

# HindPhotostat



## Hind Photostat & Book Store

Best Quality Classroom Topper Hand Written Notes to Crack GATE, IES, PSU's & Other Government Competitive/ Entrance Exams

### **MADE EASY** **MECHANICAL ENGINEERING**

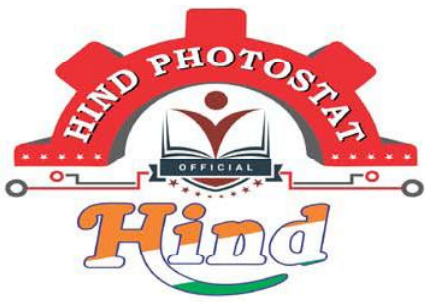
I.C Engine  
BY- Amrinder Sir

- Theory
- Explanation
- Derivation
- Example
- Shortcuts
- Previous Years Question With Solution

**Visit us:-[www.hindphotostat.com](http://www.hindphotostat.com)**

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

**Mob-9311989030**



# HindPhotostat



**MADE EASY , IES MASTER , ACE ACADEMY , KREATRYX**

**ESE , GATE, PSU 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**

<b>F230, Lado Sarai New Delhi-110030 Phone: 9311 989 030</b>	<b>Shop No: 46 100 Futa M.G. Rd Near Made Easy Ghitorni, New Delhi-30 Phone:9711475393</b>	<b>F518 Near Kali Maa Mandir Lado Sarai New Delhi-110030 Phone: 9560 163 471</b>	<b>Shop No.7/8 Saidulajab Market Neb Sarai More, Saket, New Delhi-30</b>
--	--	--	--

**Website: [www.hindPhotostat.com](http://www.hindPhotostat.com)**

**Contact Us: 9311 989 030**

**Courier Facility All Over India**

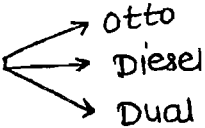
**(DTDC & INDIA POST)**

# IC

# ENGINE

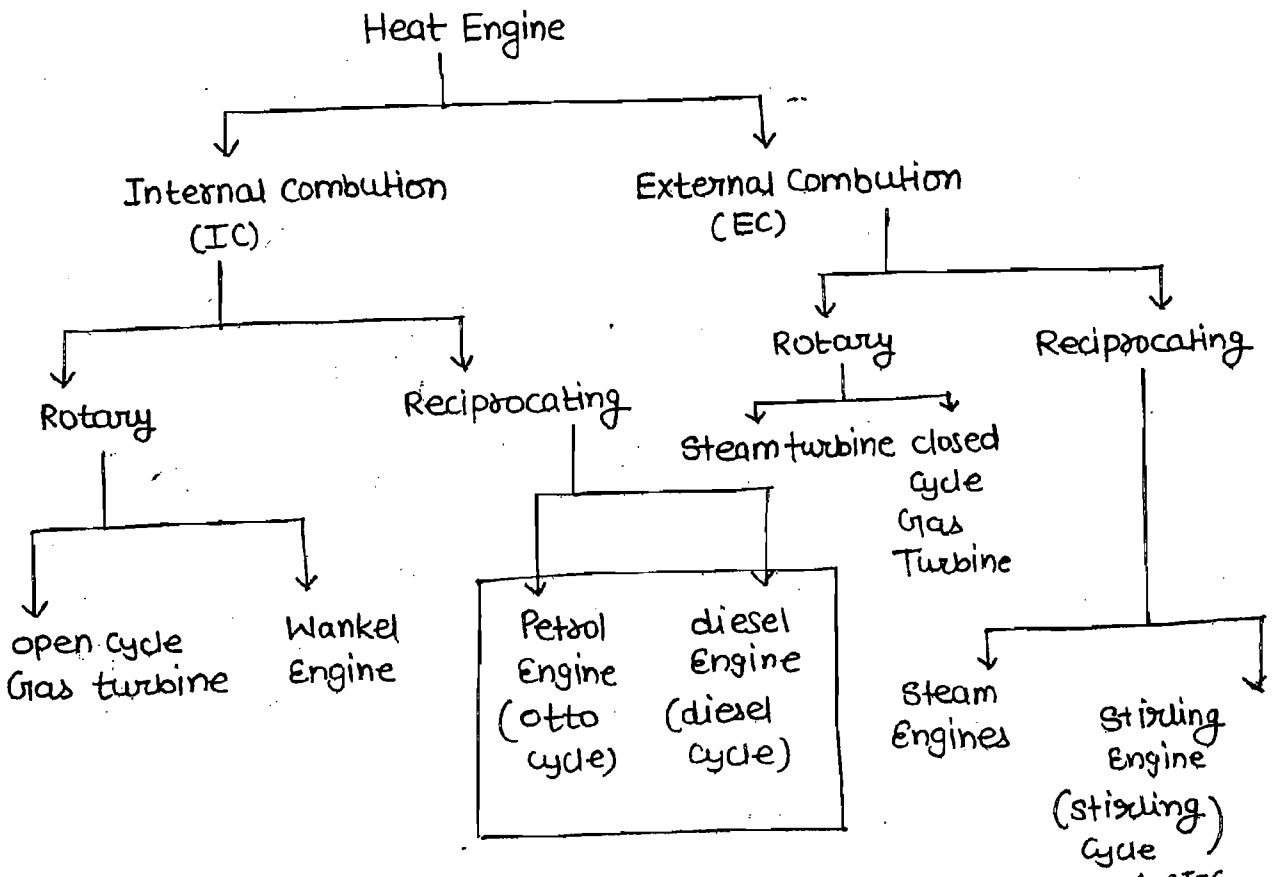
## Books :

- V. Ganeshan
- Mathur and Sharma

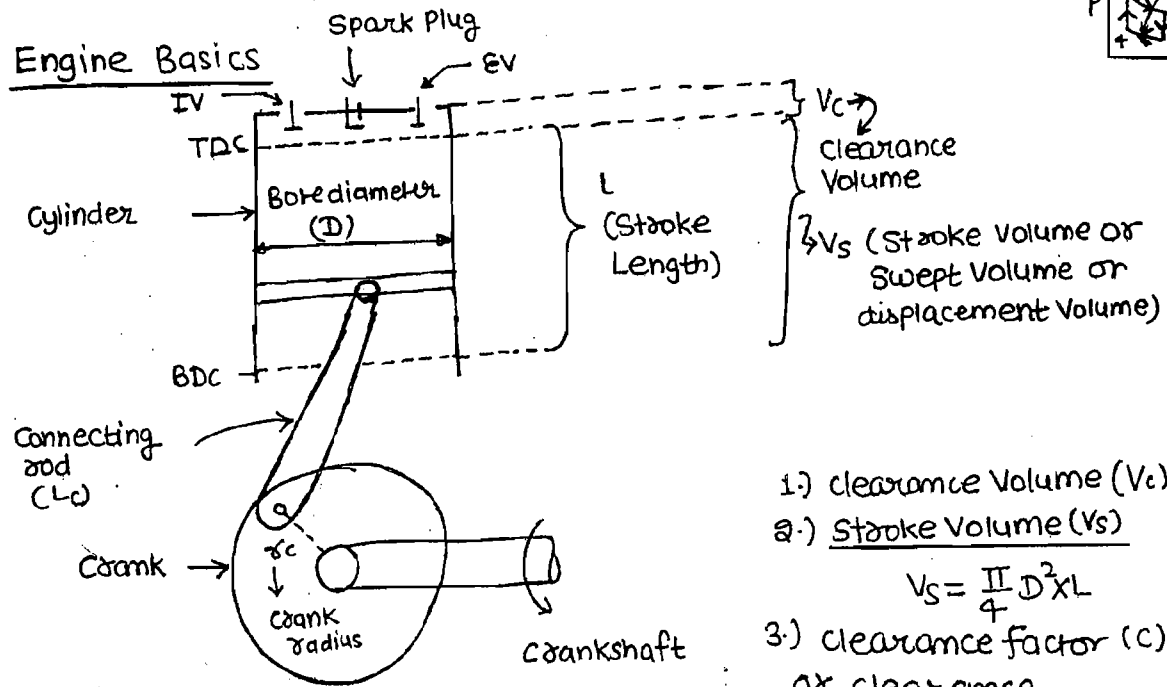
- (I) Engine Basics
- (II) Air Standard Cycles 
  - Otto
  - Diesel
  - Dual
- (III) Thermochemistry
- (IV) Performance Parameters
- (V) Engine tests



# # Various types of Engines: →



## • Engine Basics



### NOTE: →

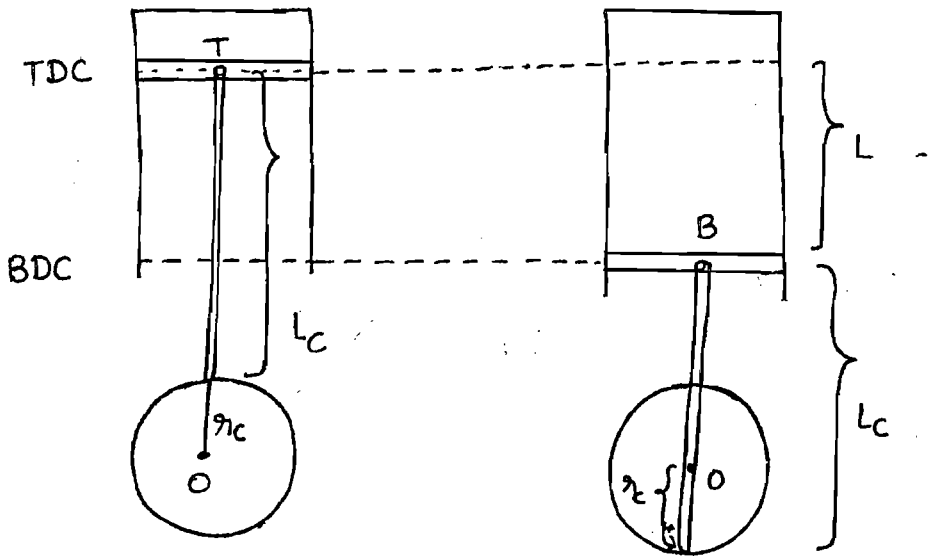
- IV: Inlet Valve
- EV: Exhaust Valve
- TDC: Top dead Centre
- BDC: Bottom dead centre

- 1) clearance Volume ( $V_c$ )
- 2) Stroke Volume ( $V_s$ )
- 3) clearance factor ( $c$ ) or clearance ratio or clearance Volume ratio

$$V_s = \frac{\pi}{4} D^2 L$$

$$c = \frac{V_c}{V_s}^*$$

$$L = 2r_c$$



$$L = OT - OB$$

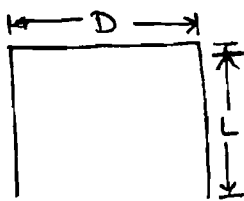
$$= (L_c + r_c) - (L_c - r_c)$$

$$L = 2r_c$$

(5) Average Piston Velocity ( $\bar{V}_p$ )

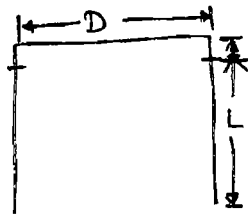
$$\bar{V}_p = \underbrace{2L}_{\text{dis/rev.}} \times \underbrace{\frac{N}{60}}_{\text{rpm}} \frac{\text{rev}}{\text{Sec}} = \frac{2L \times N}{60}$$

(6)



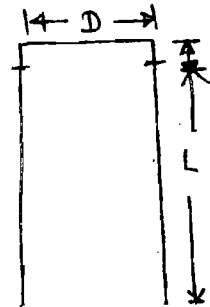
oversquare or  
Short stroke

$$\frac{D}{L} > 1$$



Square  
engine

$$\frac{D}{L} = 1$$



Under or Long  
square stroke

$$\frac{D}{L} < 1$$