



K. K. Wagh Institute of Engineering Education & Research, Nashik
(An Autonomous Institute From A.Y. 2022-23)

InSem Examination-I Winter2024	
Exam Seat No.:	
Academic Year:2024-2025	Semester:III
Class:SY	Program:B.Tech
Branch Code:MEC	Pattern:2023
Name of Course:Mechanism and Machines	Course Code:2305203
Max. Marks:30	Duration:1.15 Hrs.

Instructions: Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use.

1. This question paper contains 02 page(s).
2. Answer to each new question is to be started on a new page.
3. Assume suitable data wherever required, but justify it.
4. Draw the neat labelled diagrams, wherever necessary.
5. The last columns indicates the Course Outcome of the Question/sub-question.

Marks CO

Question No. 1

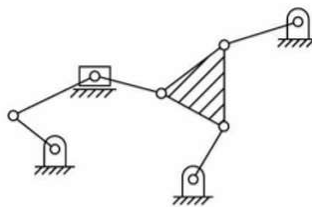
1 a) Explain the following terms with neat sketch:

(7) CO1

- 1) Kinematic link 2) Kinematic pair 3) Kinematic chain 4) Mechanism

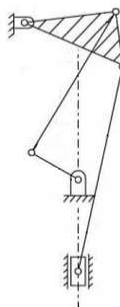
Question No. 2

2 a) Determine number of links, number of pairs and obtain degrees of freedom for the given kinematic linkage. (8) CO1



OR

2 b) Determine number of links, number of pairs and obtain degrees of freedom for the given kinematic linkage. (8) CO1

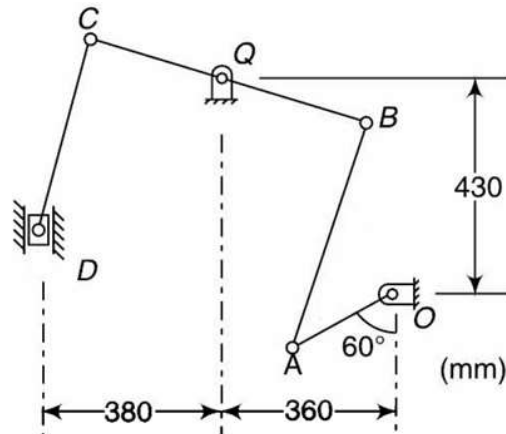


Question No. 3

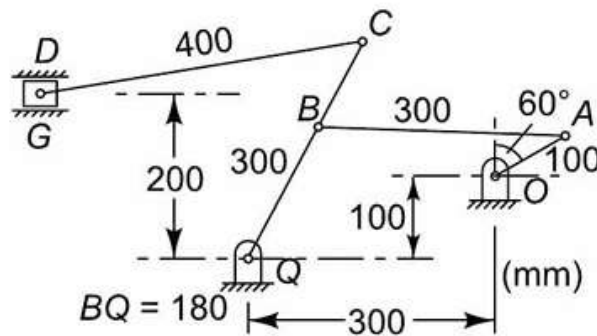
- 3 a) Draw a single slider crank mechanism and locate Fixed ICR (Instantaneous Centre of Rotation), Permanent ICR and Neither fixed nor permanent ICR. (5) CO1, CO2

Question No. 4

- 4 a) Figure shows a six-link mechanism. The dimensions of the links are $OA = 220$ mm, $AB = 485$ mm, $BQ = 310$ mm, $BC = 590$ mm and $CD = 400$ mm. For the position when the crank OA makes an angle of 60° with the vertical, find the velocity of the slider D , by Instantaneous Centre of Rotation Method. The crank OA rotates clockwise at 150 rpm. (10) CO1, CO2

**OR**

- 4 b) In the mechanism shown in figure, the crank OA rotates at 210 rpm clockwise. For the given configuration, determine the acceleration of the slider D , by Relative velocity and acceleration method. (10) CO1, CO2

**..... End of question paper.....**