

**Rajiv Gandhi Govt. Engineering College, Kangra at Nagrota Bagwan**

**Department of Mechanical Engineering**

<b>Program</b>	B.Tech.	<b>Semester</b>	6 <sup>th</sup> (M.E.)
<b>Subject Code</b>	ME-606	<b>Subject Title</b>	Dynamics of Machines
<b>Assignment No.</b>	1	<b>Course Incharge</b>	Anil Pundir
<b>Max. Marks</b>	80	<b>Date of Submission</b>	27/06/2022

**Note:** All questions are compulsory.

Q. No.	Questions	COs, RBT* Level	Marks
<b>Q 1</b>	Consider a bike with appropriate data on size, dimensions and weights. Analyze the bike for the forces, while you are driving the vehicle with uniform velocity. Consider the external load on the bike as your actual weight + Last two digits of your Roll No. in <b>reverse order</b> N. For example, if the Roll No. is <b>21010305001</b> , then External Load = Your weight (say 50 kg i.e. $50 \times 9.81 = 490.5 \text{ N} + 10 = 500.5 \text{ N}$ ). Consider the coefficient friction between the tyre and road as 0.7. Neglect the friction drag due to air.	CO1, L4, L5 & L6	<b>20</b>
<b>Q 2</b>	Consider the question no. 1 again. Consider the linear acceleration (assume suitable value) of the vehicle. Consider the external load on the bike as your actual weight + Last two digits of your Roll No. in <b>reverse order</b> N. For example, if the Roll No. is <b>21010305001</b> , then External Load = Your weight (say 50 kg i.e. $50 \times 9.81 = 490.5 \text{ N} + 10 = 500.5 \text{ N}$ ). Consider the coefficient friction between the tyre and road as 0.7. Neglect the friction drag due to air.	CO1, L4, L5 & L6	<b>20</b>
<b>Q 3</b>	With respect to question no.1, Consider the suitable data for analysis of the engine of the bike. Consider both cases of statics and dynamic forces analysis. Neglect the friction.	CO2, L4, L5 & L6	<b>10+10 = 20</b>
<b>Q 4</b>	How will you balance the different components of the bike?	CO2, L2 & L4	<b>5</b>
<b>Q 5</b>	Assume that the wheels in your bike are alloy wheels and have three limbs. Consider the appropriate weight of the limb (assuming all limbs equal and equally spaced around the wheel). If in an accident, $\frac{2}{3}$ of one of the limbs of the front wheel is completely damaged and removed. What amount of balancing weight and at what orientation is required to completely balance the said wheel. Consider that such balancing weight will be applied on the periphery of the wheel rim.	CO2, L4, L5 & L6	<b>15</b>

**Course Outcomes (COs):** *After studying the course, the students will be able to*

<b>1</b>	Understanding the influence(s) of Static and Dynamic Forces on the Planar Mechanisms.
<b>2</b>	Comprehend the importance of Balancing and analyze the Planar Mechanisms for the Balancing.
<b>3</b>	Relating the theory and practical while analyzing the mechanisms/devices like Governors, Dynamometers, Flywheel, Gyroscopes etc..
<b>4</b>	Understanding the Vibrations and its importance to the Machines.

RBT Classification	Lower Order Thinking Levels (LOTS)			Higher Order Thinking Levels (HOTS)		
	L1	L2	L3	L4	L5	L6
<b>RBT Level Number</b>	L1	L2	L3	L4	L5	L6
<b>RBT Level Name</b>	Remembering	Understanding	Applying	Analyzing	Evaluating	Create

