GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–VIII (OLD) EXAMINATION – SUMMER 2019

Subject Code: 182503   **Date: 13/05/2019**

Subject Name:Design of Product And Machine Tools

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)**	Explain various Elementary transmission methods for Transforming rotary motion into Translatory.	**07**
	(b)	Explain various devices for Intermittent motion.	**07**
Q.2	**(a)**	Explain the general requirements for Machine tool design.	**07**
	(b)	With neat sketch explain following gear box: (1) Norton's gear (2) Feed box with gear cone & sliding key	**07**

OR

	(b)	Design hydrodynamic journal bearing for a shaft of blower for following data: Bearing Load due to belt force: 3000N, Bearing Load due to weight of rotor: 600N, Speed of Blower: 600 rpm, diameter of shaft: 50 mm, Expected temperature of oil:70°, ambient temperature: 30°, c/d ratio - 0.0015, Minimum film thickness: 0.019 mm Calculate: actual attitude, type of oil used, power loss, heat generated, actual minimum film thickness.	**07**
Q.3	**(a)**	Discuss various types of Bed structure and wall arrangements and their applications with neat sketch.	**07**
	(b)	Explain the design procedure of Slideways for wear resistance.	**07**

OR

Q.3	**(a)**	Explain various Slideways profile with neat sketch and application.	**07**
	(b)	Explain various methods to adjust the clearance in slide ways?	**07**
Q.4	**(a)**	Write a note on Antifriction Guideways. Explain Open type and Close type antifriction guideways.	**07**
	(b)	Explain: Preloading of Antifriction bearing.	**07**

OR

Q.4	**(a)**	State advantage and disadvantage of Hydrodynamic and Hydrostatic bearing. Discuss where each one is more suitable.	**07**
	(b)	Design crane hook for lifting capacity of 12 tonnes, having triangular section. Take permissible tensile stress as 130 N/mm2 for forged steel.	**07**
Q.5	**(a)**	Enlist and explain any seven factors to be considered for preparing product design specification for Fully Automatic dish washer.	**07**
	(b)	Design a self-aligning ball bearing for a radial load of 7000 N and a thrust load of 2100 N. The desired life of the bearing is 160 millions of revolutions at 300 r.p.m. Assume uniform and steady load.	**07**

OR

Q.5	**(a)**	Discuss various factors to be considered for prepare a product design specifications.	**07**
	(b)	Give classification of steel wire ropes. How numbers of band are determined for steel wire ropes while designing material handling systems?	**07**

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