

Hindbookcenter



Hind Book Center & Photostat

Unacademy

Mechanical Engineering

Toppers Handwritten Notes

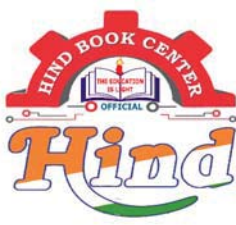
Machine Design

By- Praveen KulkarniSir

- Colour Print Out
- Blackinwhite Print Out
- Spiral Binding, & Hard Binding
- Test Paper For IES GATE PSUs IAS, CAT
- All Notes Available & All Book Availabile
- Best Quaity Handwritten Classroom Notes & Study Materials
- IES GATE PSUs IAS CAT Other Competitive/Entrence Exams

Visit us:- www.hindbookcenter.com

**Courier Facility All Over India
(DTDC & INDIA POST)
Mob-9654451541**



Hindbookcenter



MADE EASY, IES MASTER, ACE ACADEMY, KREATRYX

**ESE, GATE, PSUs BEST QUALITY TOPPER HAND WRITTEN
NOTES MINIMUM PRICE AVAILABLE @ OUR WEBSITE**

- | | |
|--------------------------------|---------------------------|
| 1. ELECTRONICS ENGINEERING | 2. ELECTRICAL ENGINEERING |
| 3. MECHANICAL ENGINEERING | 4. CIVIL ENGINEERING |
| 5. INSTRUMENTATION ENGINEERING | 6. COMPUTER SCIENCE |

IES, GATE, PSU TEST SERIES AVAILABLE @ OUR WEBSITE

❖ IES –PRELIMS & MAINS

❖ GATE

➤ **NOTE;- ALL ENGINEERING BRANCHS**

➤ **ALL PSUs PREVIOUS YEAR QUESTION PAPER @ OUR WEBSITE**

PUBLICATIONS BOOKS -

MADE EASY, IES MASTER, ACE ACADEMY, KREATRYX, GATE ACADEMY, ARIHANT, GK

RAKESH YADAV, KD CAMPUS, FOUNDATION, MC –GRAW HILL (TMH), PEARSON...OTHERS

HEAVY DISCOUNTS BOOKS AVAILABLE @ OUR WEBSITE

Shop No.7/8 Saidulajab Market Neb Sarai More, Saket, New Delhi-30 9654451541	Shop No: 46 100 Futa M.G. Rd Near Made Easy Ghitorni, New Delhi-30	F518 Near Kali MaaMandir Lado Sarai New Delhi-110030	F230, Lado Sarai New Delhi-110030
---	---	---	--

Website: www.hindbookcenter.com

Contact Us: 9654451541



MACHINE DESIGN

Classroom Notes

[Handwritten]

For GATE | ESE | PSU'S

Mechanical Engineering

By: Mr. Praveen Kulkarni

Index

1. Design Against dynamic Loading
2. Brakes
3. Clutches
4. Bearings
5. Spring
6. Design of Spur Gear
7. Riveted Joint
8. Welded Joint

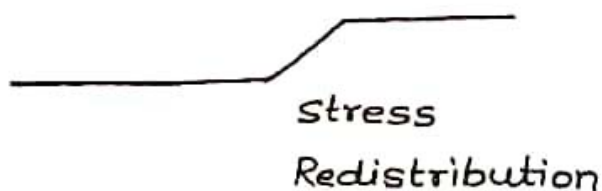
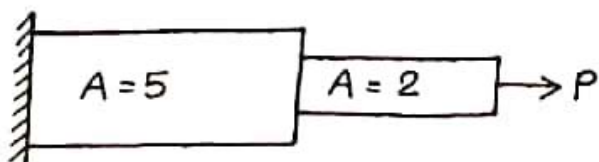
Chapter: 1

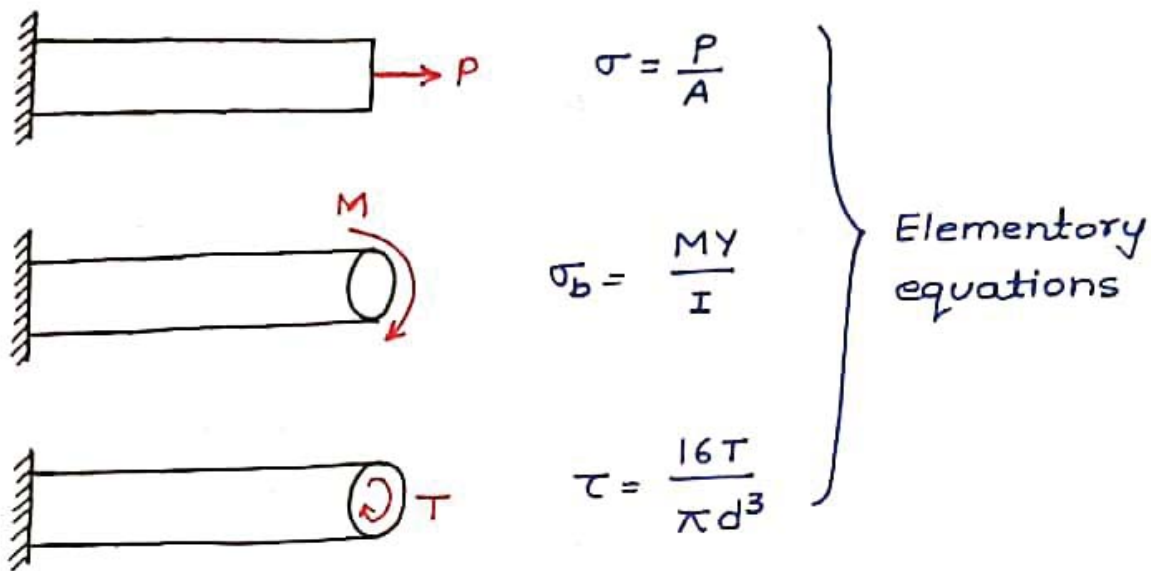
Design against dynamic loading

Design Against dynamic loading (Fluctuating loads)

In the development of basic stress equations for various types of loads, it was assumed that there are no discontinuities or irregularities in the cross-section of members. However, most machine elements have discontinuities like sudden change in cross-section, holes etc. These discontinuities in machine element change the stress distribution in their neighborhood so that elementary equations no longer describe the actual state of stress. Such discontinuities are known as Stress Raisers.

Internal cracks, cavities in weld, blow holes are examples of stress raisers. To account for this a factor called stress concentration factor is introduced.



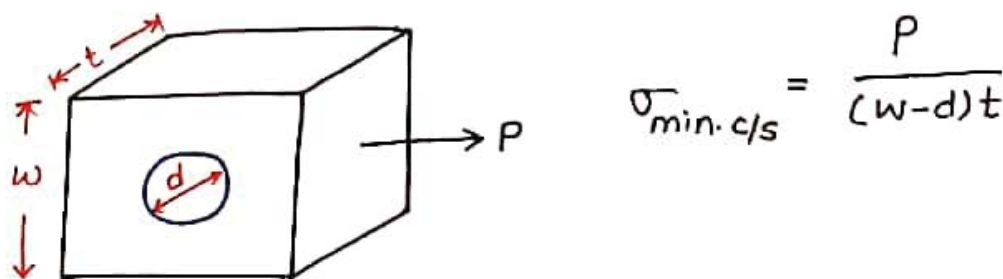


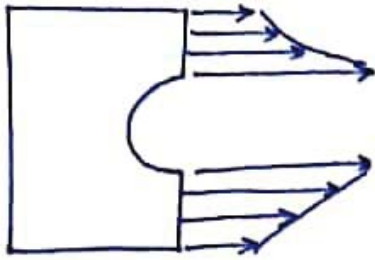
Theoretical stress concentration Factor: (K_t)

It is the ratio of maximum stress to the stress at min. cross-section obtained from elementary equations. This stress concentration factor is also known as theoretical stress concentration factor or form stress concentration factor because it depends only on geometry or shape of member. In actual practice, the stress concentration effect is less because of redistribution of stress.

$$K_t = \frac{\sigma_{\max.}}{\sigma_{\min. \text{ c/s}}}$$

For Example:

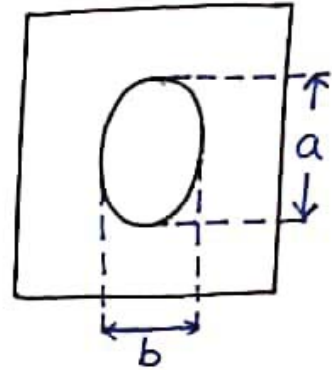




- For a plate with elliptical hole, $K_t = 1 + \frac{2a}{b}$

Where $a \rightarrow$ Major axis

$b \rightarrow$ Minor axis

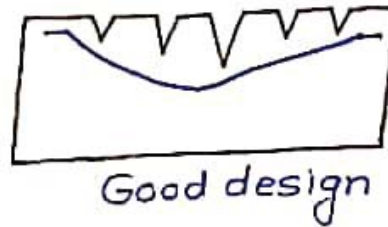
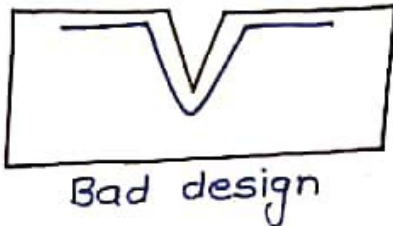


- if the hole is circular; $a = b$

$$K_t = 1 + 2 = 3$$

Examples:

(1)



(2)

