GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–V (NEW) EXAMINATION – WINTER 2021

Subject Code:3152911   **Date:15/12/2021**

Subject Name:Theory of Textile Machines

Time:02:30 PM TO 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.**
4. **Simple and non-programmable scientific calculators are allowed.**

			Marks
Q.1	**(a)**	Briefly describe flat and V belts along with their applications.	**03**
	(b)	Write short note on rope drive.	**04**
	(c)	With neat sketch describe differential mechanism used on speed frame.	**07**
Q.2	**(a)**	Explain polygonal effect in chain drive.	**03**
	(b)	Compare belt drive and chain drive.	**04**
	(c)	What is kinematics ? Explain kinematics of sley mechanism with neat sketch and derive equation for sley velocity.	**07**
		OR	
	(c)	With neat sketch, explain drive transmission through simple and compound gear train and work out its velocity ratio.	**07**
Q.3	**(a)**	Describe advantages and disadvantages of gear drive.	**03**
	(b)	Write a short note on factors to be considered while designing of transmission shaft.	**04**
	(c)	Describe design of knitting cams with suitable diagram.	**07**
		OR	
Q.3	**(a)**	A 5 cm pulley is driven by 10 cm pulley mounted on parallel shaft 2 mts apart. If the driver pulley is running at 200 rpm , calculate rpm of driven pulley and velocity of belt in mts/sec .	**03**
	(b)	Describe rack and pinion and bevel gear briefly.	**04**
	(c)	Analyze the limitations of negative let off motion .	**07**
Q.4	**(a)**	Define cam. State types of cams used in textile machine. Explain any one in detail with suitable diagram.	**03**
	(b)	Give classification of mechanical brake. Explain any one in detail.	**04**
	(c)	Explain construction of ball bearing with sketch. Give its classification. Also state its applications in textiles.	**07**
		OR	
Q.4	**(a)**	Explain various types of follower motions with suitable diagram.	**03**
	(b)	Give classification of friction clutches. Explain any one in detail with suitable diagram.	**04**
	(c)	Discuss in detail the material used for bearing. Also explain static load capacity of ball bearing with suitable diagram.	**07**
Q.5	**(a)**	A carding engine cylinder weighs 1200 lb and is supported by two bearings of 3" diameter. When the cylinder is disconnected from the other parts of the machine, it requires 0.25 HP to run it idly at 165 revolutions per minute. What is the approximate value of μ in its bearings?	**03**

	(b)	What is friction? Explain its types in detail.	**04**
	(c)	Explain simple harmonic motion.	**07**
		Hence define: amplitude, oscillation, period of simple harmonic motion, frequency.	

OR

Q.5	**(a)**	Explain friction of shaft in its bearing.	**03**
	(b)	Explain transmission of rotary movement in machines.	**04**
	(c)	Describe important steps in designing of shedding cam with suitable sketch.	**07**

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