Code: **MEMD1T1**

I M.Tech - I Semester – Regular/Supplementary Examinations – January - 2017

ADVANCED MECHANISMS
(MACHINE DESIGN)

Duration: 3 hours   Max. Marks: 70

Answer any FIVE questions.   All questions carry equal marks

1. Design a four bar mechanism for the following prescribed instantaneous values of angular velocity and angular acceleration of the three moving links.   14 M

    Driving Link: $\omega_1 = 10$ rad/sec and $\alpha_1 = 0$ rad/sec^2

    Coupling Rod: $\omega_1 = 2$ rad/sec and $\alpha_1 = 15$ rad/sec^2

    Driven Link: $\omega_1 = 5$ rad/sec and $\alpha_1 = 10$ rad/sec^2.

2. Explain the analytical and graphical procedure to evaluate the diameter of the inflection circle under the following cases.

    a) When one pair of conjugate points and the corresponding ray angle are given?   7 M

    b) When two pairs of conjugate points on different rays are given?   7 M

3. a) What do you mean by polode? With suitable example explain moving and fixed polodes.   7 M

b) What is circling point curve?   7 M

4. a) Explain in detail the construction of Roto centre triangle.
                                                    7 M

b) Explain the guiding body through two distinct positions.
                                                    7 M

5. a) State and explain the Robert's theorem.   7 M

b) Briefly explain about the Hrones and nelson's motion atlas.
                                                    7 M

6. Prove the Freudenstients equation which synthesizes a four
    bar mechanisms with usual terms and standard notations.
                                                    14 M

7. a) Explain shaking force.   7 M

b) Explain the kinetostatic analysis.   7 M

8. Explain Denavit-Hartenberg(D-H) Convention parameters
    and write down D-H convention procedure .   14 M