

**OPERATIONS MANAGEMENT**

(For students admitted in 2014 and 2015 only)

Time: 3 hours

Max. Marks: 60

All questions carry equal marks

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**SECTION – A**

Answer the following: (05 X 10 = 50 Marks)

- 1 Discuss the historical development of production and operations management.  
**OR**
- 2 Explain the process of product design used in production and operations management.
- 3 Why is location decision important for a business? What are the steps to be followed for deciding a correct location for operations?  
**OR**
- 4 Describe the methods for optimizing the layout of a shop floor in operations. Why is it important?
- 5 Explain any three rules used for production scheduling with examples.  
**OR**
- 6 Discuss the various production control methods used in operations.
- 7 Outline the significance of method study. What are the steps to be followed in method study?  
**OR**
- 8 Describe the various standards mentioned in the ISO 9000 series.
- 9 What is productivity? How is it different from emphasis on higher outputs? What are the different types of productivity factors used in operations?  
**OR**
- 10 Discuss the management total productivity model used in operations.

**SECTION – B**

(Compulsory Question)

01 X 10 = 10 Marks

11 **Case study:**

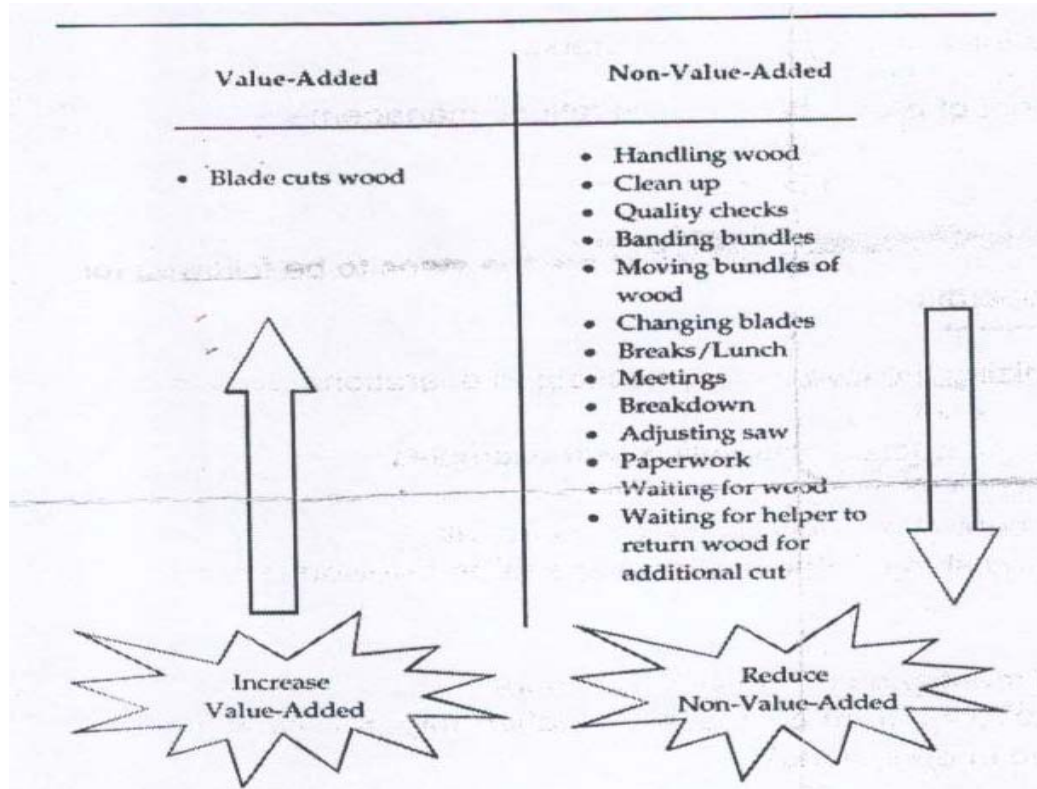
**Improving operational availability at the Cedar works:**

**Source: Toyota way field book.**

The Cedar works produces wood birdhouses. The first step of the operation involves slicing raw wood stock into thin slabs using a band saw. As a result of a sharp increase in demand, this operation was running seven days a week, 24 hours a day, in an attempt to maintain production levels. After four hours of standing in the circle, it was estimated, however, that only about 30 percent of the saw capacity was being utilized. The department manager, was incredulous. "That's crazy!" he said. "We're working 24/7! How can we get more out of this operation?" Having not had the opportunity to stand in the circle, he'd fallen into the trap of confusing "work" and "activity" with value-adding time, confusing the activities of the person and the machine. To improve his understanding, we first reviewed the concept of the seven forms of waste (non-value-adding) and value-adding activities. Beginning with the easier side of the comparison, we identified the value adding activity and agreed that the saw added value when the blade was cutting wood. We also agreed that there are other "necessary" activities performed; through they do not help achieve the end goal of cutting more wood. We then agreed that only when the blade is cutting wood is value truly added by the saw. Now the comparison was simple: On the value-added side we had "blade cuts wood", and on the non value-added side, "everything else".

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By standing in the circle and observing, we saw many situations when the blade was not cutting wood. This list was shared with the operators, who were asked to add any additional items that were not observed. We suggest standing in the circle at various times of the day and on multiple days to get a fairly complete understanding of the situation figure below shows a side-by-side comparison of value-added and non-value-added activities.



**Comparison of value added and non value added activities:**

It shows a typical situation for any operation. There will generally be few items on the value-added side and many on lost time opportunity by shifting from the non-value-added to the value-added side. From the non-value-added list we first focused on in-cycle losses-those occurring during the operation of the saw. The operators realized that simply changing the wood-handling method would increase the value-adding time nearly 25 percent. In addition, shifting activities that were currently performed "internally" (while the saw was stopped) to "external" (performed while the saw continues to add value) was borrowed from the quick changeover technique. These changes were easy to implement and the cost was minimal. Out-of-cycle losses were the secondary focus: primarily, reductions in time for blade change (quick changeover) and in clearing time. The blade time was reduced from 10 minutes per change (average two times per shift) to 2 minutes and cleanup time was reduced from 30 minutes to 15 minutes per shift.

Identify 5 concepts of operations management used in the above case.

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