



R20 Regulation *Subject code: 3P4CC*
TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech IV Semester Supplementary Examinations, July 2024

KINEMATICS OF MACHINERY
(ME)

Maximum Marks: 70

Date: 23.07.2024 Duration: 3 hours

- Note:
1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X2M=20 Marks)		CO	Bloom Tx
1	Explain the term kinematic link.	1	L1
2	Differentiate between a machine and a structure.	1	L1
3	Define instantaneous centre.	2	L1
4	List out the various methods for finding velocity & acceleration analysis of mechanism?	2	L1
5	Define Straight Line Mechanism.	3	L1
6	What is Function of a pantograph.	3	L1
7	State the advantages of cam mechanisms over linkage mechanisms.	4	L1
8	What are the different motions of the follower?	4	L1
9	State law of Gearing.	5	L1
10	Write down the common form of teeth.	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)			
11	Show that slider crank mechanism is a modification of the basic four bar mechanism. (10M)	1	L2
OR			
12	Sketch and explain any two inversions of a double slider crank chain (10M)	1	L2
13	In a four bar chain ABCD, AD is fixed and is 150 mm long. The crank AB is 40 mm long and rotates at 120 r.p.m. clockwise, while the link CD = 80 mm oscillates about D. BC and AD are of equal length. Find the angular velocity of link CD when angle BAD = 60°. (10M)	2	L2
OR			
14	State the Coriolis Component of Acceleration. (10M)	2	L2
15	Explain and sketch the Peaucellier mechanism. (10M)	3	L2
OR			

16	Sketch and show the Ackerman Steering Gear mechanism. (10M)	3	L2
17	A cam drives a flat reciprocating follower in the following manner: During first 120° rotation of the cam, follower moves outwards through a distance of 20mm with SHM. The follower dwells during next 30° of cam rotation. During next 120° of cam rotation, the follower moves inwards with SHM. The follower dwells for the next 90° of cam rotation. The minimum radius of the cam is 25mm. draw the profile of the cam. (10M)	4	L2
	OR		
18	Classification of Cams with neat sketch. (10M)	4	L2
19	Derive the expressions for Arc of contact and path of contact of pinion and gear and pinion and rack arrangements. (10M)	5	L2
	OR		
20	Explain Compound Gear Train with neat diagrams. (10M)	5	L2