**ME370: ADAMS LAB**

**Department of Mechanical Engineering,**

**IIT Bombay**



**Session 6 Report**

**Group / Section:** A8

**Name:** Ameya Halarnkar

**Roll Number:** 200020023



**Date:** March 10,2023

**Given Information**

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| --- | --- | --- | --- | --- | --- | --- |
|  | Link Lengths (mm) and Information | | | | | |
| Roll Number | AB | CD | AC | DE | Slider E | Slider B |
| 200020023 | 100 | 500 | 250 | 400 | 500 above C | Along CD |
| Link Masses | 0.12825 | 5.026 | - | 2.0137 | 61.411 | 2.397 |

**Question 1 (Shaper Mechanism)**

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| **ISOMETRIC VIEW OF SHAPER MECHANISM** |
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| **FRONT VIEW OF SHAPER MECHANISM** |
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**Question 2 (Torque Variation in absence of Force)**

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| **TORQUE VARIATION WITH TIME** |
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| **TORQUE VARIATION WITH**  **SHAPER DISPLACEMENT** |
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**Question 3 (Cumulative Load Plots at each Joint)**

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| **SUPERIMPOSED LOAD PLOTS** |
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**OUTPUTS:**

**2**

* The revolute joint A experiences the maximum load.
* The magnitude of forces at different joints is according to the order: A>B>C>D>E.

**Question 4 (Torque Variation in presence of Force)**

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| **X DISPLACEMENT OF COM OF SHAPER VS TIME** |
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| Calculations | |
| Maximum Displacement = 98.3808 mm | Obtained from above graph |
| Minimum Displacement = 599.8095 mm |
| Average (Centre) Displacement = 399.3806 mm |
| Stroke Length = = 401.4287 mm | |
| Workpiece Length = 0.2 × (Stroke Length) = 80.28574 mm | |
| Range in which cutting force acts:  ( = (-359.23773, -439.52347) | |
| Time during which cutting force acts: (0.205,0.295) | Obtained from above graph |
| Force Function:  if(time-0.205: 0,0, if(time-0.295: 200.0,0,0))  [+200 indicates that cutting force acts towards the right] | Using Nested IF Loops |

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| **TORQUE VARIATION WITH TIME** |
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| **TORQUE VARIATION WITH**  **SHAPER DISPLACEMENT** |
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