Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

BE SEM-VIII Examination May 2012

Subject code: 182901

Subject Name: Principles of Textile Process

Date: 10/05/2012 **Time: 10.30 am – 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)** Why one should study the behavior of floating fibre during drafting? Also derive the equation of drafting force on a draw frame. **07**

(b) Discuss the factors which influence uniform acceleration during picking. 'Modern high speed looms require modified shape of picking cam.' Explain with help of suitable mathematical analysis. **07**

Q.2 **(a)** Fibre length distribution at front roller of a draw frame is as fallows: **07**

Length of fibre in cms (I)	5	4	3	2	1	Total
No. of fibres (frequency)	14	16	11	9	5	55

If force required withdrawing single fibre from bundle is 4gm and there is 4000fibres entering from back roller and draft employed is 13. Calculate drafting force required to draft the material.

(b) Using instantaneous centre method, derive equation for sley velocity, average sley velocity & sley acceleration at front & back centres. State the types of curves obtained. **07**

OR

(b) Elaborately discuss the causes of end breaks in open end spinning. **07**

Q.3 **(a)** Elaborately discuss the effect of cylinder loading on hook formation on the cotton card. **07**

(b) Derive an equation of yarn tension at any radius 'r'. **07**

OR

Q.3 **(a)** What is the significance of % ash content and % moisture content on trash and cleaning efficiency of a blow room? **07**

(b) Derive the formula for winding tension considering traveler mass, ring diameter and ring traveler friction on ring frame. **07**

Q.4 **(a)** Explain the terms effective inertia of sley & radius of gyration. Define the equation for effective inertia of sley for a loom having motor speed of N_m rpm & crank shaft speed N rpm. **07**

(b) i. Explain 'Alacrity' with respect to picking mechanism. **07**

ii Write in short on 'Power required for picking'.

OR

Q.4 **(a)** Explain interrelationship between shedding and beating. Define shuttle **07**

interference. Derive an equation for shed opening at front wall of shuttle.

(b) Derive the terms kinematics & dynamics. Explain motion of sley with various factors affecting on it. **07**

Q.5 **(a)** Derive the formula for friction forces in negative let off motion also discuss design of let off mechanism. **07**

(b) Define and derive comber fractionation efficiency. **07**

OR

Q.5 **(a)** Discuss the methods used for optimize the yarn content in ring frame package. **07**

(b) With the help of retardation curve compare the performance of conventional hinged swell with that of floating swell. **07**

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