



FORENSIC AS TECHNICAL EVIDENCE

Presented By:
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Forensic Expert

FORENSIC SCIENCE




- Forensic Science is the use of science & technology for legal purpose
- ‘Forensic Science’ is the application of various basic sciences to provide scientific evidences to court of law

Locard’s Principle of Exchange

1. “Whenever two objects come into contact, they always leave a trace on the other.”
2. Every criminal can be connected to his crime by contact traces carried from the scene of crime or left by him at the scene of crime

QDE (Questioned Document Examination)

- 
1. A "questioned" document is any signature, handwriting, typewriting, or other mark whose source or authenticity is in dispute.
 2. The types of documents that come under the examiner's purview include wills, contracts, letters, threatening photos, lottery tickets, passports, voter registrations, drivers licenses, cheques, tax returns, sales receipts, torn pieces of paper ,photocopies, carbon paper, charred paper, faxes etc.

SCOPE OF QDE

- Handwriting analysis.
- Signatures and initial analysis.
- Writing and disguised writings.
- Alteration, Erasure, Obliteration and over-writings.
- Sequence of strokes in a handwritten or printed matter
- Digital written document analysis.
- Identify different types of paper, ink, water-marks, copy machines, printer cartridges, stamp impressions etc.



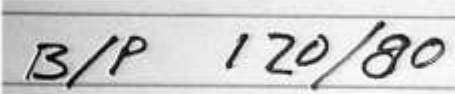
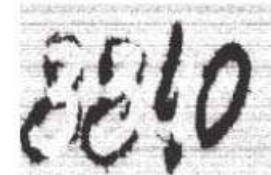
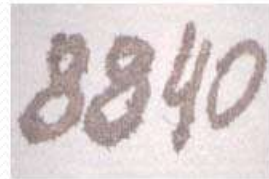
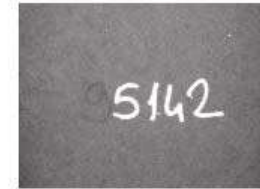
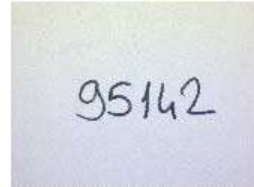


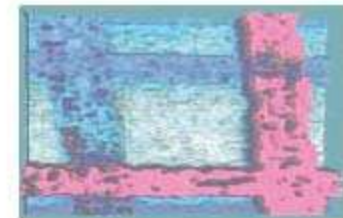
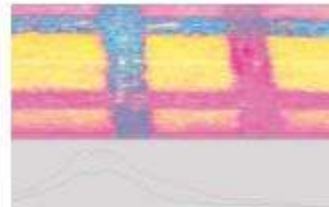
Figure 1 Viewed by the "naked eye"



Figure 2 Viewed at 665 nanometers
Infrared luminescence

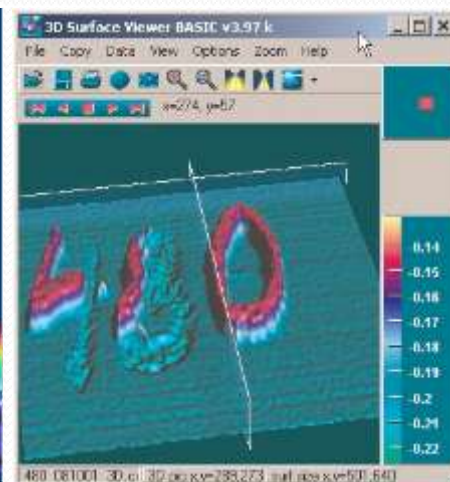
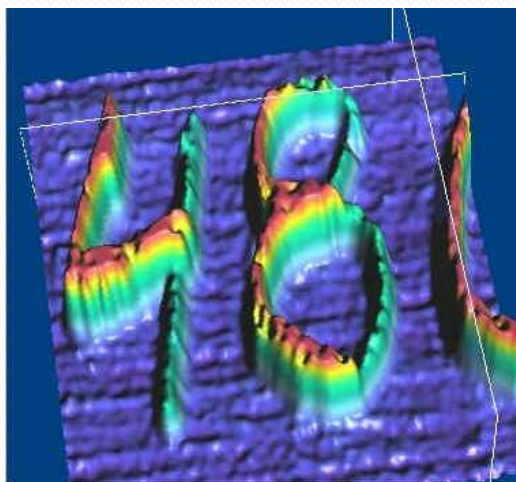
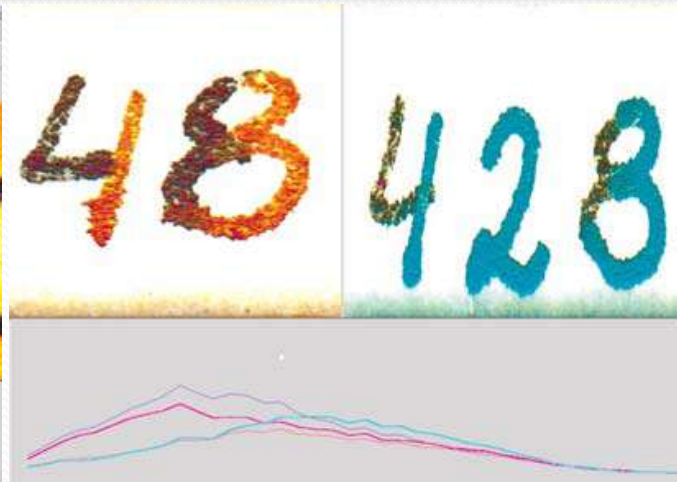
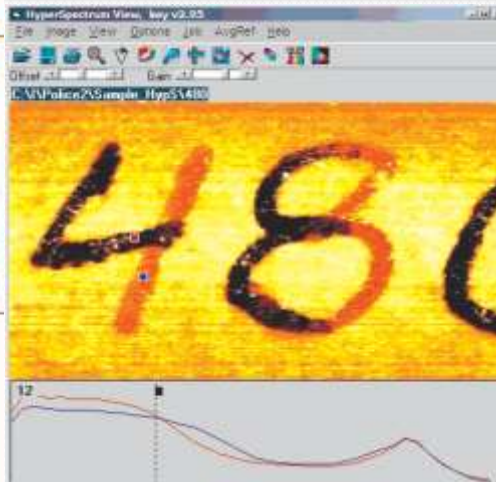


Revealing concealed or masked writing



Stroke sequence determination using micro-hyperspectral measurements in intersecting areas





CHARACTERISTICS OF HANDWRITING

- Identification of the author of disputed handwriting, and/or signatures to determine if they are genuine or a forgery.
- It is a proved fact that handwriting is “Brain Writing” controlled by the signals sent by the nervous system through hand. Thus, it is unique to every individual.
- No two people have identical handwriting
- Factors to consider include the arrangement of the writing on the paper, such as margins, spacing, crowding, insertions, and alignment.
- The final conclusion must be based on a sufficient number of common characteristics between the known and questioned writing samples; it is a judgment call made by the expert examiner in the context of each case.



CHARACTERISTICS OF HANDWRITING

- A person cannot produce in a mechanical manner exactly what has been written first. There must be some natural variation in the writing of the same person.
- If two signatures are precisely alike then one of them must be a forged signature.



CHARACTERISTICS OF HANDWRITING

- **Class Characteristics**

- General characteristics which may be common to more than one individual
- Similarities between individuals who learned the same type of writing systems.

- **Individual Characteristics**

- These are characteristics that are true only to a specific writer.
- It is a combination of individual characteristics that make handwriting unique to him/her.



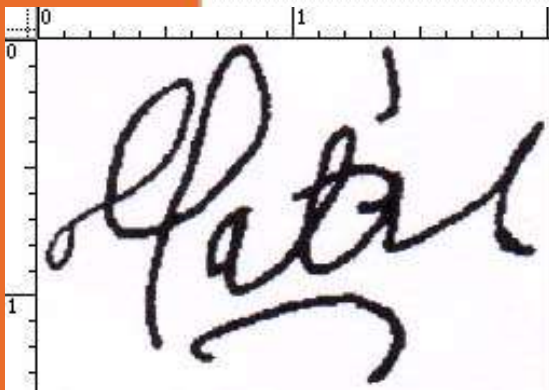
TYPES OF INDIVIDUAL CHARACTERISTICS

- Penmanship
- Slant
- Line Quality
- Pen Movement
- Proportions
- Height
- “l” Dot
- “t” Crossing
- Loops
- Pressure
- Baseline Alignment
- Pen Lifts
- Speed
- Embellishments
- Entry/Exit Strokes
- Retracing
- Spelling/Spacing
- Format
- Case



STANDARD COMPARISONS

- Include sample to be analyzed called as **Questioned / Disputed**
- Samples from an individual include
 - **Collected writing** comes from prior to the beginning of the investigation (helps prevent or indicate when a person is disguising their handwriting) known as **Admitted/ Known**
 - **Requested writing** is a dictated text using the same type of paper known as **Specimen**



www.square **Questioned/Disputed**



Admitted/Known



Specimen

FORGERY TYPES

1. Freehand, Simulated or copied forgery
2. Traced Forgery
3. Forged by memory
4. Forgery without model or forgery by impersonation





1
ਸ਼ਾਇਨ ਸਿੰਘ
ਸ਼ਾਇਨ ਸਿੰਘ
ਸ਼ਾਇਨ ਸਿੰਘ
ਸ਼ਾਇਨ ਸਿੰਘ

Shayinder
Signature
Name
Kaur
I/we undertake to inform you ab
dia for permanent residence.
Shayinder Kaur

Copied Forgery



पारवती जॉइंट
[Handwritten signature in Hindi]
[Faint text below signature]

Admitted

Harish Chari
[Traced signature in Hindi]

Traced forgery by use of Carbon

पारवती जॉइंट
[Handwritten signature in Hindi]
[Faint text below signature]

Questioned

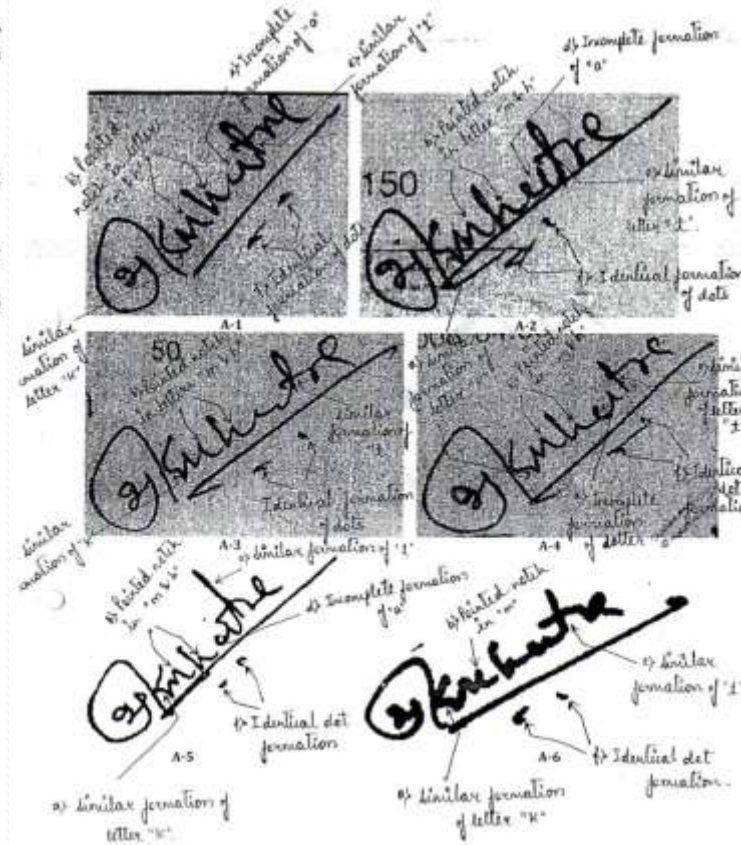
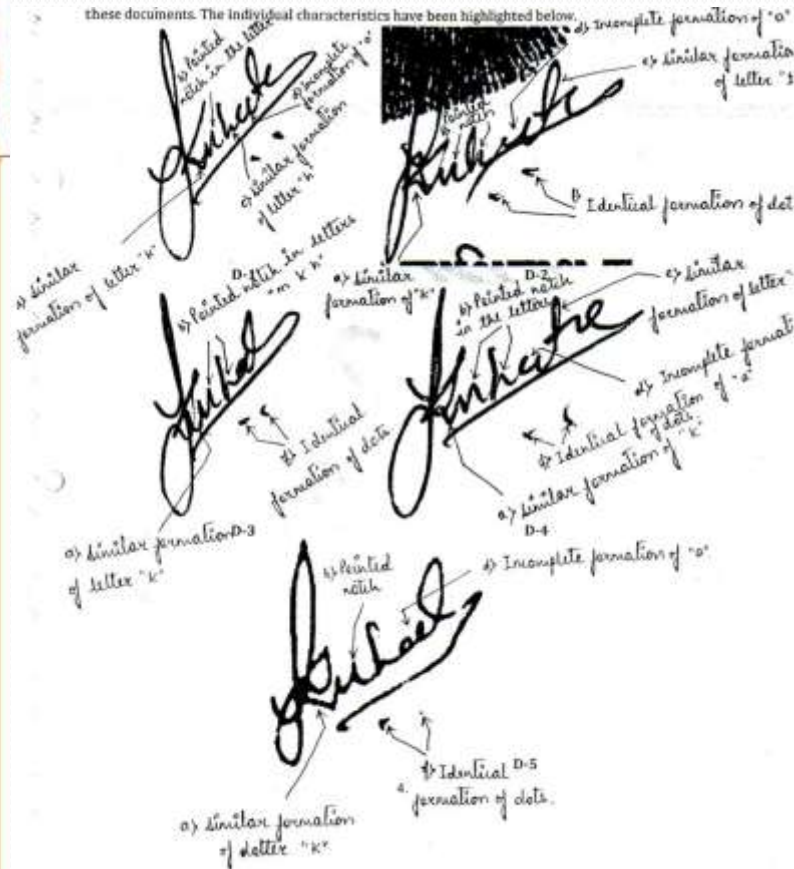
DISGUISE HANDWRITING



- A deliberate departure from the normal handwriting habits generally referred to as “Disguise”
- Even disguised handwriting will exhibit some of the person’s individual characteristics

CASE STUDY OF DISGUISE

these documents. The individual characteristics have been highlighted below.



Questioned or Disputed Document

9/7/2002

Dr. A.R. Mashru	400 → 160	(51)
Dr. M.L. Jain	300 → 120	
"	100 → 40	
Direct (2 pl5) (Blummal Jain)	600 → 0	
Dr. S.B. Shetty	300 → 120	
Dr. C.N. Parmar	200 → 80	
direct	100 → 0	
Dr. H.H. Kusradia	400 → 160	
Dr. Navesh Vaghela	400 → 160	
home visit	1500 → 0	

10/7/2002

Dr. A.R. Mashru	200 → 80
Direct	500 → 0
Dr. Chetan (Lypal)	200 → 80
direct (F.u.)	200 → 0

21/6/2002

Dr. Navesh Vaghela	400 → 160	(52)
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24/6/2002

Dr. R. P. Sri	300 → 120
Dr. A.R. Mashru	400 → 160

25/6/2002

Dr. Manisha Bleguat	300 → 0
"	250 → 0
Dr. Lalit Jain	400 → 160

27/6/2002

Dr. Mukesh Shale	300 → 0 →
Direct (F.u.)	300 → 0
"	400 → 0

28/6/2002

Direct (hosp. pt)	1000 → 0
" (F.u.)	100 → 0
" (F.u.)	200 → 0
Dr. Lalit Jain	400 → 160
direct (P.u.)	200 → 0
Dr. D. B. Vahharne	300 → 120

③ EPH-410

In the Family Court at Bandra
M.J. Petition A-141 of 2004
AND
C-11 of 2004.

MAY IT PLEASE YOUR HONOUR

The above matter is kept for the cross of the Respondent. The Advocate for the Petitioner has suddenly taken ill. Be pleased therefore to adjourn the above matter to any date convenient to this Hon'ble Court.

Bombay dated this 27th day of February 2007.

0
O.H. side 16/07
27.2.07

Shama
Petitioner

0
I submit to the order of the Court
Case is adjourned
to 15.3.07. at 11.30 am
Shama
27-2-07
27.2.07

Admitted Document



In the Family Court at London
M. J. Petition A-141 of 2004
And
C-11 of 2004

(4)
Exh 109

May It Please Your Honours

The above matter is kept for the
cess of the Respondent. The Advocate for
the Petitioner has suddenly taken ill.
Be pleased therefore to adjourn the above
matter to any date convenient to the Honorable
Court.

Comd by dated the 27th day of February 2007

This is given as specimen
writing to take in
presence of court.
16/2/07

[Signature]
Petitioner

This is given as a specimen handwriting
by pet.
16/2/07

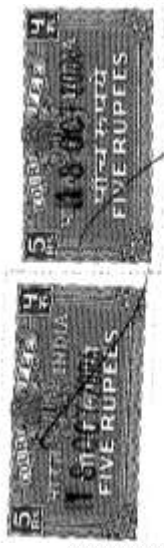
Specimen Document

HW REPORT

11/2002

Dr. A.R. Mashum	400 → 160
Dr. M.L. Jain	300 → 120
"	100 → 40
Direct (2 pl5)	600 → 0
(Balance)	
Dr. S	
Dr. C	
direct	100 → 0
Dr. A.H. Kusradia	400 → 160
Dr. Nansh Vaghela	400 → 160
home visit	1500 → 0

(3)



SQUARE

MAY IT PLEASE YOUR HONOUR

The above matter is kept for the cross of the Respondent. The Advocate for the Petitioner has suddenly taken ill. Be pleased therefore to adjourn the above matter to any date convenient to this Hon'ble Court.

Bombay dated this 27th day of February 2007.

Questioned or Disputed Document

Admitted Document

Dr. Laxmi Narayan

May It Please Your Honour.

The above matter is kept for the cross of the Respondent. The Advocate for the Petitioner has suddenly taken ill. Be pleased therefore to adjourn the above matter to any date convenient to this Hon'ble Court.

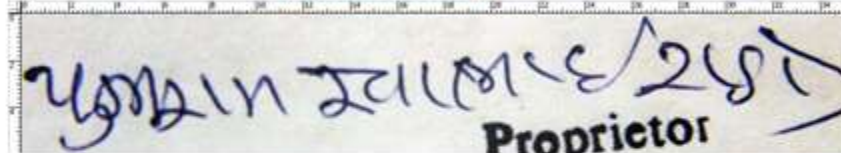
Bombay dated this 27th day of February 2007

Specimen Document



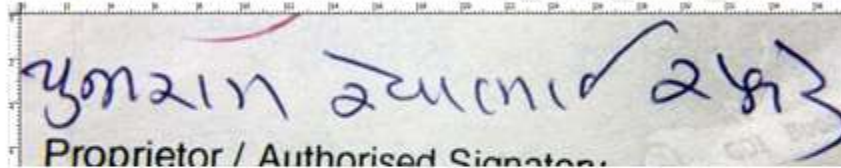
युग्मल
Proprietor

Q-1



युग्मल
Proprietor

Q-2



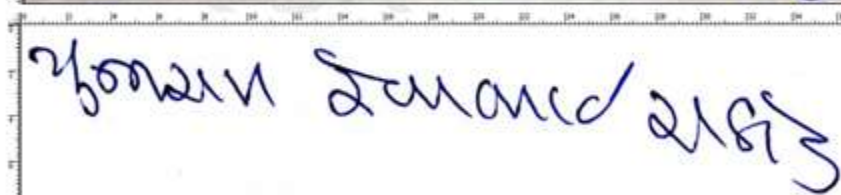
युग्मल
Proprietor / Authorised Signator

K-1




युग्मल
Proprietor

K-2



युग्मल
Proprietor

S-1



युग्मल
Proprietor

S-2



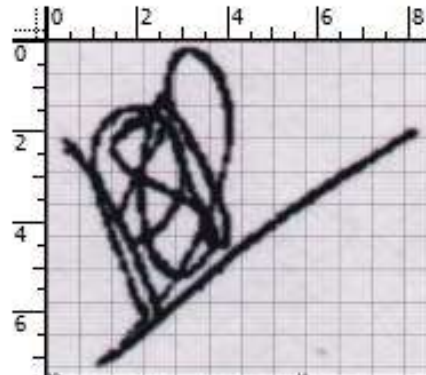
LATEST QDE TECHNOLOGY

- Any mechanical device, result in wear and damage to the machine's moving parts and leave behind identifying features on a piece of paper.
- Examiners compare transitory defect marks, fax machine headers, toner, toner application methods, and mechanical and printing characteristics.

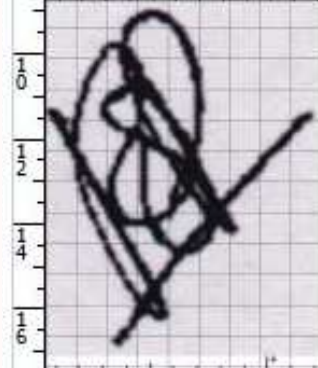




Q-1



Q-2



Q-3



Q-4



Q-5



Q-6

Identical Cut & Paste Signatures on photocopy of a legal document

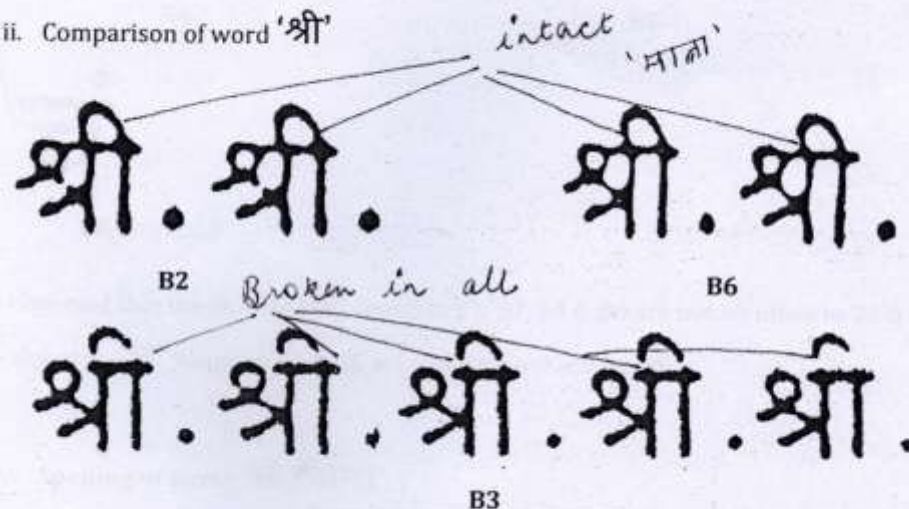
TYPESCRIPT ANALYSIS

i. Comparison of alphabet 'ए'



⇒ It is observed that the alphabet 'ए' found in B3 & B4 are not identical

ii. Comparison of word 'श्री'



⇒ It is observed that the alphabet 'श्री' found in B2 & B6 are not identical to B3



FONT ANALYSIS OF COMPUTER GENERATED DOCUMENT



and and

Exh-Q (11)

between

Exh-Q (11)

between

Exh-Q (9)

and

Exh-Q (1)

and and

Exh-Q (2)

and

Exh-Q (5)

and

Exh-Q (6)

Sadrudin Hassanali Jiwani

Exh-Q (11)

Sadrudin Hassanali Jiwani,

Exh-Q (1)

In Witness Whereof We have signed this deed in the presence of witness this 30 day of June - 2010

R. K. Popat
[1] Smt. Ranjanben Keshavlal Popat,

Manish A. Dhakan
[2] Shri Manish A, Dhakan,

Signature of witness
Manish A. Dhakan
30/6/2010

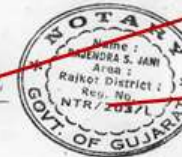
Exhibit A

In Witness Whereof We have signed this deed in the presence of witness this 30 day of June - 2010

R. K. Popat
[1] Smt. Ranjanben Keshavlal Popat,

Manish A. Dhakan
[2] Shri Manish A, Dhakan,

Signature of witness
Manish A. Dhakan
30/6/2010



Added Contents of Exhibit B

Witness
Anand, M. Jani

Signed before me by Ranjanben K. Popat who is identified by Shri Manish A. Dhakan Advocate who is known to me on this date 30/6/2010

R. S. JANI
NOTARY.

Page No. 3
Serial No. 4562
Receipt No. 4562
Date 30/6/2010



Added Contents of Exhibit B

Exhibit B



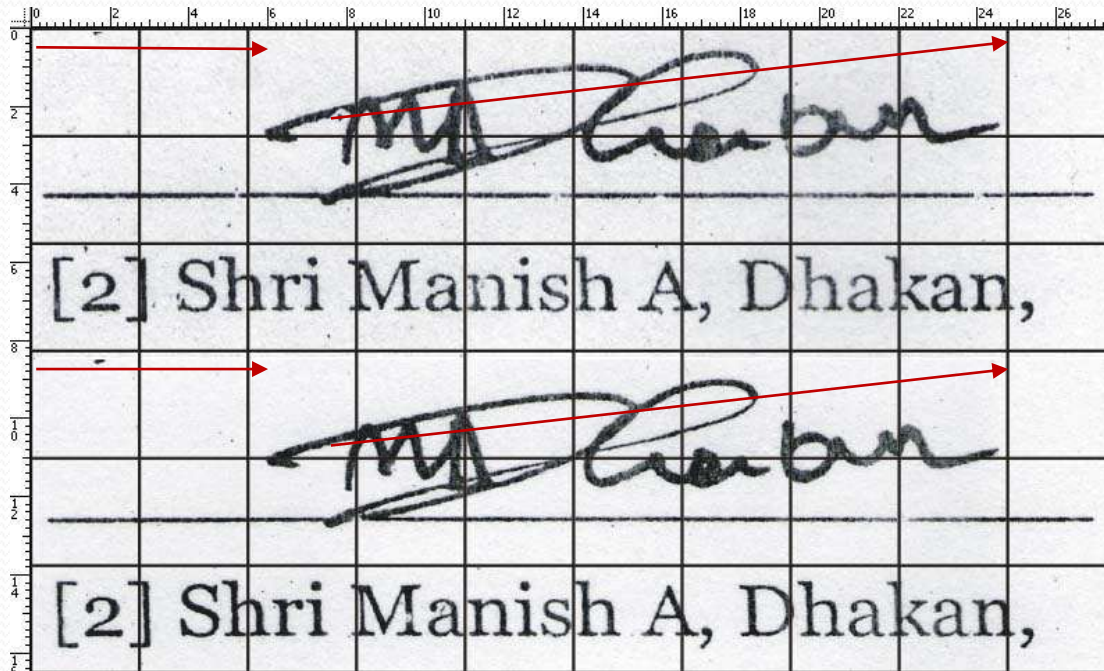


Exhibit A

Exhibit B

**Alignment, margin, spacing, baseline, placement of each
alphabet and word identical in Exhibit A & Exhibit B**

CHEQUE ALTERATION

MULTI-CITY CHEQUE
Date: 01-08-10
Pay M/s Anit Trading Co
या अन्वी आदेश पर or Order
रुपये *Thirty thousand three hundred seventy five only*
अथवा *₹ 30375/-*
CC-714930100000124
FOR B I ENTERPRISES
MANALI BRANCH
HOTEL NEELKANTH, THE MALL, MANALI
DIST - KULLU
MNL/MSB
FSC 900007400

₹ 30375/-

₹ 0

₹.Rs. 854,000/-

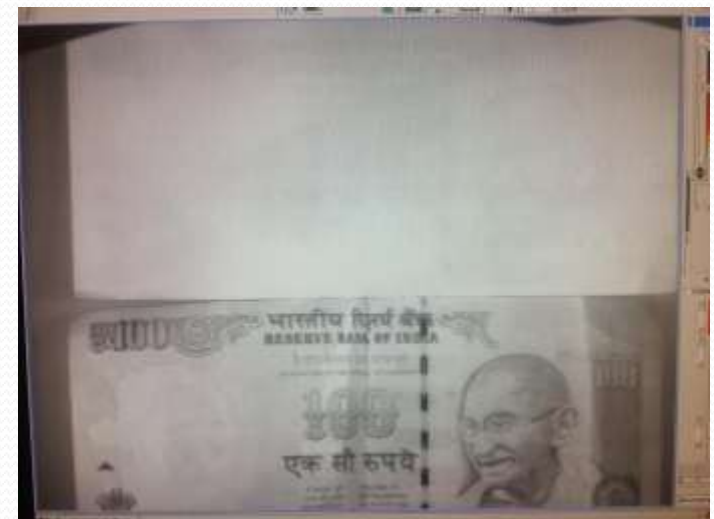
₹.Rs. 854,000/-

Golden Savings Account Payable at par at any of the branches of
Birla Sun Life Insurance Co Ltd 002849279
Date: 13/04/11
Rupees *Twenty nine thousand two hundred forty one only*
₹ 99241/-
₹ 99241/-
PAID IN CLEARING AND SIGNATURE VERIFIED
AYAT MENAKI MOMIN
RTGS/NEFT/FSC 000007
#686977# 400072007# 332669# 3# 0000009924100#

~~Rs. 99241/-~~

Rs. 99241/-

COUNTERFEIT CURRENCY



STAMP IMPRESSION ANALYSIS



Exh-A



Exh-B

Difference in Stamp impressions of same Police Station

- Presence of Lion emblem in Exh-B which is absent in Exh-A
- Difference of font type and style, Defects in Stamps Exh-A & Exh-B

LATEST QDE TECHNOLOGY


- **Forensic Stylometry** - authorship analysis to determine author of anonymous emails
- Stylometry determine a pattern of authorship for each individual suspect author in an investigation.
- The features include character based features, word based features including measures of function word frequencies, the word length frequency distribution of a email, the use of letter and collocation frequencies.
- The set of authors is reduced from an initial large list of possible suspects.



IMPORTANT POINTS

1. Determination of the authorship of a FORGED SIGNATURE produced by tracing or by simulation with suspect forger or forgers cannot be done.
2. Comparison of handwriting of any language can be done.
3. Determination of the authorship of the altered or the over written strokes over the original writing.
4. Determination of the authorship of a writing or signature by comparison of its photo state reproduction with the specimen writings of the suspect.
5. Determination of absolute age of INK AND PAPER



- 
6. Determination of the identity of a particular pen or pencil alleged to have been used in producing the questioned document.
 7. To determine whether a person is a left handed or right handed cannot be determined
 8. Signatures with signatures and Initials with Initials
 9. Use of photocopies of the signature
 10. Exhibits required to check alterations
 11. Personality assessment reports based on the handwriting sample do not have any validity in the court of law.

EXPERT PROFILE

1. **Post Graduate Diploma in Legal and Forensic science (Gold Medalist)** specialized in **QDE and Fingerprint** with Masters in Psychology
2. Practicing forensic expert since last 14+ years
3. Key forensic expert who took orientation programs for the **“Hon’ble Session and District Judges of Maharashtra”** at **Maharashtra Judicial Academy, Uttan**
4. Appointed by various courts of India to submit expert opinion on Questioned Document Examination and Fingerprinting
5. Written chapters on Handwriting and fingerprinting for the book "Forensic Science in Crime Investigation" & have co-authored book, India’s Security Requirements”
6. Presented more than **17 research papers & articles** in International and National seminars/journals/proceedings on forensic.
7. Invited talks delivered at various international & national conferences, Bar Associations, ACB (Anti Corruption Bureau), Training to various Police officials across India
8. Participated in **BITs World Conference of forensic -2011, Chongqing, China** and introduced new technology of **“Forensic Stylometry”** as powerful investigation tool



THANK YOU

FOR ANY QUERIES

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Website: www.squareadvisors.in