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Question Paper Code: 92012

M.E. DEGREE EXAMINATION, DECEMBER 2013.

Elective

CAD / CAM

01PCD519 - LEAN MANUFACTURING

(Regulation 2013)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. What are the four principles of lean production?
2. Define Lean Production.
3. State the different elements of standardized work.
4. What is Kaizen?
5. What is production smoothening?
6. How is inventory viewed in JIT philosophy?
7. State the concept of Jidoka.
8. What are the uses of Poka-Yoke system?
9. What is brainstorming?
10. List the duties of the Quality Circle Council.

PART – B (5 x 14 = 70 Marks)

11. (a) (i) Compare mass and lean production systems. (4)
- (ii) What are the different forms of waste? What are the traditional ways to minimize them? (10)

Or

- (b) (i) What circumstances necessitate lean production system? Why? (4)
(ii) What is meant by customer focus? Discuss with an example. (10)
12. (a) (i) How does U-shaped layout facilitate the use of multi-function operation? (4)
(ii) Discuss the concepts and benefits of 5S. (10)

Or

- (b) (i) What is Process Flow Chart? Explain briefly. (4)
(ii) Explain how flexible Manufacturing System assist to achieve the values of lean production. (10)
13. (a) (i) What is meant by the term modular design? How does it contribute to JIT? (4)
(ii) What are the three key elements in the JIT approach? Explain them briefly. (10)

Or

- (b) (i) What are the two types of kanban? List the details given in each of them. (4)
(ii) Explain with example the concept of Value Stream mapping. (10)
14. (a) (i) Why should automation be considered with human touch? (4)
(ii) What is meant by Zero Control? Explain with suitable illustration (10)

Or

- (b) (i) List out the issues in implementing Jidoka. (4)
(ii) What are the various means of achieving mistake proofing? Explain. (10)
15. (a) (i) What is meant by empowerment? State the conditions to be satisfied for empowered employment? (4)
(ii) List and explain the various concepts for achieving a motivated work force. (10)

Or

- (b) (i) State the purposes of suggestion programmes. Also explain the ground rules to be followed for the success of any suggestion programme. (4)
(ii) Discuss the different phases of Hoshin Planning System. (10)

PART – C (1 X 10 = 10 MARKS)

16. (a) A two workstation cell uses a kanban system with a container size of 10 units. The workstation makes eight different versions of the same product. Total annual demand is 150,000 parts. The first workstation has a maximum production rate of 250,000 parts per year, and the second workstation could produce 325,000 parts per year working full time. Internal setup is 0.0004 years at the first workstation and 0.0003 years at the second. External setup time is 0.0002 years per batch at each workstation. What batch size would you use for this work center? (10)

Or

- (b) Determine the impact on the cycle time, flow time, average inventory, process time, batch size, number of setups and total set up time for a 75% reduction in set up time and cost. Assume processing times are deterministic, and the system uses an order release policy that maintains two jobs in the system for each machine. (10)
