



**M.TECH DEGREE EXAMINATIONS: DEC 2015**

(Regulation 2014)

Third Semester

**APPAREL TECHNOLOGY**

P14FTE401: Lean Manufacture

**Time: Three Hours**

**Maximum Marks: 100**

**Answer all the Questions:-**

**PART A (10 x 1 = 10 Marks)**

1. Choose the correct sequence: CO1 [K<sub>2</sub>]
  - i) Sort, Set-in-order, Shine, Sustain, Standardize
  - ii) Shine, Sort, Standardize, Set-in-order, Sustain
  - iii) Sort, Set-in-order, Shine, Standardize, Sustain
  - iv) Sustain, Set-in-order, Shine, Sort, Standardize

a) ii - Shine, Sort, Standardize, Set-in-order, Sustain	b) iii - Sort, Set-in-order, Shine, Standardize, Sustain
c) iv - Sustain, Set-in-order, Shine, Sort, Standardize	d) i - Sort, Set-in-order, Shine, Sustain, Standardize
  
2. Critical starting point for Lean Thinking is \_\_\_\_\_. CO1 [K<sub>2</sub>]

a) value as defined by customer	b) waste as defined by customer
c) Top Management	d) Worker's participation
  
3. Assertion- A: VSM is better than Kaizen CO2 [K<sub>3</sub>]  
Reason - R: Benefit of VSM is across entire value stream

a) A is true because R is true	b) A is true because R is false
c) A is false because R is false	d) A is false because R is true
  
4. In SIPOC the customer requirements is identified by documenting \_\_\_\_\_. CO2 [K<sub>3</sub>]

a) Value of customer	b) Voice of Customer
c) Value by Manufacturer	d) Voice of Manufacturer

5. Choose the right answer CO3 [K<sub>4</sub>]
- A: Chance of rejecting a lot of acceptable quality level must not be greater than  $\alpha$
- B:  $\alpha$  is producer's risk.
- a) A and B are false b) A is false because B is true
- c) A and B are true d) A is true because B is false

6. Choose the correct match CO3 [K<sub>3</sub>]

A. In normal distribution $2\sigma$ indicates	1. Project boundaries
B. Analyze phase	2. 5Ws and 1 H
C. Define phase	3. 95.45% confidence level
D. Process performance metrics	4. process capability

- a) A-3, B-2, C-1, D-4 b) A-2, B-3, C-4, D-1
- c) A-1, B-2, C-3, D-4 d) A-3, B-2, C-4, D-1

7. Choose the correct answer: CO4 [K<sub>4</sub>]

A: EOQ optimizes lot size by balancing manufacturing cost with inventory holding costs and capacity utilization.

B: Lean relies on minimization of lot sizes, inventory and waiting

- a) A and B are False b) A and B are True
- c) A is true and B is False d) A is False and B is true

8. Match the following CO4 [K<sub>3</sub>]

A. Withdrawal Kanban	i. Total Required Inventory / Container Capacity
B. Jidoka	ii. production smoothing
C. No.of Kanban	iii. inventory movement
D. Heijunka	iv. quality at source

- a) A-ii, B-iii, C-i, D-iv b) A-iv, B-ii, C-iii, D-i
- c) A-i, B-iv, C-ii, D-iii d) A-iii, B-iv, C-i, D-ii

9. \_\_\_\_\_ are the indices used to measure process capability index and CO5 [K<sub>2</sub>]

quality index.

- i. Qpk, Pp
- ii. Mp, Cpk
- iii. Qpk, Cpk
- iv. Mp, Qpk

a) i and ii iv only

c) iii only i and iii

10. Normalized Yield provides \_\_\_\_\_ for each step of the process to achieve a given Rolled Throughput Yield CO5 [K<sub>3</sub>]

a) capacity yield b) minimum capacity yield

c) minimum Throughput Yield d) minimum performance

**PART B (10 x 2 = 20 Marks)**

11. Justify the categorizing of over processing and waiting time as waste in lean manufacture. CO1 [K<sub>3</sub>]

12. Highlight the benefits that result from effective implementation of 5S system. CO1 [K<sub>2</sub>]

13. Bring out the significance of CTQ in developing a product and process to satisfy customer requirements. CO2 [K<sub>3</sub>]

14. Categorize the factors contributing to Cost of Conformance and Cost of Non Conformance in apparel manufacture CO2 [K<sub>3</sub>]

15. Bring out the difference between attributes and variables. CO3 [K<sub>2</sub>]

16. Highlight the feasibility of achieving zero defects in apparel manufacturing unit using Poisson and Binomial distribution. CO3 [K<sub>4</sub>]

17. What type of improvement does Kaizen signify? CO4 [K<sub>2</sub>]

18. Differentiate between the batch production system and continuous flow production system CO4 [K<sub>3</sub>]

19. Bring out the path of achieving a quality level of 3.4 defects per million parts using Six Sigma application. CO5 [K<sub>4</sub>]

20. Highlight the application of CAD / CAM systems in apparel industry in the context of Six Sigma. CO5 [K<sub>3</sub>]

**PART C (6 x 5 = 30 Marks)**

21. Highlight with examples various wastes in an apparel manufacturing system contributing to cost overrun and process delay and chalk out remedial measures. CO1 [K<sub>4</sub>]

22. Draw an improved value stream map for a manufacturing system currently adopting manual fabric spreading and cutting system. CO2 [K<sub>6</sub>]
23. Evaluate the merits and demerits of various sampling techniques used in the apparel industry CO3 [K<sub>5</sub>]
24. Briefly explain how inventory can be controlled using Economic Order Quantity (EOQ). CO4 [K<sub>4</sub>]
25. Discuss with examples the application of KANBAN cards for production planning and control in apparel industry. CO4 [K<sub>3</sub>]
26. Enumerate the applications of Six Sigma in product development in apparel industry. CO5 [K<sub>3</sub>]

**PART D (4 x 10 = 40 Marks)**

27. Discuss the kind of problems experienced in the traditional manufacturing system and how it is improvised in lean system CO1 [K<sub>4</sub>]
28. Discuss in detail how SIPOC Model is used in defining process objectives and process improvement. CO2 [K<sub>3</sub>]
29. Enumerate the applications of Process measurement and improvement metrics in Six Sigma environment. CO5 [K<sub>5</sub>]
30. Explain how return on investment can be justified in case of technology upgradation in fabric spreading and cutting processes. CO5 [K<sub>5</sub>]

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