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

ELECTRICAL ENGINEERING

E.M.I

By.Raju Sir

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

Visit us:-www.hindphotostat.com

Courier Facility All Over India
(DTDC & INDIA POST)
Mob-9311989030

HindPhotostat

GET IT ON Google Play

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. INSTRUMENTION 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

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

Website: www.hindPhotostat.com

Contact Us: 9311 989 030

Courier Facility All Over India

(DTDC & INDIA POST)

rajumtec@gmail.com
9052584749

Syllabus

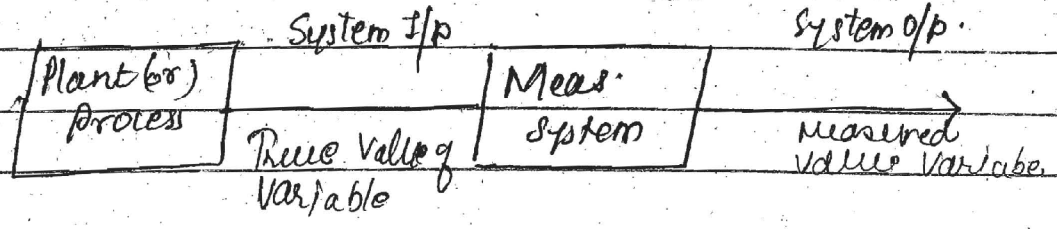
GATE - 6 to 8M.
IES Obj → 50 to 60M
Conv → 60 to 70M.

→ BASICS of measurement system
→ Error Analysis
→ Analog Instruments
→ PMMC, EMMC, MI, ESV, THERMAL Inst.
→ Rectifier Type Inst.
→ Measurement of Resistances
→ ~~All a.c. a.c. b~~
→ D C Bridge
→ Measurement of L, C, & M.
→ AC Bridges
→ Meas. of power
→ DC & AC power
→ Measu. of Energy
→ Potentiometer
→ p.f. meter
→ flux meter
→ Inst. T/F.
Electronic
→ Q Meter
→ C.R.O
→ DVM
→ TRANSDUCERS (Only for I.E.S)

→ Bridges & Potentiometer, Measurement of v/g, I, P, Energy & P.f. I.T, D.V.M & DMM, Phase, time & freq. measurement, Oscilloscope & Error analysis

www.hindphotostate.com
9311989030

→ Generalized measurement System :-



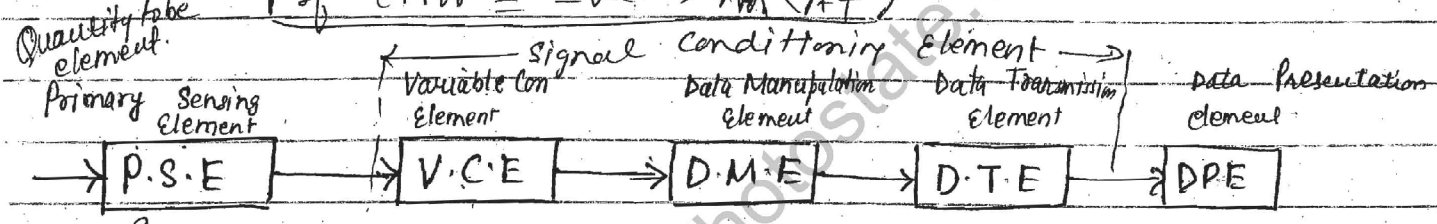
Error $\delta_A = A_m - A_T$

A_m = measured value
A_T = True value.

$\boxed{\text{Error} = \text{system o/p} - \text{system I/p}}$

$\boxed{\begin{array}{l} \text{If error} = +ve \Rightarrow A_m > A_T \\ \text{If error} = -ve \Rightarrow A_m < A_T \end{array}}$

→



Ex:- Sensor
Ex:- Thermocouple
↳ Δt
Tech ometer
↳ N

Ex:- A→D
D→A
V→I
I→V
V→f

Ex:- Modulator
Amplifier
Attenuator

Any x^{mm}
channel like
Two-wire,
co-axial cable,
Opticle ~~cable~~ fiber

Ex:- CRO
LCD display
LED "
X-Y recoder

→ Purpose of measurement system is to present an absorver with a numerical value, which consists of Nos. 0-9.
→ Most commonly preffered display is digital display of B.C.D-7 segment type.
→ If the type of display is digital it is more user friendly, easy to readable.

1) Primary Sensing Element :- The element which has direct contact with the process known as primary sensing element (or) sensor (or) Transducer.

www.hindphotostate.com 9311989030

→ Transducer is a device which can convert one form of the of energy into another form of energy. That means which can convert non electrical energy into electrical energy.

Variable Conversion Element (VCE):- The element which is used to convert one form of the s/g into another form of signal, the nature of the s/g gets changes at its o/p.
Ex:- ADC, DAC, V/g to Current, Current to V/g, etc.

Data Manupulation element:- The element which is used to modify the level of the s/g, without changing the nature of the s/g. i.e. which can either amplify or attenuate the level of the s/g.

Data Transmission Element (DTE):- The element which is used to transmitte the s/g to the presentation centre.

Data Presentation Element (DPE):- The element which is used to display the data or to store the data for future analysis.

Qeee. In a generalized measurement system the following building blocks are given as
1) VCE 2) DTE 3) DME 4) DPE 5) PSE.
Arrange these blocks in a sequential order. for the purpose of measurement.

→ 5, 1, 3, 2, 4.

www.hindpdfpostage.com 9314989030

NOTE:-

The quality of instrument is always decided by % relative static error, it is always calculated w.r.t. TRUE Value.

Q. $A = \delta A = 1A$ $\delta B = 10Amp$ which one is more quality

a) Only A, only B (c) both A & B (d) None

$$\% \text{ Relative static Error} = \frac{A_m - A_T}{A_T} \times 100 = \frac{\delta A}{A_T} \times 100$$

(or) % R.S.E

(or) % Limiting Error $= \left(\frac{A_m}{A_T} - 1\right) \times 100$

(or) % L.E

L.E = Limiting error

$$\boxed{\% \text{ Accuracy} = 100 - (\% L.E)}$$

Que.

(A)	(B)
$\delta_A = 1Amp$	$\delta_B = 10Amp$
$A_T = 2Am$	$B_T = 1000Am$

which one is more accurate

$$\% R.S.E = \frac{\delta A}{A_T} \times 100 = \frac{1}{2} \times 100$$

$\% A.E = 50\%$

$$\% R.S.E = \frac{\delta_B}{B_T} \times 100 = \frac{10}{1000} \times 100$$

$\% A.E = 1\%$

$$\Rightarrow \text{Correction factor} = \frac{1}{1 + \varepsilon_r}$$

ε_r = Relative limiting error.

www.hindphotostate.com 9311989039