

**VPM's**  
**DR VN BRIMS, Thane**  
**Programme: MMS (2013-15)**  
**Third Semester Examination October / November 2014**

Subject	Industrial Engineering Applications & Management (IEAM 03)		
MMS-III Operations		Marks	30 Marks
Roll No.		Duration	2 Hours
Total No. of Questions	5	Date	01.11.2014
Total No. of printed pages	2		

**Note: Q1 is compulsory and solve any TWO from the remaining FOUR questions.**

**Q1 – 10 Marks (Compulsory)**

**Case: Productivity Gains At Whirlpool**

Workers and management at Whirlpool Appliance's Benton Harbor plant in Michigan have set an example of how to achieve productivity gains, which has benefited not only the company and its stockholders, but also Whirlpool customers, and the workers themselves.

Things weren't always rosy at the plant. Productivity and quality weren't good. Neither were labor-management relations. Workers hid defective parts so management wouldn't find them, and when machines broke down, workers would simply sit down until sooner or later someone came to fix it. All that changed in the late 1980s. Faced with the possibility that the plant would be shut down, management and labor worked together to find a way to keep the plant open. The way was to increase productivity-producing more without using more resources.

Interestingly, the improvement in productivity didn't come by spending money on fancy machines. Rather, it was accomplished by placing more emphasis on quality. That was a shift from the old way, which emphasized volume, often at the expense of quality. To motivate workers, the company agreed to gain sharing, a plan that rewarded workers by increasing their pay for productivity increases.

The company overhauled the manufacturing process, and taught its workers how to improve quality. As quality improved, productivity went up because more of the output was good, and costs went down because of fewer defective parts that had to be scrapped or reworked. Costs of inventory also decreased, because fewer spare parts were needed to replace defective output, both at the factory and for warranty repairs. And workers have been able to see the connection between their efforts to improve quality and productivity.

Not only was Whirlpool able to use the productivity gains to increase workers' pay, it was also able to hold that lid on price increases and to funnel some of the savings into research.

**Questions:**

1. What were the two key things that Whirlpool management did to achieve productivity gains?
2. Who has benefited from the productivity gains?
3. How are productivity and quality related?
4. How can a company afford to pay it workers for productivity gains?

**Attempt Any Two from the Remaining Four Questions**

**Q2. Any two from (a) or (b) or (c) ————— (5x2) = 10 Marks**

- (a) Discuss briefly the functions of industrial engineering and the role it can play in raising industrial productivity
- (b) Define Industrial Engineering And Discuss Its Functions.
- (c) What Is The Relationship Of Industrial Engineering To Other Engineering Disciplines, To Business Administration, To The Social Sciences?

**Q3. Any two from (a) or (b) or (c) ————— (5x2) = 10 Marks**

- (a) Explain in brief Performance standard/indicator for IC-1 and IC-2.
- (b) Comment on how layout decisions are one of the key facts determining the long-run efficiency of operations?
- (c) Explain five key elements influencing warehouse layout planning.

**Q4. Any two from (a) or (b) or (c) ————— (5x2) = 10 Marks**

- (a) Give the list of various advantages of using PMTS systems over the ordinary time study.
- (b) Explain PMTS systems and briefly explain its applications.
- (c) What is Ergonomics? Highlight few of its application domains.

**Q5. Any two from (a) or (b) or (c) ————— (5x2) = 10 Marks**

- (a) Write a brief note on Organisation and Methods and the way to apply It.
- (b) What is white collar productivity? How workplace factors affecting employee performance.
- (c) What is productivity? Explain with an example how productivity is different from performance?