

**GUJARAT TECHNOLOGICAL UNIVERSITY****MBA – SEMESTER –II-EXAMINATION – WINTER-2022****Subject Code: 1529605****Date: 17/12/2022****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.

- Q.1** Definitions / terms / explanations / short questions based on concepts of theory/practical **14**
- a) Concurrent Engineering Vs Reverse Engineering
  - b) Define Cover time with respect to Inventory management
  - c) Float Vs Slack in Projects
  - d) Optimistic Time
  - e) Trade Barriers
  - f) Design Capacity
  - g) Just In Time

- Q.2** (a) Write a note on four important needs of capacity planning with proper example of your choice, also explain ways of increasing capacity **07**
- (b) M/s Zuber India Pvt Ltd. is France based MNC wants to locate it's chemical plant in India, What factors they will need to consider while establishing manufacturing units? **07**

**OR**

- (b) Write a note on Process design and types of processes, Which process will be useful for manufacturing of products like bath tubs and buckets in bathroom? What will be advantages and disadvantages of the same? **07**
- Q.3** (a) For a special component outsourced to a vendor and used in compressor manufacturing used by M/s Emerson technologies, Following data is available. **07**

Annual Demand : 600000 Units  
 Purchase quantity : 200000 Units  
 Safety stock : 100000 Units

The ordering cost is Rs. 2000 per order, irrespective of number of orders. The price of component is Rs. 100/- per unit and annual holding cost is 20% of the value of component used. Assuming 250 working days per year calculate following

- 1) Average inventory level including safety stock
  - 2) Cover time
  - 3) Reorder point if lead time is 20 days
  - 4) Total inventory cost with purchase quantity of 100000 units
- (b) For the given data in above sum Q. 3(a) company wants to compare total cost of inventory with present purchase system Vs EOQ model. Therefore calculate following **07**
- 1) EOQ
  - 2) Total inventory cost as per EOQ.
  - 3) Inventory turn over with actual given purchase quantity
  - 4) Inventory turn over as per EOQ order.

Compare total cost with both the modes , present purchase system and as per EOQ system.

**OR**

- Q.3** (a) For a particular project data set of activities are given as under. **07**

Activity	Time – Number of Days	Required Predecessor (s)
A	2	-
B	3	-
C	4	-
D	2	A
E	2	B
F	5	B
G	7	C
H	2	D,E
I	3	F ,G
J	2	H,I

Draw a network diagram for the above project and identify Critical path. Also explain what does critical path means? How it can help in understanding the project better.

- (b) For the above data given in Q 3 (a) calculate , Early start , Early finish points and Late Start , Late finish points for the given project and also calculate Total Float and Total Slack in the given project. **07**

- Q.4** (a) Explain in brief the use of SQC, state the importance of Control charts and How control limits will be calculated for the X double bar chart from the Standard deviation and Range? **07**

Explain Six sigma control limits in brief and its importance.

- (b) What is Project Crashing? How crashing will help the company in financial and non financial value addition in the project management? **07**

**OR**

- Q.4** (a) Briefly explain 7 Quality Control Tools and it's suitable application and their role in quality improvements. State the philosophy of quality gurus and their perspectives in brief. **07**

- (b) Which are important ISO Series for the Production plant company must consider ? **07**  
Write a note on scope, application, advantages and challenges in implementation of ISO 9000

**Q.5**

**CASE STUDY: Kamraj Industries Ltd (M/s KIL)**

Ms.Swati Desai is a bright individual who was being groomed for the Chief Engineer's position in a medium-sized manufacturing firm M/s M/s Kamraj Industries Ltd. With their growth and expansion in business M/s KIL has appointed , consulting firm M/s GREEN TECH Pvt Ltd. as their Business Strategy and Financial and Developer consultant. After her first year as Executive Engineer, for Ms Swati, the top management of company were starting to include her in major company functions. For instance, today she was attending the monthly financial statement summary given at a prestigious consulting firm M/s GREEN TECH Pvt Ltd. During the meeting, She was intrigued at how all the financial data are read , referred and analyzed. Techno commercial data , what she had been accumulating was transformed by the consultant into revealing charts and graphs.

Ms.Swati was generally optimistic about the session and the company's future until the consultant started talking about the new manufacturing plant the company was adding to the current location and the costs per unit of the chemically plated products it produced. At that time, Mr.Shardul Shah (the President) and Ramesh (the chemical engineer) started talking about waste treatment and disposal problems. Mr. Ramesh mentioned that the current waste facilities were not adequate to handle the waste products that would be created by the "ultramodern" new plant as the present plant is being also served the notice by various controlling body which monitor pollution controls. Mr. Shardul mentioned that the company could not grab certain large orders as plant does not have any accreditation on environmental standards . Besides, He also mentioned that, quality of the product has been not up to the consistent standards.

Ms Swati's immediate super ordinate and head of operations Mr. Nagesh , informed that, the need of an hour is for implementation of certain professional production and operations management concepts for the improvement of quality , productivity and to control the pollution generated by the organization. They also viewed that the estimated cost per unit would be increased if the waste treatment facilities were upgraded according to recently specified standards. Mr. Shardul , however mentioned that since their closest competitors and other industry players did not have the waste treatment facilities at all, which their plant has - already has at their firm, any more investments further in that directions will lead to increase in price and it is not favorable, therefore he was not in favor of any more expenditures in any of these areas like new production concepts implementation or any accreditation or certification or auditing cost in this area. Most managers at this meeting resoundingly agreed with, and business continued on to another topic.

It was an unpleasant support for Ms Swati who was environment engineer and Management graduate too , and aggressively in favor of change and who wanted higher operational efficiency through professionalism and also wanted to be concerned for environment with proper accreditation and certification.

Ms Swati, however was given a chance to work and prepare a suggestions & plan for betterment of the plant what she had in mind keeping cost in mind.

**Q 5**

- (a) Help Ms.Swati in drawing up the plan what concepts she will have to implement to improve the productivity and efficiency of the plant as well as suggest her the ways to improve quality.

**07**

- (b) How company can earn better control on environmental standards and what type of auditing or accreditation company will have to go for the preliminary level as well as advance levels? **07**

**OR**

- Q.5** (a) Critically evaluate the views of Mr. Shardul , who thinks of not to add any cost in upgrading environment standards as it may add to production cost and contradictory views of Ms Swati. **07**
- (b) Help Ms Swati in Preparing a “Mission” of the production plant and quality policy which she thinks is the best approach to convey her views considering all stakeholders interest and keeping environmental concerns in mind. **07**

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