

(**b**) Write a note on Centralization Vs. Decentralization of Authorities and Responsibilities with respect to operations management.

OR

Q.3 **(a)** Write a note on various Process layouts with suitable examples. **(7)**

(b) Write a note on Just in Time and Kanban Concepts of Lean Manufacturing **(7)**

Q.4 **For a given Project data is as follows, Answer the questions given below using This data.**

Activity	Required Predecessor(s)	Time estimate		
		a	M	b
A	-	10	11	12
B	A	6	10	14
C	A	5	8	11
D	A	1	5	9
E	B	3	5	13
F	C	4	9	14
G	D	1	2	3
H	E,F	3	7	11
I	G,H	9	12	15
J	G,H	3	5	7

Q.4 (a) Calculate Effective Time Te for all the activities. **(7)**

(b) Draw a network diagram with reference to effective time Te **(7)**

OR

Q.4 (a) Calculate Effective Time Variance (Sigma Square) for all the activities using the above data given in Q.4 above. **(7)**

(b) Calculate the **Z value** using variance of the critical path if project needs to be completed in 50 days using above data given in Q.4. **(7)**

Q.5 **Read the case below and answer the questions at the end of the case.** **(14)**

A leading Air-conditioning manufacturing company ABC Ltd. decided to have their new manufacturing plant at Union Territory of Dadra and Nagar Haveli in the year 1994 as Government declare the Union Territory as Sales Tax Free Zone and gave benefit of wavier of Central Sales Tax of (around15%) for 15 years from the date of establishment. However other factors cost them heavily on and after the establishment. As a result of which the over all cost benefit in manufacturing after establishment was nearly about 6 to 7% only instead 15% expected. However 6 % reduction in manufacturing cost gave sizable advantage to the company in dropping sales price as a result of which the sales of the product grew up by around 20% in next three years with the improved margins.

Company has been manufacturing consumer durable air conditioning products like window air conditioners and split air conditioners at Dadra plant. There are more than 10 different competitors in the segment from the companies of Japan , USA , South Korea , China etc. The market is also having unorganized non branded players present in each part of the country , who all takes away around 15% of the total business. Competitive revelry is extremely high in the market and each marginal rupee saved is rupee earned is the situation for the manufacturers.

Year 2017 turned very challenging for all the organizations in the country as ruling Government violated all the different taxes applicable with business and introduced new single tax , known as GST (Goods and Service Tax). GST is now applicable to all the manufactures equally irrespective of their location or situation. This has taken away now the price competitive advantage ABC Ltd had over it's competitor players. On the one hand domestic air conditioning business was under constant pressure of margins and on the other hand post GST ABC Ltd manufacturing cost have gone up by 6 to 8% and the prices are now challenged in the market by the competitors. These created worry some situation for the top management of the company and constant conflicts were prevailing between sales team and production team.

After loosing few more weeks as a part of conflict resolution mechanism , board of governor of the company arrived at a conclusion that it is advisable to shift the plant to South India were 50% of the companies product are shipped to achieve cost benefit in the transportation. Top management estimated that they will have a major savings in the logistics and they will be able to drop the cost of production by around 3 to 5% by relocating the plant. Company estimates that the payback of the relocation cost will be within three years.

After loosing sizable time and resources , company decided to shift the manufacturing facility to another state (Tamil Nadu). After doing so, the major challenge company's board of director were facing that of , having production started on planned date as they lost sizable time. Project head was guided to use Project management tool to recover the lost time of 2 months in shifting and relocation. Second and important challenge for the company officials was to maintain the consistency in quality – in spite of expediting manufacturing plant execution process and dropping the cost at every stage.

Keeping the case situation in mind answer the following questions.

a) According to you , what all factors company ABC Ltd. could have considered before the establishment of plant at Sales tax free zone of Dadra and Nagar Haveli ? Was that the correct decision of the company to locate plant there?
b) What competitive advantage M/s ABC Ltd had over it's competitors prior to GST applicability ? Now post GST which are the major challenges company is facing ?

OR

a) What alternative solution Board of Governance of the ABC Ltd. found to reduce the cost of manufacturing. Evaluate the decision is that sustainable ?

b) Which are the major challenges company will be facing in relocating plant and after relocation of plants ? How Project Management will help in recovering the time lost?

****