

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 term 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 = $\frac{1}{3}$ of pick

Diameter of treadle bowl = 2 inch

Also Write down the step followed to draw the shedding tappet.
