Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VIII (NEW) EXAMINATION – SUMMER 2021

Subject Code:2182901 Date:05/08/2021

Subject Name:Principles of Textile Processes

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.**

Q.1	**(a)**	Explain the term Spinnability.	**3**
	(b)	What are the reasons of end breaks at ring frame?	**4**
	(c)	Explain the retardation of shuttle with hinged swell, along with necessary diagrams.	**7**
Q.2	**(a)**	Explain the term fractionation efficiency	**3**
	(b)	Calculate the traveler speed from the following data. Spindle speed = 14000 rpm, Bobbin diameter = 22 mm, Front roll rpm = 172, Front roll diameter = 1 inch, Ring diameter = 42 mm.	**4**
	(c)	Discuss factors affecting cleaning efficiency of blow room.	**7**
		OR	
	(c)	Derive an equation of yarn tension at any radius ‘r’.	**7**
Q.3	**(a)**	Explain the term Draft constant.	**3**
	(b)	Discuss the Optimisation of yarn content on ring spun package.	**4**
	(c)	Derive an equation to calculate drafting force.	**7**
		OR	
Q.3	**(a)**	Explain the importance of size pick up.	**3**
	(b)	What are the reasons of end breaks at open end spinning?	**4**
	(c)	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.	**7**
Q.4	**(a)**	what are the limitations of negative let off	**3**
	(b)	If a loom has reed space of 1.40 mts, the average velocity of shuttle is 12.8 mts/ses, shuttle enters the shed at 85^0 of crank and leaves at 215^0, and the length of shuttle is 26 mm, Calculate maximum loom speed.	**4**
	(c)	Derive the formula for friction forces in negative let off motion also discuss design of let off mechanism.	**7**
		OR	
Q.4	**(a)**	Explain ‘Alacrity’ with respect to picking mechanism.	**3**
	(b)	Discuss interrelationship between shedding and beat up briefly.	**4**
	(c)	Discuss briefly effect of l/r ratio on type of movement to sley.	**7**
Q.5	**(a)**	Explain the term kinematics for sley.	**3**
	(b)	State the types of stretch in sizing and factors affecting it.	**4**
	(c)	Derive equation of winding tension (Tw) in a spinning balloon zone.	**7**
		OR	
Q.5	**(a)**	Explain the importance of sley velocity	**3**
	(b)	Explain the theory of propulsion in air jet loom	**4**
	(c)	Derive an equation for sley velocity with necessary assumptions and draw the curve.	**7**

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