Kinematics of Machines (KOM)

B. TECH (Mechanical) 4th Sem, 2nd Sessional, May, 2025

Max marks: 15 *Max time: 90*

Note: Answer all questions. Each question carries equal marks. Drawing Sheet may be used for Q2.

Q1 (a). Two gear wheels mesh externally to give a velocity ratio of 3. The involute tooth has 6mm module and 20^0 pressure angle. Addendum is equal to one module. The pinion rotates at 90 rpm. Determine number of teeth on pinion to avoid interference. [3]

(b) What is a Gear Train. Classify gear train and explain each with neat sketches. [2]

Q2. Cam is to give the following motion to a knife-edged follower: [5]
1. Outstroke during 60° of cam rotation; 2. Dwell for the next 30° of cam rotation;
3. Return stroke during next 60° of cam rotation, and 4. Dwell for the remaining 210° of cam rotation. The stroke of the follower is 40 mm and the minimum radius of the cam is 50 mm. The follower moves with uniform velocity during both the outstroke and return strokes. Draw the profile of the cam when (a) the axis of the follower passes through the axis of the cam shaft, and (b) the axis of the follower is offset by 20 mm from the axis of the cam shaft.

Q3: (a) Explain a type of Power Transmission dynamometer with a neat diagram. [3]

(b) Write a short note on synthesis of mechanism. [2]