



INSTITUTE OF AERONAUTICAL ENGINEERING

Dundigal, Hyderabad -500 043

MECHANICAL ENGINEERING

ASSIGNMENT

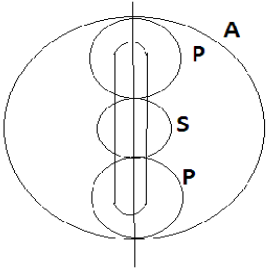
Course Name	:	KINEMATICS OF MACHINERY
Course Code	:	A40309
Class	:	II B. Tech II Semester
Branch	:	Mechanical Engineering
Year	:	2016 – 2017
Course Faculty	:	V.V. S. H Prasad, Professor, G.Karunya, Assistant Professor

OBJECTIVES:

To meet the challenge of ensuring excellence in engineering education, the issue of quality needs to be addressed, debated and taken forward in a systematic manner. Accreditation is the principal means of quality assurance in higher education. The major emphasis of accreditation process is to measure the outcomes of the program that is being accredited.

In line with this, Faculty of Institute of Aeronautical Engineering, Hyderabad has taken a lead in incorporating philosophy of outcome based education in the process of problem solving and career development. So, all students of the institute should understand the depth and approach of course to be taught through this question bank, which will enhance learner's learning process.

S. No	Question	Blooms Taxonomy Level	Course Outcome
ASSIGNMENT-I			
1	In a crank and slotted lever quick return mechanism, the distance between the fixed centers is 150 mm and the driving crank is 75 mm long. Determine the ratio of time taken on the cutting and return strokes.	knowledge	1,3
2	Locate all the Instantaneous centers of the crossed four bar mechanism shown in figure. The dimensions of various links are CD= 65 mm, CA = 60 mm, DB = 80 mm and AB = 55 mm. Find the angular velocities of the links AB and DB if the crank CA rotates counter clockwise at 100 rpm. Figure	knowledge	1,3
3	Derive an expression for the magnitude of Corioli's component of acceleration.	analysis	2,3
4	Sketch and describe the Peaucellier straight line mechanism for generating a straight line with proof.	application	1,3
5	Derive an expression for the ratio of shaft velocities in a Hooke's Joint	knowledge	1,3
ASSIGNMENT-II			
1	What is the condition for correct steering? Sketch and describe Davi's steering gear mechanism.	knowledge	1,3
2	A cam drives a roller follower in the following manner: During first 120° of cam rotation, follower moves outward through a distance of 50 mm with SHM. The follower dwells during next 30° of cam rotation. During next 120° of cam rotation, the follower moves inwards with UARM. The follower dwells for the next 90° of cam rotation. The minimum radius of	application	1,3

S. No	Question	Blooms Taxonomy Level	Course Outcome
	the cam is 25 mm. Draw the cam profile.		
3	Derive an expression for the length of path of contact of meshed spur gears.	knowledge	1,3
4	Derive an expression for the minimum number of teeth required on a pinion to avoid interference in involute gear teeth.	knowledge	1,3
5	<p>An epicyclic gear train is shown on figure. A sun wheel S of 30 teeth meshes with two planet wheels P-P of 50 teeth with external contact. The planet wheels mesh with annular wheel A with internal contact. The driving shaft carrying the sun wheel transmits 4 kW at 300 rpm. The drive shaft is connected to an arm which carries the planet wheels. Determine the speed of the driven shaft and the torque transmitted if the overall efficiency is 95%.</p> 	application	1,3

Prepared By: V.V. S. H Prasad, Professor,
G.Karunya, Assistant Professor

HOD, MECHANICAL ENGINEERING