

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION SP/2025)

CLASS: BTECH
BRANCH: PIE

SEMESTER : VI
SESSION : SP/2025

SUBJECT: PE349 LEAN MANUFACTURING & SIX-SIGMA

TIME: 02 Hours

FULL MARKS: 25

INSTRUCTIONS:

1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
4. Tables/Data handbook/Graph paper etc., if applicable, will be supplied to the candidates

		CO	BL																
Q.1(a)	Differentiate between Lean Manufacturing and Conventional Manufacturing. What are the barriers for adoption of Lean Manufacturing?	[2] 1	2																
Q.1(b)	Explain the concept of Visual Factory and Kaizen Blitz. How are these concepts implemented?	[3] 1	2																
Q.2(a)	Explain CON-WIP and Takt Time.	[2] 1	2																
Q.2(b)	What is the significance of the Ishikawa Fishbone Diagram? Draw Ishikawa Fishbone Diagram for defects in Welding process.	[3] 2	3																
Q.3(a)	Explain Poka yoke.	[2] 2	1																
Q.3(b)	Explain SMED and its implications in industries.	[3] 2	3																
Q.4(a)	Explain the concept of Pareto Chart and differentiate with Bar Chart.	[2] 2	2																
Q.4(b)	Prepare a Pareto chart for the given data:	[3] 2	4																
	<table border="1"><thead><tr><th>Defects</th><th>Dent</th><th>Paint</th><th>Abrasion</th><th>Tear</th><th>Brittle</th><th>Label</th><th>Stitching</th></tr></thead><tbody><tr><td>Frequency</td><td>77</td><td>29</td><td>34</td><td>9</td><td>14</td><td>58</td><td>13</td></tr></tbody></table>	Defects	Dent	Paint	Abrasion	Tear	Brittle	Label	Stitching	Frequency	77	29	34	9	14	58	13		
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Q.5(a)	Define Maintenance and what are the different types of Maintenance?	[2] 3	1																
Q.5(b)	What is TPM and Explain the pillars of TPM.	[3] 3	2																

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