

GUJARAT TECHNOLOGICAL UNIVERSITY**BE – SEMESTER- V EXAMINATION-SUMMER 2023****Subject Code: 3152911****Date: 23/06/2023****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.

		Marks
Q.1	(a) Describe open belt and cross belt drive with suitable diagram.	03
	(b) Compare V belt drive and flat belt drive.	04
	(c) Describe crank and connecting rod mechanism with neat sketch. Hence discuss kinematics of sley briefly.	07
Q.2	(a) Describe rack and pinion gear drive briefly with sketch.	03
	(b) State advantages and disadvantages of gear drive.	04
	(c) Discuss various aspects to be considered for designing transmission shaft.	07
	OR	
	(c) Describe designing of shedding cam with suitable diagram.	07
Q.3	(a) Describe rope drive and its applications.	03
	(b) Compare chain drive and belt drive.	04
	(c) Describe knife edge and roller type follower with suitable diagram.	07
	OR	
Q.3	(a) Discuss polygonal effect observed in chain drive.	03
	(b) Describe ball bearings and roller bearings briefly. State their few applications in textile machines.	04
	(c) Describe differential motion with neat sketch. Discuss its application on speed frame in detail.	07
Q.4	(a) Explain the terms : (i) Angular displacement (ii) Simple harmonic motion	03
	(b) State types of friction and give example.	04
	(c) Discuss designing of knitting cam briefly with suitable diagram.	07
	OR	
Q.4	(a) Explain the terms : (i) Force (ii) Work (iii) Center of gravity	03
	(b) Describe transmission of rotary movement in machine with suitable sketch.	04

- (c) What is a clutch? State its function. Hence describe any one clutch with neat sketch. **07**
- Q.5** (a) What is a cam? State different types of cam. Also state any two applications of cam in textile machines. **03**
- (b) Give classification of brakes. Hence describe any one type of brake. **04**
- (c) Describe working of simple and compound gear with neat sketch. Also work out its velocity ratio. **07**
- OR**
- Q.5** (a) Explain the following terms used for gear : **03**
- (i) Pitch circle
- (ii) Base circle
- (iii) Addendum circle
- (b) Discuss in detail 'coefficient of friction'. **04**
- (c) Describe construction and working of negative let off motion and analyze its major limitation. **07**