

Review Report Of

**FINITE ELEMENT ANALYSIS OF HULL BASE OF NAVAL  
FRIGATE SUBJECTED TO RANDOM VIBRATIONS**

A thesis submitted in the partial fulfillment of the requirement for the award for the degree of

**BACHELOR OF TECHNOLOGY**

**IN**

**MECHANICAL ENGINEERING**

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CERTIFICATE

This is to certify that project report is entitled “**FINITE ELEMENT ANALYSIS OF HULL BASE OF NAVAL FRIGATE SUBJECTED TO RANDOM VIBRATIONS**” was carried out by, **K.NANI (17811A0328)**, **N.MOHAN (17811A344)**, **A.DURGA PRASAD (17811A302)**, **M.VAMSHI KRISHNA (17811A0340)**, in partial fulfilment of requirements for the award of the degree of bachelor of technology in “**MECHANICAL ENGINEERING**” by Jawaharlal Nehru Technological university , Kakinada During the years 2017-2021.

  
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EXTERNAL EXAMINER

## ABSTRACT

The hull part of any sailing body over the sea waves experiences multiple excitation loads resulting from many machines integrated as a part of the propulsion system. These include shaft forces (bearing forces) and hull surface forces that act as major excitation factors causing the ship structure to vibrate. The shaft forces act along the shaft line originating from diesel alternators that power all mechanical, electrical and other auxiliary gauges employed in the structure. Other major forms of excitations originate from the gas turbine unit which is employed as a propelling unit. These excitations or vibrations are not uniform which may lead to machinery failure or malfunction, personal discomfort for the crew, loosening of joints, nuts, bolts, etc. In this work, a random vibration analysis of Naval Frigate is carried out subjected to varying modal frequencies that emerges as a resultant of all periodic and random excitations originating from different sources of machinery onboard. The mode shapes for different frequencies are studied to identify the areas of highly induced stresses due to deformations obtained at varying natural frequencies. The results are iterated for different mode sets to identify the critical areas where the intensity of vibrations will be more to decide the frigate stability.

**Keywords:** *Frigate Vibration Analysis, Random Vibration Analysis of Ship Hull, Dynamic Analysis of Ships*