GALGOTIAS UNIVERSITY

ADMISSION NUMBER												

School of Computing Science and Engineering

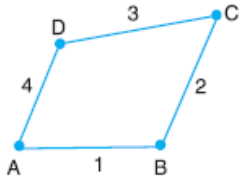
Bachelor of Technology in Computer Science and Engineering
Mid Term Examination - May 2024

Duration : 90 Minutes
Max Marks : 50

Sem VI - E2UC510T - Mechanisms Machines and Automation

General Instructions
Answer to the specific question asked
Draw neat, labelled diagrams wherever necessary
Approved data hand books are allowed subject to verification by the Invigilator

1)	Define the term "gear ratio" and explain its importance in gear systems.	K2 (2)
2)	A motor car moving at a certain speed takes a left turn in a curved path. If the engine rotates in the same direction as that of wheels, then due to the centrifugal forces	K1 (3)
3)	Explain the concept of "inversions" in four-bar mechanisms. Provide an example of an inversion and its practical use.	K2 (4)
4)	Show the mechanism given in the figures are Kinematic Chain or not, Justify your answer.	K2 (6)



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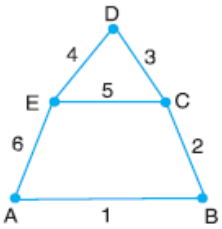
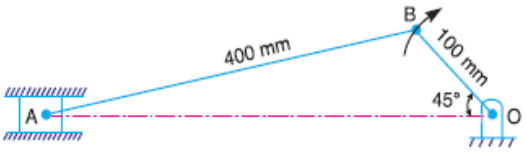


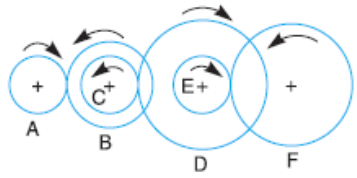
5)	Present the Coupling rod of a locomotive (Double crank mechanism) with schematic diagram and its application.	K3 (6)

6) Locate all the instantaneous centres of the slider crank mechanism as shown in the figure shown below. The lengths of crank OB and connecting rod AB are 100 mm and 400 mm respectively. If the crank rotates clockwise with an angular velocity of 10 rad/s, find: 1. Velocity of the slider A, and 2. Angular velocity of the connecting rod AB. K3 (9)



7) Present the Advantages and Disadvantages of Chain Drive Over Belt or Rope Drive K4 (8)

8) The gearing of a machine tool is shown in Figure below. The motor shaft is connected to gear A and rotates at 975 r.p.m. The gear wheels B, C, D and E are fixed to parallel shafts rotating together. The final gear F is fixed on the output shaft. What is the speed of gear F ? The number of teeth on each gear are as given below : K4 (12)



Gear	*A*	*B*	*C*	*D*	*E*	*F*
No. of teeth	*20*	*50*	*25*	*75*	*26*	*65*

OR

Two parallel shafts, about 600 mm apart are to be connected by spur gears. One shaft is to run at 360 r.p.m. and the other at 120 r.p.m. Design the gears, if the circular pitch is to be 25 mm. K4 (12)