

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI  
(END SEMESTER EXAMINATION)**

**CLASS: B.TECH.  
BRANCH: MECHANICAL ENGINEERING**

**SEMESTER: VI  
SESSION: SP/2025**

**SUBJECT: ME311 COMPUTER AIDED DESIGN**

**TIME: 3 Hours**

**FULL MARKS: 50**

**INSTRUCTIONS:**

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
  2. Attempt all questions.
  3. The missing data, if any, may be assumed suitably.
  4. Before attempting the question paper, be sure that you have got the correct question paper.
  5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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		CO	BL
Q.1(a)	Describe the product life cycle used in CAD.	[5] 1	1
Q.1(b)	With neat sketches, discuss five different sketching operations used in CAD.	[5] 1	1-3
Q.2(a)	Derive an expression and explain the DDA line-drawing algorithm	[5] 2	1-3
Q.2(b)	Vectorize a line to be drawn from (8, 15) to (140, 120) mm on display, which is mapped to approximately 250 x 200 mm). The screen's resolution is 640 x 480 pixels using Bresenham's algorithm.	[5] 2	1-4
Q.3(a)	Explain the explicit and implicit representation with an example.	[5] 3	1-3
Q.3(b)	Derive an expression for the Hermite cubic splines curve. Is it preferred over the Bezier curve?	[5] 3	1-3
Q.4(a)	Define the reflection and rotation operations in CAD with neat sketches.	[5] 4	1-3
Q.4(b)	A square with an edge length of 10 units is located on the origin with one of the edges at an angle of 60° with the +X axis. Calculate the new position of the square if it is rotated about the Z axis by an angle of 60° in the clockwise direction.	[5] 4	1-4
Q.5(a)	Write a short note about the IGES standard.	[5] 5	1-4
Q.5(b)	Explain the STEP model data representation.	[5] 5	1-4

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