

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2024****Subject Code: 3152911****Date:16-05-2024****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) State any two advantages of V-belt drive over flat belt drive. **03**  
 (b) Define the terms related to belt drive: slip and creep. **04**  
 (c) How chain drive used to transmit motion and where it is use? State the advantages and disadvantages of chain drive. **07**

- Q.2** (a) Write advantages of rope drive. **03**  
 (b) Explain i) Helical gear ii) Bevel gear iii) Spiral gear iv) worm gear. **04**  
 (c) Explain the following gear trains with a neat sketches and mention their applications: (i) Reverted gear train and (ii) Epicyclic gear train. **07**

**OR**

- (c) Discuss the different types of belts and their material used for power transmission. **07**

- Q.3** (a) State any three advantages and disadvantages of gear drive. **03**  
 (b) How are the cams classified? Also give its application. **04**  
 (c) Explain construction and working of a band and block brake with suitable diagram. **07**

**OR**

- Q.3** (a) Briefly write about application of clutch and brake. **03**  
 (b) Classify and state application of ball and roller bearings textile. **04**  
 (c) Write short note on coefficient of friction. **07**

- Q.4** (a) Explain about angular displacement with suitable example. **03**  
 (b) Explain briefly about work done and power. **04**  
 (c) What is a clutch? Discuss the various types of clutches giving at least one practical application for each. **07**

**OR**

- Q.4** (a) What are the classifications of follower according to follower shape? **03**  
 (b) Explain acceleration and retardation with respect to textile mechanism. **04**  
 (c) What is let off? Draw negative let-off mechanism. How to avoid short term and long term tension variation from full beam to empty beam? **07**

- Q.5** (a) Explain briefly about centre of gravity. **03**  
 (b) Describe design of knitting cams with suitable diagram. **04**  
 (c) Write short note on application of differential gear in a speed frame. **07**

**OR**

- Q.5** (a) Derived the relation between force, time and momentum. **03**  
 (b) Explain four link sley beat mechanism with diagram. **04**  
 (c) Describe important steps in designing of shedding cam with suitable sketch. **07**