Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M. E. - SEMESTER – II • EXAMINATION – WINTER • 2014

Subject code: 1722501 **Date: 02-12-2014**

Subject Name: Theory and Design of Textile Machines - II

Time: 02:30 pm - 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)**	Discuss effect of diameter, number of holes and blowing time of relay nozzle on reduction of air consumption on air jet weaving machines.	**07**
	(b)	With sketch explain how the traverse of the drum is calculated on a sectional warping machine? A Multi colored warps of 40s Nm spun yarns are wound on a horizontal section of 1.4 m diameter, on which inclines are fixed at 13.5 degrees to the axis. Each warp is 2700 m long and 2 m wide and contains 6000 ends. Warp density on drum is 0.65 g/cm3. Determine the depth of yarn on drum when the warp is completed and the corresponding reed traverse per section.	**07**
Q.2	**(a)**	With reference to shed geometry explain how front and back heald shaft lifts are calculated?	**07**
	(b)	Draw diagram of three types of beat up mechanisms. Compare cam versus crank mechanism.	**07**
		OR	
	(b)	Write in brief on influence of pre wetting on the characteristics of a sized yarn.	**07**
Q.3	**(a)**	Considering polytropic air flow, discuss zone wise distribution of air flow in the main nozzle of air jet loom.	**07**
	(b)	With graph show how tension is distributed across the width of the warp sheet on loom. What is the effect of plain and twill weaves on shed formation?	**07**
		OR	
Q.3		Taking a hypothetical example show general features of shed-shape characteristics. Also draw shed-shape graphs for a loom having no dwell for shed crossing at 300 and 360 degrees.	**14**
Q.4	**(a)**	With reference to cloth fell position, write on main sources of variation in pick-spacing.	**07**
	(b)	Compare weft yarn characteristics on multi-phase loom with those of single phase shuttleless looms.	**07**
		OR	
Q.4	**(a)**	With graph explain characteristic load profiles of the weft insertion on rapier, projectile and air jet loom. What is change in the tensile strength and elongation of rotor yarn after picking on air jet and rapier loom?	**07**
	(b)	Discuss effect of presence of thick places in the yarn on its tensile properties. What is Realization Factor (RF) and what is the effect of sizing on it?	**07**
Q.5	**(a)**	With graph explain cloth fell movement for two and more than two pick cycles.	**07**
	(b)	While considering parameters affecting selection of modern looms, discuss effect of loom speed and short term stops on loom efficiency, weaver assignment and weaving costs.	**07**
		OR	
Q.5	**(a)**	Compare following causes with reference to weft yarn stoppages on air jet loom: (i) Coefficient of friction & Flexural strength (ii) Controlled weft yarn brake (iii) Longer weft insertion Time	**07**
	(b)	What is set mark? What are the common methods for measuring them? Write in short on measure of set marks using Kawabata Tester.	**07**

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