

Seat No./Enrollment No.: _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BACHELOR OF ENGINEERING – SEMESTER 5 – EXAMINATION – SUMMER 2026

Subject Code: 3152911

Date: 21/05/2026

Subject Name: Theory of Textile Machines

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.**

- Q.1**
- (a) List the types of rope drives and state their features. **03**
 - (b) Discuss various types of brakes and clutches used in spinning machines. **04**
 - (c) Define force, mass, and momentum. Explain the difference between work and power with examples from textile machines. **07**
- Q.2**
- (a) Discuss bearings role in any drive. **03**
 - (b) Describe classification of gears and velocity ratio in simple gear trains. **04**
 - (c) With neat sketch explain different types of belt drives with their applications. **07**
- OR**
- Q.2**
- (c) Explain polygonal effect and relative advantages/disadvantages of chain and belt drives. **07**
- Q.3**
- (a) Explain differential gearing used in roving frames with examples. **03**
 - (b) What is simple harmonic motion? Illustrate its significance in textile machine operation. **04**
 - (c) How does friction affect transmission modes in textile machinery? Suggest suitable friction-reduction methods. **07**
- OR**
- Q.3**
- (a) Define epicyclic gear train with a simple sketch. **03**
 - (b) Describe different types of followers used in cams for textile machines. **04**
 - (c) Describe classification of ball and roller bearings with applications. **07**
- Q.4**
- (a) What are types of friction encountered in machine elements? **03**
 - (b) Define and explain the different types of belt drives used for transmission of motion in textile machinery. **04**
 - (c) With neat sketch explain different types of chain construction, also suggest application for each type. **07**
- OR**
- Q.4**
- (a) What is uniform velocity motion? Give a textile machinery example. **03**
 - (b) Discuss the transmission of rotary movement in textile machines. **04**
 - (c) Analyze kinematics of shedding and let-off mechanisms in weaving machinery. **07**

Q.5	(a) What are cams and followers? Name any two types of cams and their applications in textile machines.	03
	(b) Explain laws of friction relevant for textile machinery design.	04
	(c) Explain the steps involved in designing a shedding cam.	07
	OR	
Q.5	(a) Explain adjustment of belt tension for flat belt drives.	03
	(b) Explain the function and construction of a clutch in weaving machinery.	04
	(c) Explain the importance and role of bearings in textile machinery.	07
