Q. Code: 400286

Reg. No. | | | | | | | | | | | | | | |

B.E / B.TECH. DEGREE EXAMINATIONS, MAY 2024

Seventh Semester

ME18015 – LEAN SIX SIGMA

(Mechanical Engineering)

(Regulation 2018 / 2018A)

TIME: 3 HOURS **MAX. MARKS: 100**

CO 1 The students will apply lean Manufacturing concepts and related tools in industrial cases for eliminating the wastes.

CO 2 The students will apply the lean metrics and develop current value stream mapping for 135 the system and with lean assessments it will be evaluated.

CO 3 The students will elucidate six sigma principles, tools and its techniques. Also will develop steps to incorporate them.

CO 4 The students will apply and experiment the implementation of define, measure and analyze phases of six sigma methods in any given system.

CO 5 The students will apply and analyze the improve and control phases of six sigma in any given system.

PART- A (10 x 2 = 20 Marks)

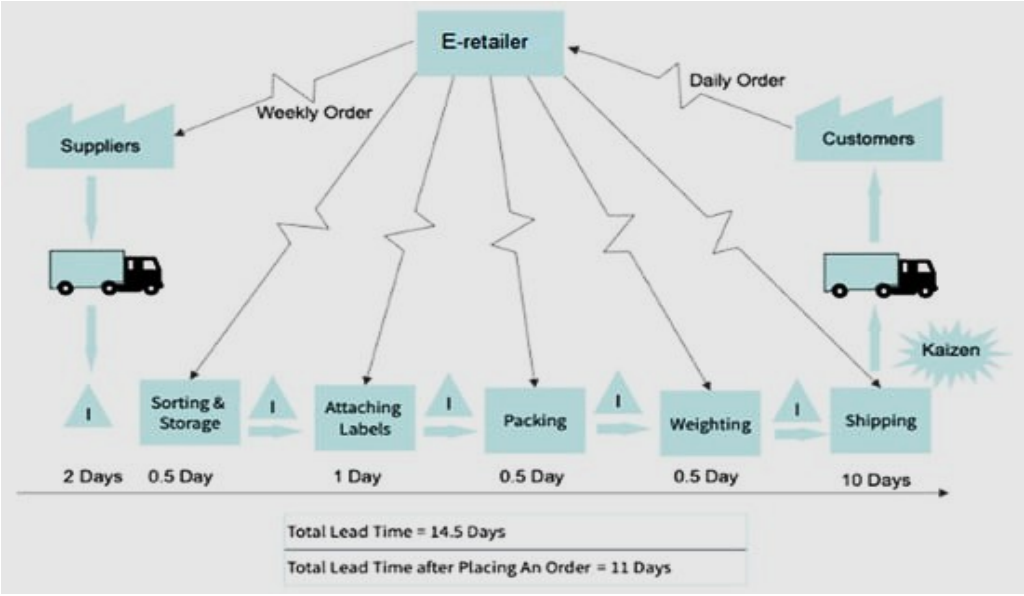
(Answer all Questions)

		CO	RBT LEVEL
1.	List the 7 types of MUDA.	**1**	**2**
2.	What is the role of customer need in lean manufacturing?	**1**	**2**
3.	How does Kaizen cloud identification helps VSM?	**2**	**2**
4.	If a customer needs 200 products completed each day and a company operates 1,060 minutes a day, what would be the takt time? Assume lunch break as 30 minutes and two scheduled maintenances as 15 minutes each with no unexpected break down.	**2**	**3**
5.	Cost of poor quality is cost lost in quality'- Justify.	**3**	**2**
6.	Why statistical tools are widely used in quality control techniques?	**3**	**2**

7.	What is the difference between alternate hypothesis and null hypothesis?	**4**	**2**
8.	Statistical Test and Tables comes under which DMAIC phase and why?	**4**	**2**
9.	What is the 80-20 rule and how does it assist quality managers using FMEA?	**5**	**2**
10.	List the 5S principles.	**5**	**2**

PART- B (5 x 14 = 70 Marks)

		Marks	CO	RBT LEVEL
11. (a)	'Push vs Pull system'- which is better for a mobile manufacturing company when introducing new models into the market? Justify.	**(14)**	**1**	**3**
	(OR)			
(b)	In the context of technological advancements that has happened over the years, illustrate the different Poka Yoke techniques that has been implemented in automobile sector.	**(14)**	**1**	**3**
12. (a)	Current state VSM of an e-commerce industry is shown.	**(14)**	**2**	**3**



Analyze possible scope for improvement in the value chain and prepare a

Future state VSM for the same

(OR)

(b)	Illustrate the impact of lean assessment in a tool manufacturing industry and how benchmarking of standards helps them in improving their target.	**(14)**	**2**	**3**
13. (a)	Brief about the Kano model with respect to the product – '**E-bike**'.	**(14)**	**3**	**3**

(OR)

(b)	Construct house of quality using QFD for design & development of Mobile phones.	**(14)**	**3**	**3**
14. (a)	Develop a cross functional team with the help of project charter for documenting and identifying the person responsible for developing a new product e-vehicle.	**(14)**	**4**	**3**

(OR)

(b)	Describe the procedure involved in survival analysis and explain its significance in healthcare.	**(14)**	**4**	**3**
15. (a)	Apply DMADV (or) DFSS for a automobile seat manufacturing industry which is looking for productivity improvement through lean six sigma.	**(14)**	**5**	**3**

(OR)

(b)	Prepare FMEA worksheet for the failure of automatic drive of Tesla in Indian market.	**(14)**	**5**	**3**

PART- C (1 x 10 = 10 Marks)

(Q.No.16 is compulsory)

		Marks	CO	RBT LEVEL
16.	Apply DFMA concept for the product **'Kettle'** and explain in detail.	**(10)**	**1**	**5**

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