BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID-SEMESTER EXAMINATION MO/2024)

CLASS: BTECH **SEMESTER: V**
BRANCH: PRODUCTION AND INDUSTRIAL ENGINEERING **SESSION: MO/2024**

SUBJECT: PE318 RAPID PROTOTYPING AND TOOLING

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	Based on the classification of rapid prototyping processes, develop a framework for selecting appropriate prototyping methods	[5]	1	4
Q.2	Consider a healthcare company that develops custom prosthetics using 3D printing technology. How might rapid prototyping affect their product offerings' effectiveness, customization, and patient satisfaction?	[5]	1	4
Q.3	Explain how layer adhesion plays a crucial role in the overall strength and functionality of FDM-printed parts. What strategies can be implemented to enhance layer adhesion during the printing process?	[5]	2	4
Q.4	What are the possible additive manufacturing processes for producing a product with a near-net shape? Conduct a comparative analysis of these processes, and recommend the most suitable options based on specific conditions and criteria	[5]	2	4
Q.5	Describe the role of STL files as an intermediary between digital design and physical surface generation. Discuss the specific rules and considerations that govern their use in this process.	[5]	3	4

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