

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VIII (NEW) - EXAMINATION – SUMMER 2017****Subject Code: 2182901****Date: 29/04/2017****Subject Name: Principles of Textile Processes****Time: 10:30 AM to 01:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Discuss the factor affecting drafting force and derive equation to calculate drafting force. **07**
- (b) Explain the term kinematics and derive an equation for sley velocity and acceleration. **07**
- Q.2** (a) Derive equation of winding Tension (T_w) in a spinning balloon zone. **07**
- (b) Explain the alacrity of picking mechanism and drive its equation with the help of elastic model. **07**
- OR**
- (b) What is perfect drafting? Why it is not achieved in conventional draw frame. Explain theory of drafting put forwarded by foster. **07**
- Q.3** (a) Calculate the traveler speed from the following data. **07**
Spindle speed = 14000 rpm, Bobbin diameter = 22 mm, Front roll rpm = 172, Front roll diameter = 1 inch, Ring diameter = 42 mm.
- (b) Derive an equation of yarn tension at any radius 'r'. **07**
- OR**
- Q.3** (a) If a loom has reed space of 1.20 mts, the average velocity of shuttle is 12.8 mts/ses, shuttle enters the shed at 85° of crank and leaves at 215° , and the length of shuttle is 26 mm, Calculate maximum loom speed. **07**
- (b) Describe the experiment of Thomas and Vincent to study the forces acting on shuttle during acceleration. Hence draw nominal and actual curve. **07**
- Q.4** (a) Discuss the interrelationship between shedding and beat up with suitable diagram. **07**
- (b) Explain the various limitation of negative friction type let off motion. **07**
- OR**
- Q.4** (a) Derive equation to calculate the fractionating efficiency of comber. **07**
- (b) Define Transfer ratio and residual ratio. Derive an equation to find transfer ratio of card. **07**
- Q.5** (a) Discuss the optimization of yarn content in ring spinning package. **07**
- (b) Explain the importance of size pick up & discuss the various factors affecting it. **07**
- OR**
- Q.5** (a) Discuss the causes of end breaks in open end spinning. **07**
- (b) Explain short term and long term variation taking place during unwinding of yarn from ring bobbin with suitable diagram. Also discuss the various factors affecting the unwinding tension. **07**
