

School of Mechanical Engineering

Mechanical Engineering

ETE - Jun 2023

Time : 3 Minutes

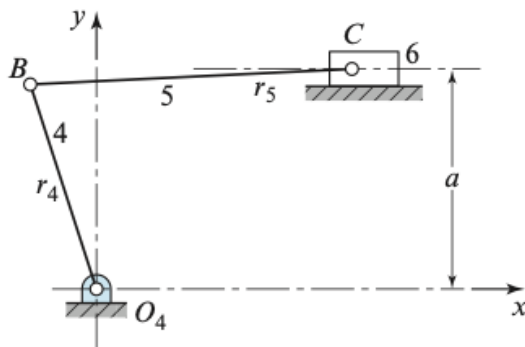
Marks : 50

Sem II - MCCR5028 - Computer Aided Analysis of Mechanical Systems

Your answer should be specific to the question asked

Draw neat labeled diagrams wherever necessary

1. Describe the steps in finding the solution for dynamic analysis of a mechanical system K2 CO2 (2)
2. What are the different software packages available for computer-aided analysis of mechanical systems? K2 CO5 (2)
3. Describe the kinematic analysis with example K2 CO1 (2)
4. What are the different types of analysis that can be performed using computer-aided tools in mechanical engineering K2 CO3 (2)
5. Describe the steps involved in conducting a finite element analysis for a mechanical component. K2 CO4 (2)
6. Explain the concept of multi-body dynamics analysis and its applications in mechanical system analysis. K3 CO3 (5)
7. Design a crank and rocker for a six-bar linkage such that the slider in Fig below reciprocates a distance of 800 mm with an advance-to-return ratio of 1.12; use $a=r_4 = 1200\text{mm}$ and $r_5 = 1800\text{mm}$. Locate O_4 such that rocker 4 is vertical when the slider is at midstroke. Find suitable coordinates for O_2 and lengths for r_2 and r_3 . K4 CO5 (6)



8. Explain the concept of sensitivity analysis and its importance in computer-aided analysis of mechanical systems. K4 CO4 (5)
9. Synthesize a function generator to follow the equation $y=1/x$ over the range $1 \leq x \leq 2$ using three precision postures K4 CO1 (8)
10. Explain the techniques utilized for advance dynamic analysis. K5 CO5 (8)
11. Describe the overlay method for synthesis of linkages K4 CO2 (8)