## **GUJARAT TECHNOLOGICAL UNIVERSITY** ME - SEMESTER-II • EXAMINATION – SUMMER • 2014

Subject Code: 1722502Date: 18-06-201Subject Name: Theory of Yarn ManufacturingTotal Marks: 7Time: 02:30 pm - 05:00 pmTotal Marks: 7			
Inst	tructio 1. 2. 3.	ns: Attempt all questions. Make suitable assumptions wherever necessary. Figures to the right indicate full marks.	
Q.1	(a) (b)	Why rotor yarn is known as bipartite structure? Find out no. of fibres in yarn cross section, flux in transport tube and at rotor surface with following particular: sliver linear density ó 3ktex, opening roller speed ó 9000rpm, opening roller diameter ó 65mm, rotor speed ó 1,00,000rpm, rotor diameter ó 30mm, fibre length ó 36mm, fibre fineness ó 1.30dtex, yarn fineness ó 30tex. How to measure false twist in rotor spinning with laser Doppler anemometry.	10 04
Q.2	(a)	How the roller errors affect drawing at drafting arrangement? Also list out the	07
	(b)	consequences of it on textile product. Explain the effect of spinning angle and angle of wrap round the bottom roller on spinning geometry.	07
	(b)	<b>OR</b> Discuss the effect of drafting on fibre configuration and effect of fibre configuration on yarn quality.	07
Q.3	(a)	How floating fibre affect perfect drafting? Derive the equation of drafting force on a draw frame.	07
	(D)	OR	07
Q.3	(a) (b)	Define and derive an equation of yarn air drag force at ring frame. Discuss the complex relation between winding zone, spinning zone and balloon zone tension at ring frame.	07 07
Q.4	(a)	<ul><li>Briefly explain:</li><li>(1) Several arrangements for compact spinning</li><li>(2) Advantages of siro spinning</li><li>(3) Self twist spinning principle</li></ul>	14
04	(9)	OR Define: optimum twist coriolis force down twisting torsional stiffness	14
Q.5	(a) (b)	Why tenacity of ring spun yarn is more than rotor spun yarn? Explain. Briefly explain drafting force at drawing stage and carding force exerted on fibres.	07 07
05	(z)	OR	05
Q.5	(a) (b)	what is the effect of air pressure of DREF3 spinning on single strand strength, strand variability and yarn strength variability? Define FSI ó fibre straightness index. With neat sketch explain the indirect method to measure fibre orientation.	05 09

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