

M.Tech. Mechanical Engineering Design (CBCS) Semester - II
MED21 - Analysis and Synthesis of Mechanisms

P. Pages : 2

Time : Three Hours



GUG/S/23/14193

Max. Marks : 70

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- Notes :
1. All questions carry equal marks.
 2. Due credit will be given to neatness and adequate dimensions.
 3. Assume suitable data wherever necessary.
 4. Illustrate your answers wherever necessary with the help of neat sketches.
 5. Solve **any five** questions.

1. a) What is the significance of Ball point. What is it's used? 7
b) Explain glubbler criterion for spatial mechanism and reduce the form to apply for planer mechanism. 7
2. a) State any two form of Euler-Savary Equation and discuss their significance and uses with reference to the rolling motion of the moving centrode over fixed centrode. 7
b) Write a short notes on: 7
 - 1) Bermester points,
 - 2) Branch order defects
3. a) State and prove Robert Chebychev theorem. 7
b) Write a short notes on: 7
 - 1) Synthesis for path generation.
 - 2) Center point and circle point curves.
4. a) What is the of Bobillier constructions? Explain all Bobillier constructions with supporting sketches. 7
b) Write a short notes on: 7
 - 1) Inflection circle
 - 2) Cubic of stationary curvature
5. a) What do you mean by cubic of stationary curvature? Explain one graphical method to draw it. 7
b) What is rigid body guidance? Explain in detail. 7
6. What do you mean by precision or accuracy points in the design of mechanisms? What are the types of error? What is the structural error? Explain in details. 14

7. a) Explain the terms:

7

1) Function generation

2) Path generation

3) Motion generation

b) What is the degree of freedom of mechanism? How it is determined?

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8. For the motion of the coupler relative to the fixed link of the four-link mechanism as shown in figure below. Locate the position of the centre of curvature of the point E using the Bobillier theorem.

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