



Kasarani Campus
Off Thika Road
P. O. Box 49274, 00101
NAIROBI
Westlands Campus
Pamstech House
Woodvale Grove
Tel. 4442212
Fax: 4444175

KIRIRI WOMENS' UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATIONS, 2024/2025 ACADEMIC YEAR
FIRST YEAR, SECOND SEMESTER EXAMINATION
FOR MASTER IN BUSINESS ADMINISTRATION
KOM 3112 OPERATIONS MANAGEMENT PRACTICE

Date: 19TH AUGUST, 2024
Time: 11:00 AM – 2:00 PM

INSTRUCTIONS TO CANDIDATES

ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER THREE QUESTIONS

QUESTION ONE: COMPULSORY (40 MARKS)

Read the case study below and answer the questions that follow

ABC Ltd. is a manufacturing company engaged in the manufacturing of valves. They have been in the business for last 3 years and have been manufacturing only one type of valves. They started their business initially with sales of 10,000 valves per month and now they have grown the volume to about 50,000 valves per month. They have been buying all the raw material for the valve and were doing all the manufacturing in house. Now they have established themselves in the market and are planning to expand and produce different varieties of valves. They have their plant in the main city and the total area of the plant is 50,000 sq. ft. Now if they want to expand and continue doing all the activities of manufacturing of all the varieties in house, they would need another 50,000 sq.ft. of the area. In the recent times, the land prices in the area have more than doubled in the last 3 years and still land is available with great difficulty. Mr. Mohan is the production head of ABC Ltd. and has been successful with the production and the level is continuously increasing. But in recent times, he is facing the problem of quality complaints which have gone up from average 0.2 % in previous 2 years to 0.5 % this year. Also, he is finding that there is a high level of dissatisfaction among the workers regarding workload as well as salary levels. The workers are regularly complaining about the over work.

Although, Mr. Mohan has found that the workers have been spending lot of time on tea breaks, lunch breaks and even in between the production spending lot of time talking to each other. But, due to insufficient workers and staff, he is unable to take strict action and the workers are taking advantage of this situation. For completing the work and delivering the products timely, he has to employ workers on overtime and his overtime cost has also increased 3 times. Mr. Mohan is worried about the new expansion plan of the management and is worried where the new workers would come from as he is already finding shortage of workers for the existing job. He has requested the management not to go for expansion immediately and look at improving and consolidating the existing set up. He has sent his request to Mr. S. Kumar Director – Operations.

Required:

- From the above case identify the challenges facing operations management **(6 Marks)**
- Establish the various elements of production planning and control which the director of operations can reengineer to cut cost in the company **(6 Marks)**
- Explain to the director of operations at least **THREE** forms of customer-introduced variability that he should consider in order to minimize customer complains **(6 Marks)**
- Why is the ABC company facing challenges in expansion and what are your recommendations? **(6 Marks)**
- Summarize the Statistical process control techniques that the director of operations can use to determine which part /stage of the production process is leading to customer quality complains **(6 Marks)**

- f) The operations director has come to you for advice on the key Areas of Cost Reduction he should prioritize on. Provide an outline of this areas **(6 Marks)**
- g) Describe how Just-In-Time (JIT) manufacturing technique can be customized to fit the operations of ABC Company in order to increase efficiency **(4 Marks)**

QUESTION TWO:(20 MARKS)

- a) You are given below the values of sample mean (\bar{X}) and the range (R) for ten samples of size 5 each with the following control chart constraint: $n = 5$, $A_2 = 0.58$, $D_3 = 0$ and $D_4 = 2.115$

Sample number	1	2	3	4	5	6	7	8	9	10
\bar{X}	43	49	37	44	45	37	51	46	43	47
R	5	6	5	7	7	4	8	6	4	6

- b) Draw a control chart and advice on the state of control of the process. **(8 Marks)**
- c) Highlight the objectives of production planning and control **(7 Marks)**
- d) C) Discuss the procedure for capacity planning **(5 Marks)**

QUESTION THREE: (20 MARKS)

- (a) Quality is one of the factors that determine the long run success of an organization. Explain factors that determine the quality of manufactured product. **(8 Marks)**
- (b) Explain the objectives of equipment maintenance and replacement **(6 Marks)**
- (c) You have been consulted as an expert in operation management to advice Mabati Rolling Mills on how to reduce the cost of production. Discuss the techniques of Cost Control that you will include in your presentation **(6 Marks)**

QUESTION FOUR: (20 MARKS)

- a) The challenges of operations management are overruled by different strategies to convert the challenges into the strengths. In support of his statement, identify and explain the different strategies to overcome the challenges in operation management **(8 Marks)**
- b) For a certain type of light bulbs (1000 Nos.), following mortality rates have been observed:

Week	1	2	3	4	5
Percent failing	10	25	50	80	100

Each bulb costs Rs.10 to replace an individual bulb on failure. If all bulbs were replaced at the same time in group it would cost Rs. 4 per bulb. It is under proposal to replace all bulbs at fixed intervals of time, whether or not the bulbs have burnt out. And also it is to continue replacing immediately burnt out bulbs. Determine the time interval at which all the bulbs should be replaced **(6 Marks)**

- c)A production system refers to how an organization organizes material flow using different process technologies. Highlight the major types of production systems **(6 Marks)**

QUESTION FIVE: (20 MARKS)

- a) Factory building is like skin and bones of a living body for an organization. It is for these reasons that the factory building acquires great importance. In support of the statement, discuss the factors you will consider for an Industrial Building **(8 Marks)**
- b) The process of operation management is similar for all types of products and services. Discuss the process **(6 Marks)**
- c) Inventory managers are always looking for ways to improve pricing and quality or to achieve greater efficiencies. Explain to the managers the benefit of ABC analysis **(6 Marks)**