

Enrollment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY
Bachelor of Engineering - SEMESTER - IV EXAMINATION - WINTER 2025

Subject Code: 3142006

Date: 24-11-2025

Subject Name: Analysis of Mechanisms

Time: 02:30 PM TO 05:00 PM

Total Marks: 70

Instructions

- 1. Attempt all questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**
- 4. Simple and non-programmable scientific calculators are allowed.**

	Marks
Q.1 (a) Define Machine, Mechanism, kinematics.	03
(b) Explain the types of follower as per surface in contact	04
(c) Explain Klein's construction for velocity and acceleration analysis of slider crank mechanism.	07
Q.2 (a) What are the types of band brakes? Explain briefly.	03
(b) Classify the kinematic pairs based on number of constraints.	04
(c) Define the degree of freedom. Find the degree of freedom for four bar chain mechanism.	07
OR	
(c) Explain different types of the Instantaneous centers.	07
Q.3 (a) With neat sketch explain (i)Circular pitch(ii)Space width(iii)Tooth thickness	03
(b) Explain the working of cone clutch with neat sketch,	04
(c) Describe with the help of a neat sketch the principles of operation of an internal expanding shoe brake,	07
OR	
(a) Explain the types of the Gears.	03
(b) States types of cams with neat sketches.	04
(c) State the relation for displacement diagram for Cycloidal motion.	07
Q.4 (a) Explain kinds of friction.	03
(b) State the application of friction in mechanical engineering	04
(c) Discuss gyroscopic effects on two wheeler.	07
OR	
(a) Differentiate between static and dynamic balancing.	03
(b) What are the causes of unbalance? Explain.	04

- (c) Briefly discuss the gyroscopic effects on naval ship taking right turn. 07
- Q.5** (a) What are the causes of vibrations? Explain. 03
- (b) Explain hydrodynamic lubrication with applications. 04
- (c) Explain how dynamic balancing is carried out when number of rotating masses are having unbalance in different planes. 07

OR

- (a) What are the effects of Vibrations ? Explain. 03
- (b) Derive a governing equation for single degree of freedom spring mass system with neat sketch. 04
- (c) States basic elements of a vibrating system and Explain the types of vibrations giving examples. 07
