Seat No.: _____ Enrolment No._____

# GUJARAT TECHNOLOGICAL UNIVERSITY

**BE - SEMESTER–VIII EXAMINATION – WINTER 2015**

**Subject Code:182007** **Date:30/11/2015**

**Subject Name: Theory of Mechanisms**

**Time: 2:30pm to 5:00pm** **Total Marks: 70**

**Instructions:**

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

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|---|---|---|---|
| **Q.1** | **(a)** | Explain function generation carried out using Chebyshev's spacing method considering a suitable example. | **07** |
| | **(b)** | With appropriate example explain graphical approach of path generation. | **07** |
| **Q.2** | **(a)** | State and explain D'Alembert's principle giving appropriate example and related equation. | **07** |
| | **(b)** | Explain use of poles and relative poles with respect to 4-bar linkage giving neat sketches. | **07** |
| | | **OR** | |
| | **(b)** | For a 4-bar linkage explain how dynamic force analysis can be carried out using graphical approach. | **07** |
| **Q.3** | **(a)** | How the concept of friction is visualized in turning pair and screw pair? Explain. | **07** |
| | **(b)** | Briefly discuss the (i) causes of vibration and(ii) effects of vibration. | **07** |
| | | **OR** | |
| **Q.3** | **(a)** | What is 'damping' with reference to mechanical vibrations? Explain giving examples. | **07** |
| | **(b)** | Derive governing equation for single degree free damped vibration system. State the assumptions clearly. | **07** |
| **Q.4** | **(a)** | What are the parameters in which vibrations are measured? List the transducers and pick ups to measure vibrations and briefly discuss any one of them. | **07** |
| | **(b)** | Explain longitudinal and transverse vibrations giving examples. | **07** |
| | | **OR** | |
| **Q.4** | **(a)** | Explain 'modes of vibrations' with reference to a two degree of freedom undamped free vibration system with neat sketches and its significance. | **07** |
| | **(b)** | Write a short note on 'Whirling of Shafts'. | **07** |
| **Q.5** | **(a)** | State and explain Holzer method for determining natural frequencies of multi degree freedom system.Give related equations. | **07** |
| | **(b)** | Explain 'Longitudinal Vibrations of Bars'considering as continuous system. | **07** |
| | | **OR** | |
| **Q.5** | **(a)** | Briefly discuss the torsional vibrations of shafts. | **07** |
| | **(b)** | Write a short note on 'Mathematical modeling' giving example and related example from vibration point of view. | **07** |

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