# ANURAG GROUP OF INSTITUTIONS
(Autonomous)
School of Engineering
II-B.Tech-II-Semester
II Assignment Questions
Subject: KINEMATICS OF MACHINERY
(Only for MECH)

1. Give classification of cams and followers with neat diagrams?

2. A pinion having 30 teeth drives a gear having 80 teeth. The profile of the gears is involute with 20 degrees pressure angle, 12 mm module and 10 mm addendum. Find the length of path of contact, arc of contact and the contact ratio?

3. An epicyclic gear train is shown in figure. The number of teeth on A, B are 80 and 200. Determine the speed of the arm a, if a) A rotates at 100 rpm clockwise and B at 50 rpm counter clockwise b) A rotates at 100 rpm clockwise and B is stationary
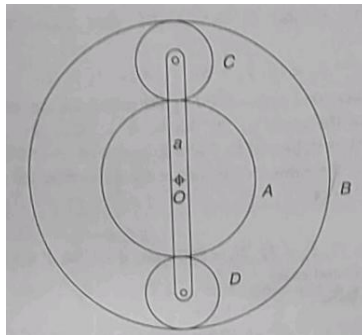
4. Two pulleys, one 450 mm diameter and the other 200 mm diameter are on parallel shafts 1.95 m apart and are connected by a crossed belt. Find the length of the belt required and the angle of contact between the belt and each pulley.

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Venkatapur (V), Ghatkesar (M), Medchal Dist.-501 301.

Department of Mechanical Engineering

Mechanics of Fluid and Hydraulic Machinery

Assignment Test Questions II

1. Explain all types of heads and efficiencies.

2. A jet of water having a velocity of 37 m/s strikes a series of radial curved vanes mounted on a wheel which is rotating at 350 rpm. The jet makes an angle of 40^0 with the tangent to wheel at inlet and leaves the wheel with a velocity of 3 m/s at an angle of 125^0 to the tangent to the wheel at outlet. Water is flowing from outward in a radial direction. The outer & inner radii of the wheel are 0.7m & 0.45m respectively.

   Determine (i) Vane angles at inlet & outlet

   (ii) Workdone per sec per unit weight of water striking per sec

   (iii) Efficiency of the wheel.

3. The following data is related to a Pelton Wheel Turbine:

   Head at base of nozzle = 110 m

   Dia. Of jet = 7.5 cm

   Discharge of nozzle = 200 lit/sec

   Shaft power = 191.295 KW

   Power absorbed in mechanical resistance = 3.675 KW

   Determine (i) Power lost in nozzle (ii) Power lost due to hydraulic resistance in runner.

4. A Kaplan Turbine working under a head of 25m develops 16000 KW of shaft power. The outer dia. of runner is 4m & hub dia. is 2m. The guide blade angle is 35^0. The hydraulic & overall efficiencies are 90% & 85% respectively. If velocity of whirl is zero at outlet, determine runner vane angles at inlet & outlet & find the speed of runner.

5. A Centrifugal Pump is running at 1200 rpm. The outlet vane angle of impeller is 35^0 & velocity of flow at outlet is 4.2 m/s. The pump is working against a total head of 37m & discharge through pump is 0.52 m^3/s. If manometric efficiency of pump is 80%, determine (i) dia. of impeller (ii) width of impeller at outlet.

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II-B.Tech I- Semester II-Assignment Examination

Subject: Probability and Statistics

(Common to CE,CIVIL AND MECH)

1. The nicotine contents in milligrams in two samples of tobacco were found to be as follows

Sample A	24	27	26	21	25	
Sample B	27	30	28	31	22	36

Can it be said that two samples have come from same normal population.

2. From the following data find whether there is any significant linking in the habit of taking soft drink among the categories of employees

Soft drinks	Employees			
	Clerks	Teachers	Officers	Total
Pepsi	10	25	65	100
Thumsup	15	30	65	110
Fanta	50	60	30	140

3. Explain Randomized block design.

4. Set up the analysis of variance for the following results of a Latin square design

A	C	B	D
12	19	10	8
C	B	D	A
18	12	6	7
B	D	A	C
22	10	5	21
D	A	C	B
12	7	27	17

5. Which of the following matrices are regular

a) $\begin{bmatrix} \frac{1}{2} & \frac{1}{4} & \frac{1}{4} \\ 0 & 1 & 0 \\ \frac{1}{2} & \frac{1}{2} & 0 \end{bmatrix}$

b) $\begin{bmatrix} 0 & 0 & 1 \\ \frac{1}{2} & \frac{1}{4} & \frac{1}{4} \\ 0 & 1 & 0 \end{bmatrix}$

6. If $q = \frac{1}{2}$ $z = 500$ and $a = 1500$ then find P_Z, q_Z AND the expected duration of the game

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II Assignment Questions
Subject: PRODUCTION TECHNOLOGY
(Only for MECH)

1. Explain different types of resistant welding. Explain with neat sketch any one type.

   (CO-3 L-2, U-3)

2. Distinguish between hot working and cold working processes with suitable examples.

   (CO-4 L-2, U-4)

3. Describe the process of spinning with neat sketch. (CO-4 L-2, U-4)

4. Explain the difference between Blanking and Piercing operation.(CO-5 L-2, U-5)

5. Describe the process of extrusion and its characteristics with a neat sketch.

   (CO-5 L-2, U-5)

6. Describe thermosetting plastics? With a neat sketch explain blow molding process?

   (CO-5 L-2, U-5)

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Department of Mechanical Engineering

II B.TECH II SEM

ASSIGNMENT TEST-2

Subject: Thermal engineering-1

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1   Explain the Morse test method of determination of frictional power.
2   Derive the expression for volumetric efficiency of reciprocating air compressor in terms of clearance ratio, pressure ratio and Index of the compression.
3   Explain how the use of intermediate pressure for minimum work results in equal pressure ratios in the Two-stages of compression, equal discharge temperature and equal work for two stages.
4   Explain the working of centrifugal air compressor with a neat diagram.
5   Draw the schematic diagram of axial flow air compressor and explain its working.