

VPM's
DR VN BRIMS, Thane
Programme: PGDM (14-16)
Fifth Semester Examination January 2015

Subject	World Class Manufacturing		
Roll No.		Marks	60 Marks
Total No. of Questions	7	Duration	3 Hours
Total No. of printed pages		Date	20-01-2016

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

Q1) Case Study

20 Marks

When Volkswagen AG decided to produce its new Beetle in Mexico, its goal was to transfer to that country the lean manufacturing techniques and supplier park concept employed at its SEAT subsidiary production facility in Martorell, Spain, one of the world's largest automotive production facilities in terms of daily output. The facility produces nearly 2000 cars daily in seven different models with the support of its pre-assembly supplier park located 2.2 kilometers from the factory. The challenge faced by Volkswagen was how to export quickly and efficiently this extremely effective just-in-time (JIT) supplier park model to Puebla, Mexico.

That's when Volkswagen invited Excel, the global logistics and supply chain services provider that designed, engineered, and now operates the SEAT Park, to work with them in Mexico. Excel had an established infrastructure in Mexico providing services to clients such as Procter & Gamble, which was expected to expedite the transfer process.

The SEAT Pre-Assembly Supplier Industrial Park in Spain was created near the factory to support its lean manufacturing strategy. Subassembly activities are carried out at the Park, guaranteeing JIT delivery and zero stocks at SEAT assembly lines. Twenty-five suppliers are located there, providing parts or subassemblies. Excel is responsible for primary transport from the component supplier's main plants to the Park, and also for warehousing, picking, subassembly and sequencing operations, and JIT deliveries to the SEAT assembly lines.

In January 1998, at Volkswagen's Mexican assembly plant in Puebla, Excel implemented the JIT sequencing operation; with limited modifications to the SEAT model. Currently, the Mexican plant produces more than 1600 vehicles daily including the Beetle and the Jetta. The operation provides parts and components to the assembly line with as little as one hour's notice. The Excel JIT sequencing operation is the cornerstone of a supplier industrial park that serves the Volkswagen assembly plant. Excel is responsible for the assembly, staging, and delivery of parts and components from more than a dozen suppliers in that industrial park to the assembly line. Parts delivery is scheduled to take place within 40 minutes of an order, with one car built every 40 minutes, 24 hours a day, 6 days per week. Parts are to be delivered directly to specific locations on the assembly line.

The end result is that Excel provides Volkswagen with expert logistics and supply chain management to support operations in a new, modular JIT manufacturing environment. Actually, this represented the first Volkswagen Mexico manufacturing park logistics operation to be managed by a single supply chain specialist. Overall, the involvement of Excel in Volkswagen's Puebla, Mexico operation demonstrates significant capability to transfer technology, human resources, and best practices on a global basis.

Questions:

- 1) What are the characteristics of the SEAT lean manufacturing model. (7 marks)
- 2) World class manufacturing encompasses activities beyond the shop floor activities. Explain in detail. (7 marks)
- 3) Outsourcing is an important model in world class manufacturing. Explain based on the above case study. (6 marks)

Attempt Any FOUR from the Remaining SIX Questions

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

- a) Process Design and Product/Service Design are interrelated. Explain.
- b) Write a note on types of KANBAN.
- c) Explain productivity measures.

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

- a) What are benefits of Lean Production.
- b) What is Flexible Manufacturing System and how does it work.
- c) Write a note on control charts and its use.

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

- a) Write a note on process mapping.
- b) What are benefits of Total Productive Maintenance.
- c) Explain the terms production and productivity.

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

- a) Write a note on 5S technique.
- b) Explain role of Training in Total Productive Maintenance.
- c) Explain batch production process in detail.

Q6) Any two from (a) or (b) or (c) ————— (5x2) = 10 Marks

- a) Write a note on JIT technique.
- b) What is the impact of less inventory and excess inventory on production process.
- c) Explain need of waste management in production process.

Q7) Any two from (a) or (b) or (c) ————— (5x2) = 10 Marks

- a) What is value equation and explain how value is getting added in an operation process.
- b) Explain key differences between manufacturing operations and service operations.
- c) Explain total productivity through SMED process