

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

**CLASS: BTECH**  
**BRANCH: PROD & IND ENGG**

**SEMESTER : VII<sup>th</sup>**  
**SESSION : MO/2024**

**SUBJECT: PE401 CIM AND PHYSICAL CYBER SYSTEM**

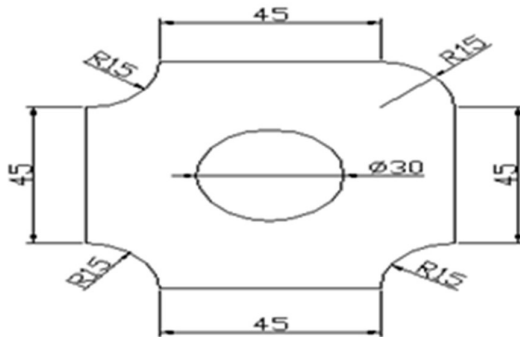
**TIME: 02 Hours**

**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
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Q.1(a)	Explain the concept and features of the factory of the future.	[2] 01	02
Q.1(b)	Describe in detail the evolution of manufacturing from craft to empirical art to predictable science. Justify your answer with neat sketches and examples.	[3] 01	02
Q.2(a)	Explain CIM ARCHITECTURE in brief.	[2] 01	01
Q.2(b)	Demonstrate Mechanical System Modeling in Mechatronic Systems.	[3] 01	03
Q.3(a)	Explain Cutter length and size compensation in CNC Machine	[2] 02	01
Q.3(b)	What do you mean by NC coordinate system? Illustrate in detail with neat sketches and examples.	[3] 02	02
Q.4(a)	Explain Briefly the Encoders used in CNC Machines.	[2] 02	01
Q.4(b)	Write Down the NC Part Programming of the following component using the Absolute & Incremental method. All dimensions in cm. Assume cutter dia & other data required.	[3] 02	01



Q.5(a)	What is adaptive control system? Discuss its applications with examples.	[2] 02	01
Q.5(b)	Write about Automatically Programmed Tools (APT) Programming.	[3] 02	01

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