

# DESIGN AND FABRICATION OF ENGINE FOR GO - KART

A PROJECT REPORT

*Submitted by*

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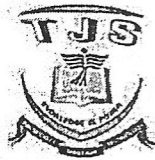
*in partial fulfillment for the award of the degree*

*of*

**BACHELOR OF ENGINEERING**

*in*

**MECHANICAL ENGINEERING**



**T.J.S ENGINEERING COLLEGE**



**ANNA UNIVERSITY: CHENNAI 600 025**

**JUNE 2022**

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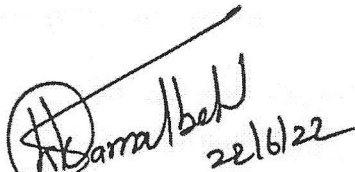
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BONAFIDE CERTIFICATE

Certified that this project report "DESIGN AND FABRICATION OF ENGINE FOR GO-KART" is the bonafide work of J.SIMSOAN (112819112021), S.SINDHU(112819114022), K.ELANGOAN (112819114301), K.YUVANESH (112819114302)", who carried out the project work under my supervision.

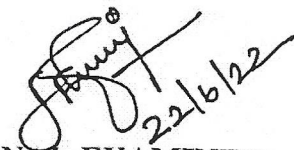
  
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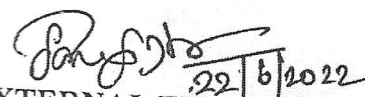
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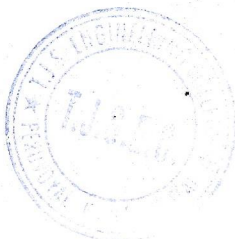
  
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Submitted for project viva - voce examination held on 22/6/22

  
INTERNAL EXAMINER

  
EXTERNAL EXAMINER



  
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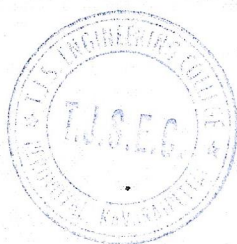
## ABSTRACT

motorcycle engine is an engine that powers a motorcycle. Motorcycle engines are typically two-stroke or four-stroke internal combustion engines, but other engine types, such as Wankels and electric motors, have been used.

Although some mopeds, such as the VéloSoleX, had friction drive to the front tire, a motorcycle engine normally drives the rear wheel, power being sent to the driven wheel by belt, chain or shaft. Historically, some 2,000 units of the Megola were produced between 1921 and 1925 with front wheel drive,[1] and the modern Rokon, an all terrain motorcycle



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ME8593

DESIGN OF MACHINE ELEMENTS

L T P C  
3 0 0 3

**OBJECTIVES**

- To familiarize the various steps involved in the Design Process
- To understand the principles involved in evaluating the shape and dimensions of a component to satisfy functional and strength requirements.
- To learn to use standard practices and standard data
- To learn to use catalogues and standard machine components
- (Use of P S G Design Data Book is permitted)

**UNIT I STEADY STRESSES AND VARIABLE STRESSES IN MACHINE MEMBERS 9**

Introduction to the design process - factors influencing machine design, selection of materials based on mechanical properties - Preferred numbers, fits and tolerances – Direct, Bending and torsional stress equations – Impact and shock loading – calculation of principle stresses for various load combinations, eccentric loading – curved beams – crane hook and 'C' frame- Factor of safety - theories of failure – Design based on strength and stiffness – stress concentration – Design for variable loading.

**UNIT II SHAFTS AND COUPLINGS 9**

Design of solid and hollow shafts based on strength, rigidity and critical speed – Keys, keyways and splines - Rigid and flexible couplings.

**UNIT III TEMPORARY AND PERMANENT JOINTS 9**

Threaded fastners - Bolted joints including eccentric loading, Knuckle joints, Cotter joints – Welded joints, riveted joints for structures - theory of bonded joints.

**UNIT IV ENERGY STORING ELEMENTS AND ENGINE COMPONENTS 9**

Various types of springs, optimization of helical springs - rubber springs - Flywheels considering stresses in rims and arms for engines and punching machines- Connecting Rods and crank shafts.

**UNIT V BEARINGS 9**

Sliding contact and rolling contact bearings - Hydrodynamic journal bearings, Sommerfeld Number, Raimondi and Boyd graphs, -- Selection of Rolling Contact bearings.

**TOTAL: 45 PERIODS**

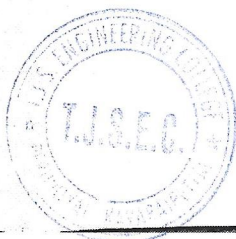
**OUTCOMES:**

Upon the completion of this course the students will be able to

- CO1 Explain the influence of steady and variable stresses in machine component design.
- CO2 Apply the concepts of design to shafts, keys and couplings.
- CO3 Apply the concepts of design to temporary and permanent joints.
- CO4 Apply the concepts of design to energy absorbing members, connecting rod and crank shaft.
- CO5 Apply the concepts of design to bearings.

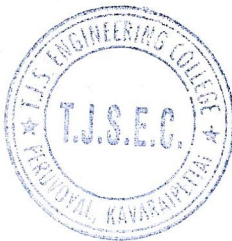
**TEXT BOOKS:**

1. Bhandari V, "Design of Machine Elements", 4<sup>th</sup> Edition, Tata McGraw-Hill Book Co, 2016.
2. Joseph Shigley, Charles Mischke, Richard Budynas and Keith Nisbett "Mechanical Engineering Design", 9th Edition, Tata McGraw-Hill, 2011.



**REFERENCES:**

1. Alfred Hall, Halowenko, A and Laughlin, H., "Machine Design", Tata McGraw-Hill BookCo.(Schaum's Outline), 2010
2. Ansel Ugural, "Mechanical Design – An Integral Approach", 1<sup>st</sup> Edition, Tata McGraw-Hill Book Co, 2003.
3. P.C. Gope, "Machine Design – Fundamental and Application", PHI learning private ltd, New Delhi, 2012.
4. R.B. Patel, "Design of Machine Elements", MacMillan Publishers India P Ltd., Tech-Max Educational resources, 2011.
5. Robert C. Juvinall and Kurt M. Marshek, "Fundamentals of Machine Design", 4<sup>th</sup> Edition, Wiley, 2005
6. Sundararamoorthy T. V. Shanmugam .N, "Machine Design", Anuradha Publications, Chennai, 2015.



  
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