Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

ME – SEMESTER II (NEW) – • EXAMINATION – SUMMER 2016

Subject Code: 2722509 **Date: 25/05/2016**

Subject Name: Theory and design of Textile machine II

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)**	How one can reduce the air consumption on air-jet weaving machines ?	**07**
	(b)	Graphically explain the relationship between angular displacement and acceleration to main shaft degree in different beat-up mechanisms.	**07**
Q.2	**(a)**	Discuss about woven fabric parameters affected by shed unbalancing.	**07**
	(b)	With reference to EYC, discuss LD short & LD long settings.	**07**
		OR	
	(b)	Derive the equation for the ratio of yarn tension (T_2) to the applied force (F) for the non rotating back rest which gives minimum tension. Draw a graph taking the value of coefficient of friction as 0.25	**07**
Q.3	**(a)**	Give comparison about the performance of cycloid cam to simple harmonic cam for warp breakages & warp tension.	**07**
	(b)	Multicolored 20 tex warp wound on a horizontal section warping drum of 1.5 dia. ,on which inclines are fixed at 15 deg. to the axis. Each warp is 3000 m long and 2m wide and contains 6500 ends. The warp density is 0.6 g/cc on drum. Calculate the depth of yarn on the mill when war is completed & corresponding reed traverse per section.	**07**
		OR	
Q.3	**(a)**	The mass of shuttle is 480g. when the pirn is full & 460g. when pirn is empty. Shuttle's impact is not less then 4 m/s when loom is correctly running and strikes the swell at 13 m/s and uniformly retarded over a distance 0.018m up to impact with the picker. Calculate the impact velocity and give your comments.	**07**
	(b)	Explain main nozzle design relating to air flow for air-jet weaving machine.	**07**
Q.4	**(a)**	Show general features of shed-shape characteristics taking reed displacement angle v/s shed angle by taking hypothetical example. Draw only shed-shape for a loom having sley and heald dwell and having shed crossing at 270 & 360 degrees.	**14**
		OR	
Q.4	**(a)**	Compare stress on weft yarn with reference to projectile, rapier and air-jet looms.	**14**
	(b)	For a shuttle loom, calculate max. permissible loom speed from following data. Effective reed space =46" Avg. shuttle speed =12m/s. Duration of picking =130 Deg. Effective length of shuttle =28 cm.	
	(c)	Explain briefly the concept of pre-wetting in sizing.	

(P.T.O.)

Q.5	**(a)**	Discuss about the effect of yarn objectionable faults on performance of weaving and sizing.	**07**
	(b)	Explain the effect of shed formation on warp tension.	**07**

OR

Q.5	**(a)**	Which factors are taken in to consideration while investing in new weaving equipments? Discuss any two briefly.	**07**
	(b)	Compare multiphase wave shed weaving system with conventional shuttleless looms with respect to warp & weft tension phenomenon.	**07**

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