

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

CLASS: BTECH
BRANCH: MECHANICAL

SEMESTER : VII
SESSION : MO/2022

SUBJECT: ME411 COMPUTER AIDED DESIGN

TIME: 3:00 Hours

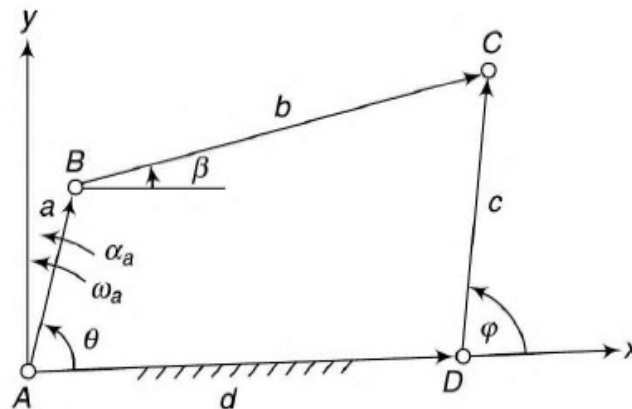
FULL MARKS: 50

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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- Q.1(a) What are the different modelling aids and tools offered by CAD systems? [2]
Q.1(b) Describe with neat sketches the input and output devices? [3]
Q.1(c) Describe the product life cycle with block diagram? [5]
- Q.2(a) Explain the advantages of Synthetic curves? [2]
Q.2(b) Write a Bresenham's line drawing algorithm and draw a line using Bresenham's line drawing algorithm having coordinates (32,22) and (42,30) [3]
Q.2(c) Explain the properties of Bezier curve and also draw the curve for its blending functions? [5]
- Q.3(a) Enumerate advantages and disadvantages of boundary representation. [2]
Q.3(b) What is solid modelling and what are the different ways of representing it? Explain with examples? [3]
Q.3(c) Discuss B-spline surface with its properties? [5]
- Q.4(a) Determine the form of the transformation matrix for a reflection about an arbitrary line with equation $y = mx + c$ [5]
Q.4(b) Explain the different data exchange format used in CAD system? [5]
- Q.5 In a four-link mechanism shown in Fig. 1, the dimensions of the links are $AB = 30$ mm, $BC = 80$ mm, $CD = 40$ mm and $AD = 75$ mm. If OA rotates at a constant angular velocity of 30 rad/sec in the clockwise direction, Calculate the angular velocities and the angular accelerations of links BC and CD for values of θ at an interval of 30 degrees. [10]

Also write a Program to solve the problem.



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