

A Report on

REDUCE THE FREQUENCY AMPLITUDE AND ROAD CONDITION IMPLEMENT ON VEHICLE CHASSIS

A Project report submitted for the partial fulfillment of the requirements for
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CERTIFICATE

This is to certify that the project entitled “**REDUCE THE FREQUENCY AMPLITUDE AND ROAD CONDITION IMPLEMENT ON VEHICLE CHASSIS**” is the record of the work carried out by **PIRADI DHANARAJU (21815A0337)**, **NANDIPALLI VENKATA SAI VIVEK (21815A0332)**, **NAMBALA SITHARAM (21815A0331)**, **TNADIMPALLI VENKATA NARSIMHA RAJU (21815A0328)** & **MALLA PRADEEP (21815A0366)** students of final year B. Tech in the department of Mechanical engineering. This work is done for the partial fulfillment for the award of BACHELOR OF TECHNOLOGY. during the year 2023-2024.

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REDUCE THE FREQUENCY AMPLITUDE AND ROAD CONDITION IMPLEMENT ON VEHICLE CHASSIS

ABSTRACT

The chassis stands as a crucial and integral component within the framework of a vehicle. The primary objective of this undertaking revolves around conducting static structural analysis as well as harmonic analysis to explore the fundamental characteristics of a truck chassis. In the realm of stationary response, the focus is on identifying the location of failure zones and areas with high stress concentrations. Simultaneously, this analysis aims to determine the extent of deformation experienced by the truck chassis.

For a comprehensive understanding of the dynamic response of the truck chassis, factors such as natural frequencies and mode shapes are meticulously planned through the utilization of the Finite Element Analysis (FEA) technique. The ensuing numerical analysis is then devised to validate the results obtained from the FEA models.

To enhance the design and performance of the chassis, strategic modifications are envisaged. This involves the incorporation of a tuned mass damper to optimize the vibrations associated with the truck chassis and, in turn, mitigate the likelihood of failure. The ultimate objective is to curtail the frequency amplitude, particularly under favorable road conditions. Through these interventions, the goal is to achieve a chassis design that not only meets structural integrity requirements but also minimizes vibrations and enhances overall performance on the road.