

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V EXAMINATION – SUMMER 2025

Subject Code:3152911

Date:13-05-2025

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) A 8 cm pulley is driven by 12 cm pulley mounted on parallel shaft 2 mts apart. If the driver pulley is running at 400 rpm, calculate rpm of driven pulley and velocity of belt in M/Min. **3**

(b) Give classification of mechanical brake. Explain any one in detail. **4**

(c) Explain differential gear train mechanism of speed frame with suitable diagram. **7**

Q.2 (a) Define Cam. State importance and application of Cam in Textile. **3**

(b) Discuss Warp tension in negative let off mechanism. **4**

(c) With neat sketch, explain drive transmission through simple and compound gear train and work out its velocity ratio. **7**

OR

(c) Enlist type of clutch and explain jaw/toothed clutch with suitable diagram. **7**

Q.3 (a) Briefly describe flat and V belts along with their applications. **3**

(b) Compare belt drive and chain drive. **4**

(c) What is kinematics? Explain kinematics of slider mechanism with neat sketch and derive equation for slider velocity. **7**

OR

Q.3 (a) Define the term: Pitch circle, Addendum, and Dedendum. **3**

(b) What is gear train? Explain compound gear train with suitable diagram. **4**

(c) Explain four link crank and slider mechanism with suitable diagram. Also define and state the importance of slider eccentricity ratio. **7**

Q.4 (a) Define the term: force, moment of force and moment of inertia. **3**

(b) Explain term, work done and power with suitable example. **4**

(c) Explain type of cams and type of cam followers with suitable diagram. **7**

OR

Q.4 (a) What is centre of gravity? State importance of centre of gravity in textile. **3**

(b) With neat sketch explain bevel gear drive and its application. **4**

(c) Explain simple harmonic motion. Hence define: amplitude, oscillation, period of simple harmonic motion, frequency. **7**

Q.5 (a) Write short note on chain drive. **3**

- (b) What do mean by negative cam and positive cam? 4
- (c) Explain construction of ball bearing with sketch. Give its classification. 7
Also state its applications in textiles.

OR

- Q.5** (a) Explain briefly, lift of tappet and dwell of tappet. 3
- (b) Explain types of belts used in textile industries with suitable diagram. 4
- (c) Discuss the steps for design a shedding tappet? 7
