Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–V (NEW) EXAMINATION – WINTER 2020

Subject Code:3152911 **Date:22/01/2021**

Subject Name:Theory of Textile Machines

Time:10:30 AM TO 12:30 PM **Total Marks: 56**

Instructions:

1. **Attempt any FOUR questions out of EIGHT questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			Marks
Q.1	**(a)**	State advantages of V belt drives.	**03**
	(b)	Give classification gear. Also state advantages of gear drive.	**04**
	(c)	Discuss different types of belts used in textile industries. Explain the effect of slip on velocity ratio.	**07**
Q.2	**(a)**	Define the term for gear profile (i) Pitch circle (ii) Circular pitch, and (iii) addendum	**03**
	(b)	Derive the velocity ratio for open belt drive.	**04**
	(c)	What is gear train? Describe various types of gear trains with clear diagram.	**07**
Q.3	**(a)**	What is the basic difference between clutch and brake?	**03**
	(b)	Describe working of a band and block brake with clear diagram.	**04**
	(c)	What is cam? Discuss the various types of motion that can be transmitted with a cam and follower combination.	**07**
Q.4	**(a)**	Suggest some lubrication processes to improve bearing life.	**03**
	(b)	Classify ball and roller bearings and mention the uses of each in textile.	**04**
	(c)	List out type of clutch. Explain cone clutch with clear diagram.	**07**
Q.5	**(a)**	Define tern work done and power.	**03**
	(b)	Explain linear displacement and angular displacement with suitable example.	**04**
	(c)	Defined coefficient of friction. Explain Static friction and Dynamic friction. Also state laws of solid friction.	**07**
Q.6	**(a)**	Define term: acceleration and retardation.	**03**
	(b)	Derived the relation between force, time and momentum.	**04**
	(c)	What is use of differential gear in speed frame? Describe the differential gear use in a speed frame with neat sketch.	**07**
Q.7	**(a)**	What is centre of gravity? State importance of centre of gravity in textile.	**03**
	(b)	What are the reasons for excessive vibration in textile machines?	**04**
	(c)	For crank beat up mechanism, derive an expression for displacement of sley (s) in terms of length of crank (r), connecting arm length (l) and crank angle (θ).	**07**
Q.8	**(a)**	What is roller eccentricity and roller vibration in drafting?	**03**
	(b)	Explain the working of the differential gear train in a speed frame.	**04**
	(c)	Draw shedding tappet for plain weave considering following particulars: Lift of tappet = 4 inch	**07**

Distance from the centre of driving shaft to the nearest point of contact with the treadle bowl = 2 inch
Dwell of tappet = 1/3 of pick
Diameter of treadle bowl = 2 inch
Also Write down the step followed to draw the shedding tappet.

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