



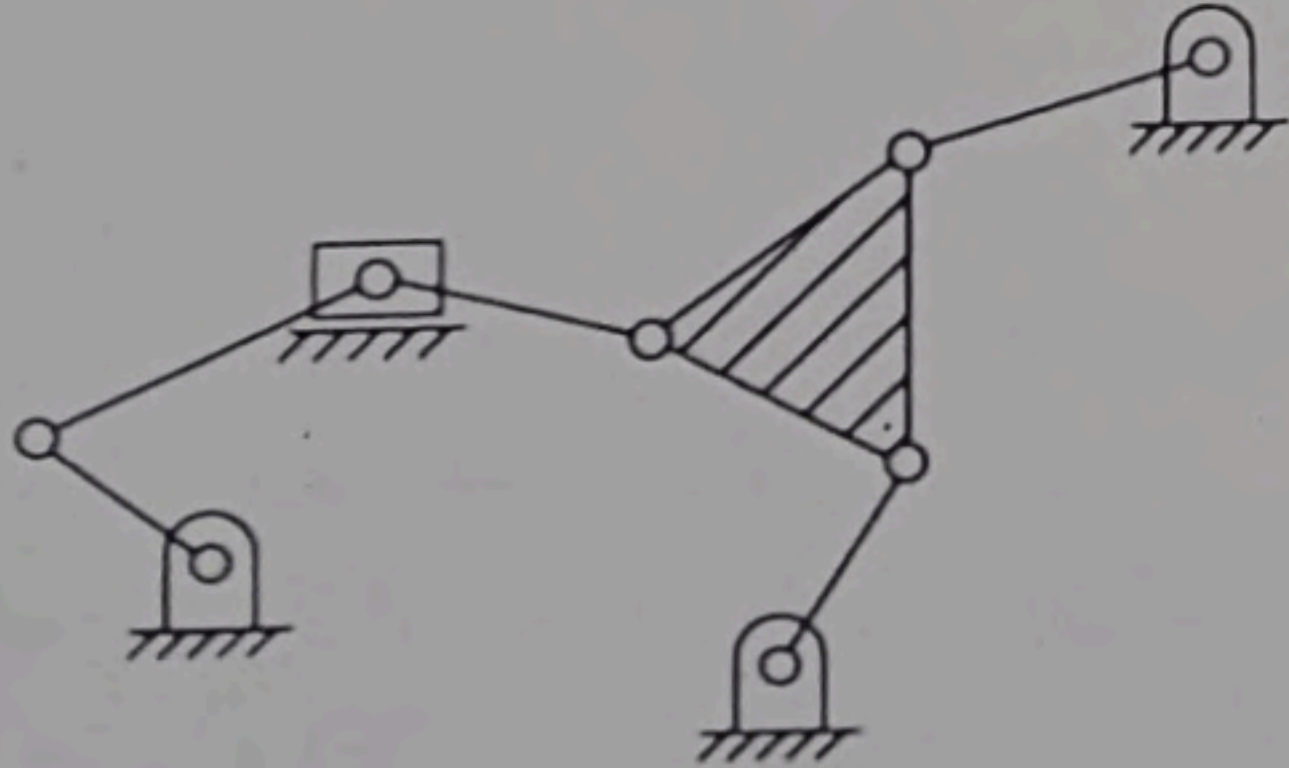
**SCHOOL OF MECHANICAL ENGINEERING
CONTINUOUS ASSESSMENT TEST-I
WINTER SEMESTER 2025-2026**

26 BM E02

Programme Name & Branch : B.TECH(Mechanical Engineering)
Course Code : BMEE207L
Course Name : Kinematics and Dynamics of Machines
Faculty Name(s) : Dr. Narendiranath Babu T.Dr.J.Naveen, Dr. Benedict Thomas, Dr. Senthilnathan N, Dr. Edwin sudhagar P, Dr.Sridharan K.
Class Number(s) : VL2025260502908 ,2911,2907,2909,2906,2912
Date of Examination : 28/01/2026
Exam Duration : 90 minutes
Maximum Marks: 50

General instruction(s):

- Answer All the Questions
- M - Max mark; CO – Course Outcome; BL – Blooms Taxonomy Level (1 – Remember, 2 – Understand, 3 – Apply, 4 – Analyse, 5 – Evaluate, 6 – Create)
- Course Outcomes Statements:
CO. 1: Examine the kinematic behaviour of various planar mechanisms.
CO. 2: Construct velocity and acceleration diagrams for various planar mechanisms
CO. 3: Analyse kinematics of cam and gear-train mechanisms.

Q. No	Question	M	CO	BL
1.	What is the difference between mechanism and structure? Also, explain the inversions of single slider crank chain, stating actual machines in which these are used in real time application. (any 2 inversions)	10	CO1	BL2
2.	a) Determine the degrees of freedom of the following mechanisms. (Fig 1) (5 Marks)  Fig.1	10	CO1	BL3



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b) Determine the mobility of the mechanism shown in Figure 2 b. Figure 2a is an application (dump truck) of the mechanism. (5 Marks)

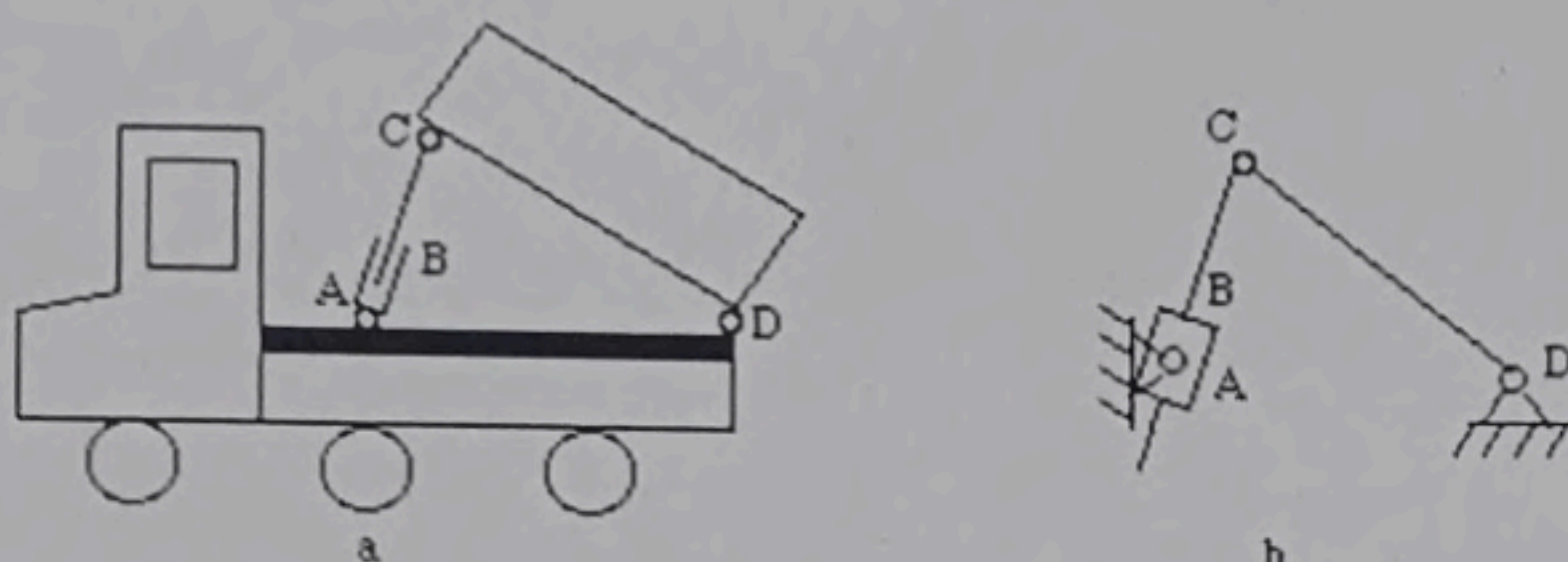


Fig.2

	b) Determine the mobility of the mechanism shown in Figure 2 b. Figure 2a is an application (dump truck) of the mechanism. (5 Marks)			
3.	PQRS is a four bar chain with link PS fixed. The lengths of the links are PQ= 62.5 mm; QR = 175 mm; RS = 112.5 mm ; and PS = 200 mm. The crank PQ rotates at 10 rad/s clockwise. Draw the velocity diagram when angle QPS = 60° and Q and R lie on the same side of PS. Find the angular velocity of links QR and RS.	10	CO2	BL3
4.	Construct the acceleration diagram for question 3 and determine the angular acceleration of links QR and RS	10	CO2	BL3
5.	A cam is to give the following motion to a knife-edged follower: 1.Outstroke during 70° of cam rotation; 2. Dwell for the next 30° of cam rotation; 3. Return stroke during next 70° of cam rotation, and 4. Dwell for the remaining 190° of cam rotation. The stroke of the follower is 40 mm and the minimum radius of the cam is 50 mm. The follower moves with uniform velocity during both the outstroke and return strokes. Draw the profile of the cam when the axis of the follower passes through the axis of the cam shaft	10	CO3	BL3