

**INTRODUCTION  
TO DOCUMENTS  
&  
EXAMINATION  
OF FORGERIES**

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# DOCUMENT??

- A document is anything that bears marks, signs or symbols which have some meaning or conveys a message to someone.
- According to Section 29 of IPC, the word “Document” denotes any matter expressed or describe upon any substance by means of letters, figures or marks or by more than one of those means, intended to be used, or which may be used as evidence of that matter.



# CLASSIFICATION OF DOCUMENTS

## GENUINE DOCUMENTS

- These types of documents are always unique and whose authenticity is proved.
- The documents authenticated by the owner or whomsoever it may belongs.

## QUESTIONED DOCUMENTS

- Any object that contains handwritten, typewritten, or printed markings, whose source or authenticity is in doubt or dispute, is referred as Questioned Document.



# HANDWRITING????

- An individual personal style of penmanship is called *Handwriting*.
- *Penmanship* refers to the technique or art or skill of writing with hand using writing instrument.



## CONTD....

- Handwriting is the acquired art like painting, dancing or cycling.
- It is the visible results of mental and muscular habits developed by individual after a long painstaking efforts.
- It is a neuro-muscular task.

Person develops  
his own habit of  
writing

Habit never dies

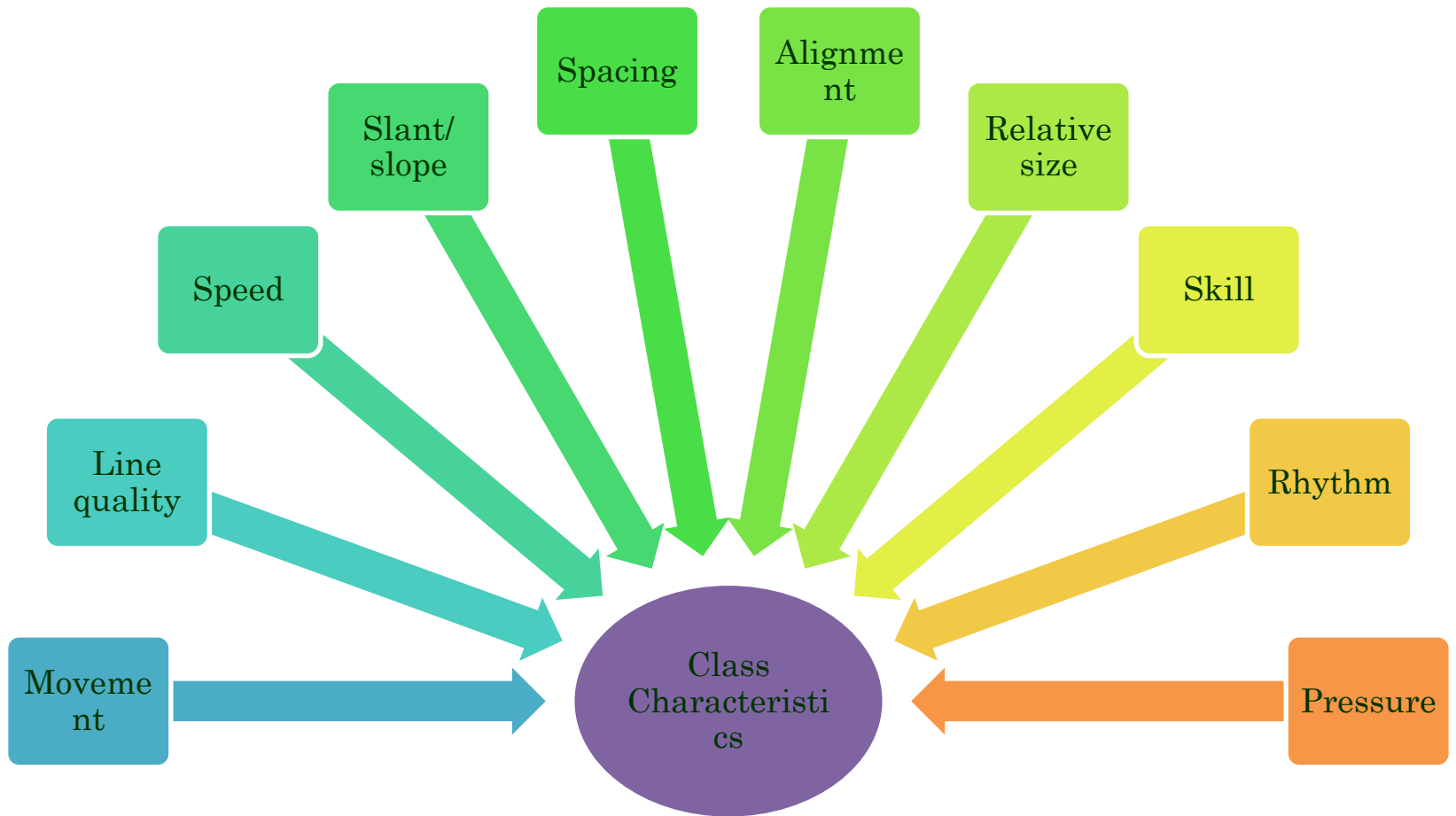
No two person  
can write  
exactly alike

# IDENTIFICATION OF HANDWRITING

Handwriting examination mainly rely on different writing characteristics:

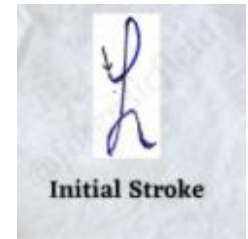
- Class characteristics
- Individual writing characteristics
- Stylistics Features



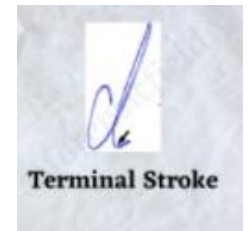


# INDIVIDUAL CHARACTERISTICS

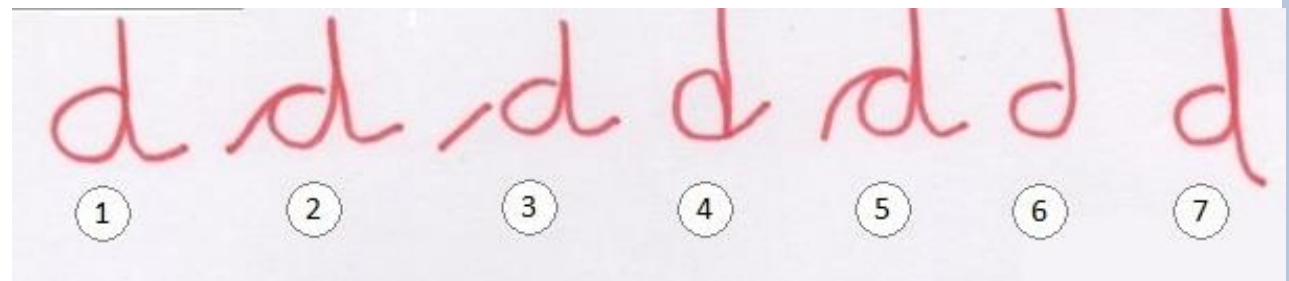
- Commencement of letters
- Connecting strokes
- Starting and Ending Strokes
- Abbreviations
- Formation of loops, its size & inclination
- Nature of I – dots & t- bars
- Embellishments



Initial Stroke



Terminal Stroke





# STYLISTICS FEATURES

- It is the scientific study of patterns of variations in written language.
- Unique style of writing of individual : ***STYLE MARKERS***
  - Size of letters and paragraphs
  - Format of page arrangement
  - Spacing between lines, paragraphs
  - Page numbers or any identifying features
  - Arrangement of letters & words along the margin
  - No. of words in a line



## CONTD...

- Location of punctuation marks (coma, semicolon, exclamation, question marks, quote mark).
- Emphasizing of headings
- Misspellings
- Profanity (slang)
  - LIT – amazing, cool
  - TBH – to be honest
  - Fam – Group of friends
  - OMG , Emo,
- Use of alternative forms/ words : (& , with , which , K/a)



# NATURAL VARIATION

- Normal deviations found between repeated specimens of an individual's handwriting.
- Human beings cannot be expected to function with the precision of machines to produce exactly same character all the time.
- The variations in a person's writing can be caused due to various factors.



## SOURCES OF VARIATION IN HANDWRITING

- Mechanical factors
- Time span
- Health
- Blindness
- Mental Health
- Drug and medications
- Alcohol
- Guided hand
- Tremor



# TREMOR

- Tremor is indicated by involuntary, rhythmic and recurrent movement of the pen from the side to side.
- Tremor in handwriting can be caused due to age, pathological or psychiatric disorder, illiteracy and fraud.



# FORGERY??

- “Forgery” is the act of modifying or altering any document with the intention to prejudice another person.
- It is a form of crime committed to harm or cause damage to a person.
- *Forgery may be defined as the creation of any false written document or alteration of a genuine one, with the intent to defraud.*
- Forgery may consist the filling up a blank on a document containing a genuine signature or materially altering or erasing instrument. An underlying intent to defraud, based on knowledge of the false nature of the instrument, must accompany the act.



# FORGERY UNDER SECTION 463 IPC

“Whoever makes any false document or part of a document, with intent to cause damage or injury, to the public or to any person, or to support any claim or title, or to cause person to part with property, or to enter into any express or implied contract, or with intent to commit fraud or that fraud may be committed, commits forgery”.



# SIGNS OF FORGERY

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Abnormal Pen pause

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Unusual pen lifts and hesitations

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Ink blots due to sudden start or ending (the starts and endings will be blunt)

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Retouching or patching

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Abnormal speed and pressure

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Abnormal shading of inking of strokes

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# TYPES OF FORGERY

Signature Forgery

Handwriting Forgery

Document Forgery

Counterfeiting



# TYPES OF SIGNATURE FORGERY

- Tracing
- Simulation
- Spurious forgery
- Transplanted forgery
- Tricked forgery



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**Direct Tracing:** With the help of transmitted light

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**Carbon Tracing :** With the help of carbon paper

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## **Traced Forgery**

**Tracing Paper :** Outlines of genuine signatures are traced on tracing paper and these outlines are transferred to the new document in form of indentation

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**Projection Tracing:** Genuine model is projected on the projector screen

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# CHARACTERISTICS

Constant  
abnormal  
pressure

Blunt initials &  
Terminal Strokes

Defective line  
quality

Abrupt starts and  
stops of writing  
instrument

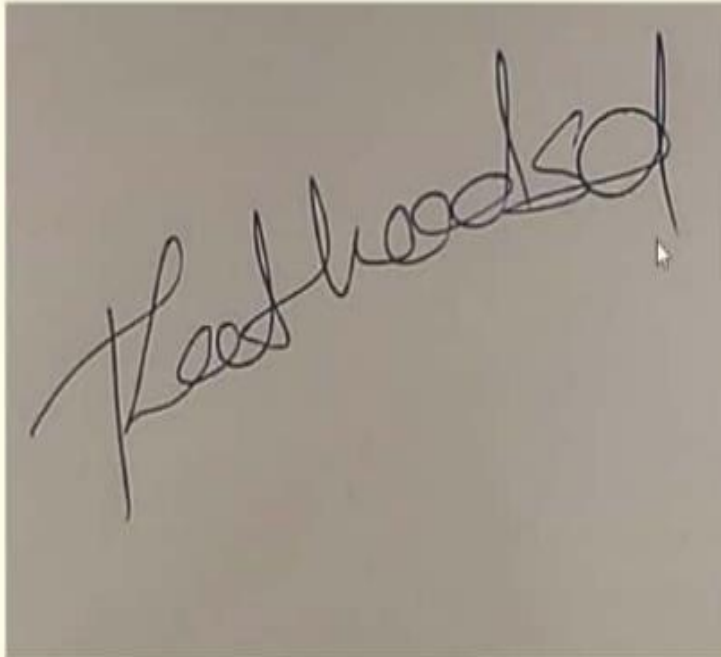
Hesitating strokes

Abnormal pen  
lifts

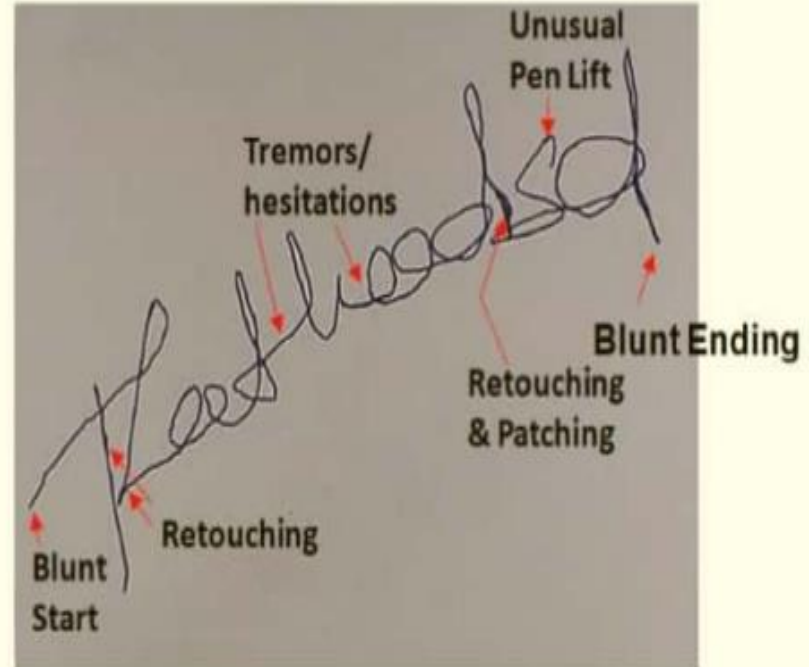
Retouching and  
patching of  
strokes



# DIRECT TRACING



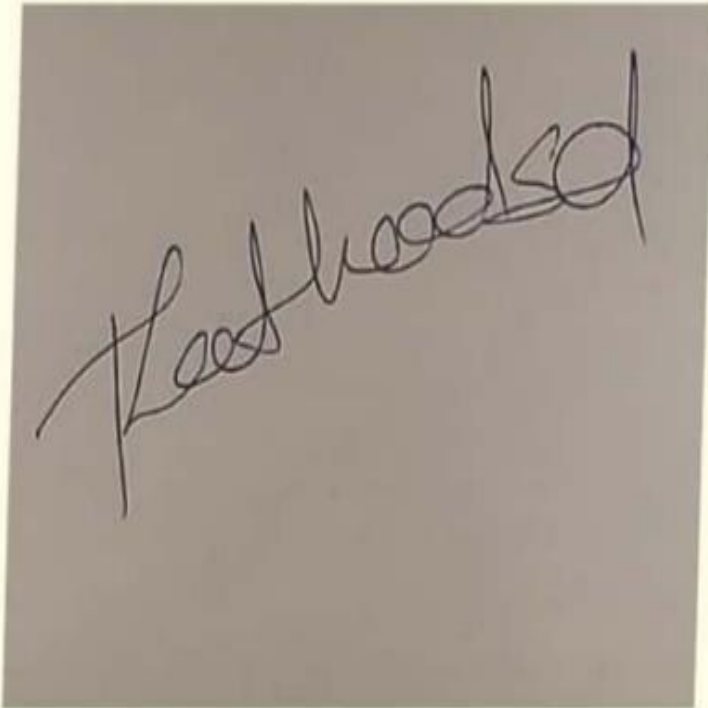
Line Quality : Uniform



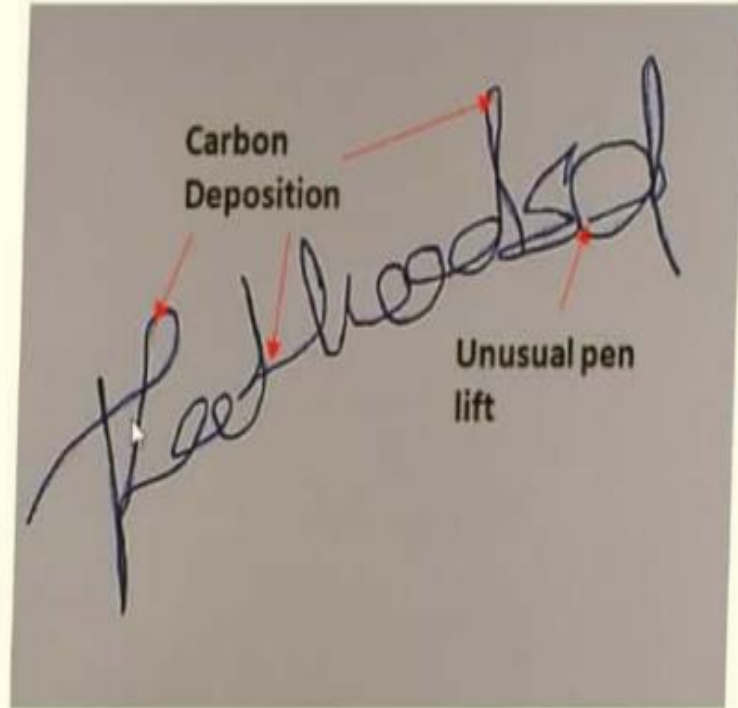
Line Quality : Defective



# CARBON TRACING



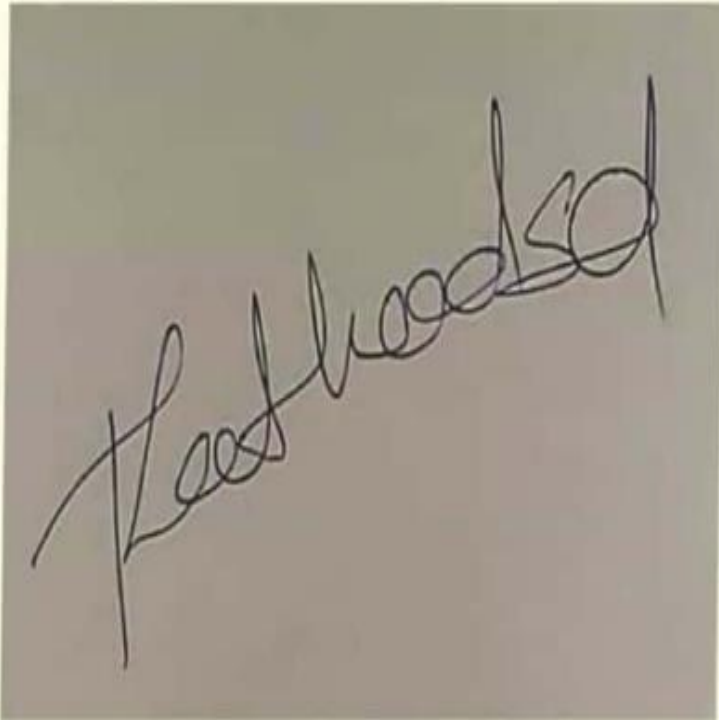
Line Quality : Uniform



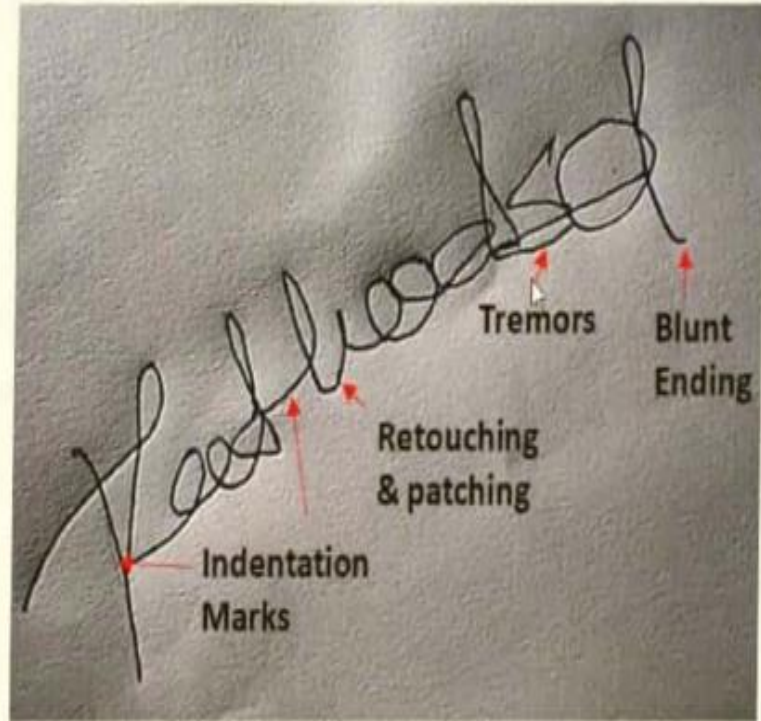
Line Quality : Defective



# INDENTATION



Line Quality : Uniform



Line Quality : Defective



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## **Copied**

It is done by copying the genuine signatures by process of drawing and keeping the model signature in front of you.

# **SIMULATION**

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## **Freehand**

These are created by practice over a genuine model and memorizing the signatures

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# CHARACTERISTICS

Defective  
Line Quality

Slowly  
executed  
letters

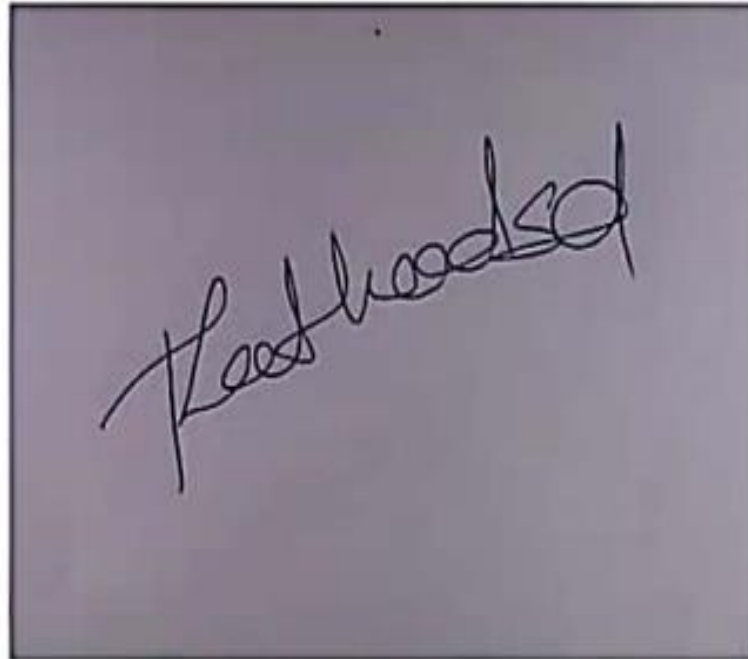
Poor Rhythm

Blunt starts  
and stops

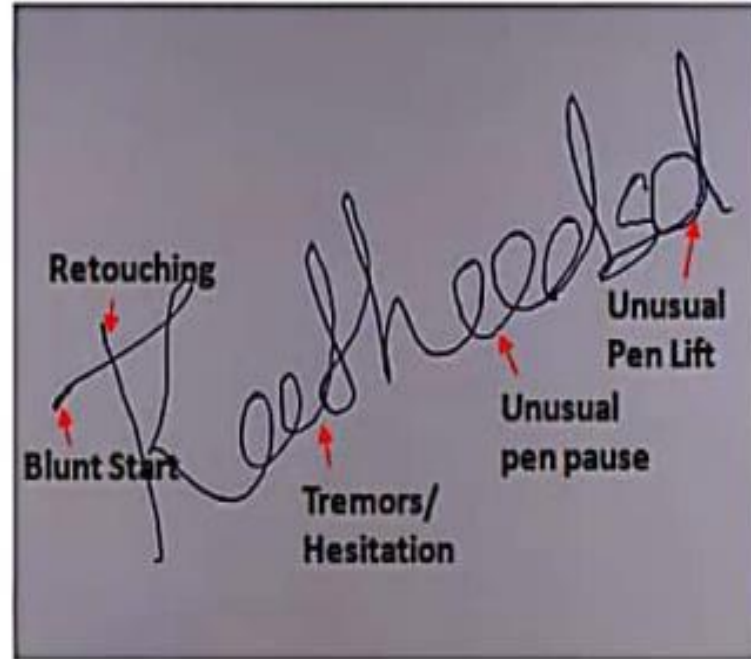
Retouching of  
letters



# COPIED SIMULATION



Line Quality : Uniform



Line Quality : Defective, abnormally bigger size



# SPURIOUS SIGNATURES

These are in the name of non-existent person or in the name of any person without seeing the genuine signature of the person.



# TRANSPLANTED FORGERY



Pasting using cello tape



Xerox



With the help of printers



# LIFTED REVENUE STAMP



# HANDWRITING FORGERY

A purple trapezoidal shape, wider at the top and narrower at the bottom, containing the word 'Simulation' in white serif font.

Simulation

A blue trapezoidal shape, wider at the top and narrower at the bottom, containing the word 'Disguised' in white serif font.

Disguised

A teal trapezoidal shape, wider at the top and narrower at the bottom, containing the word 'Spurious' in white serif font.

Spurious



# TAMPERING WITH DOCUMENTS

Addition

Deletion

- Erasures
- Obliteration

Overwriting

Substitution



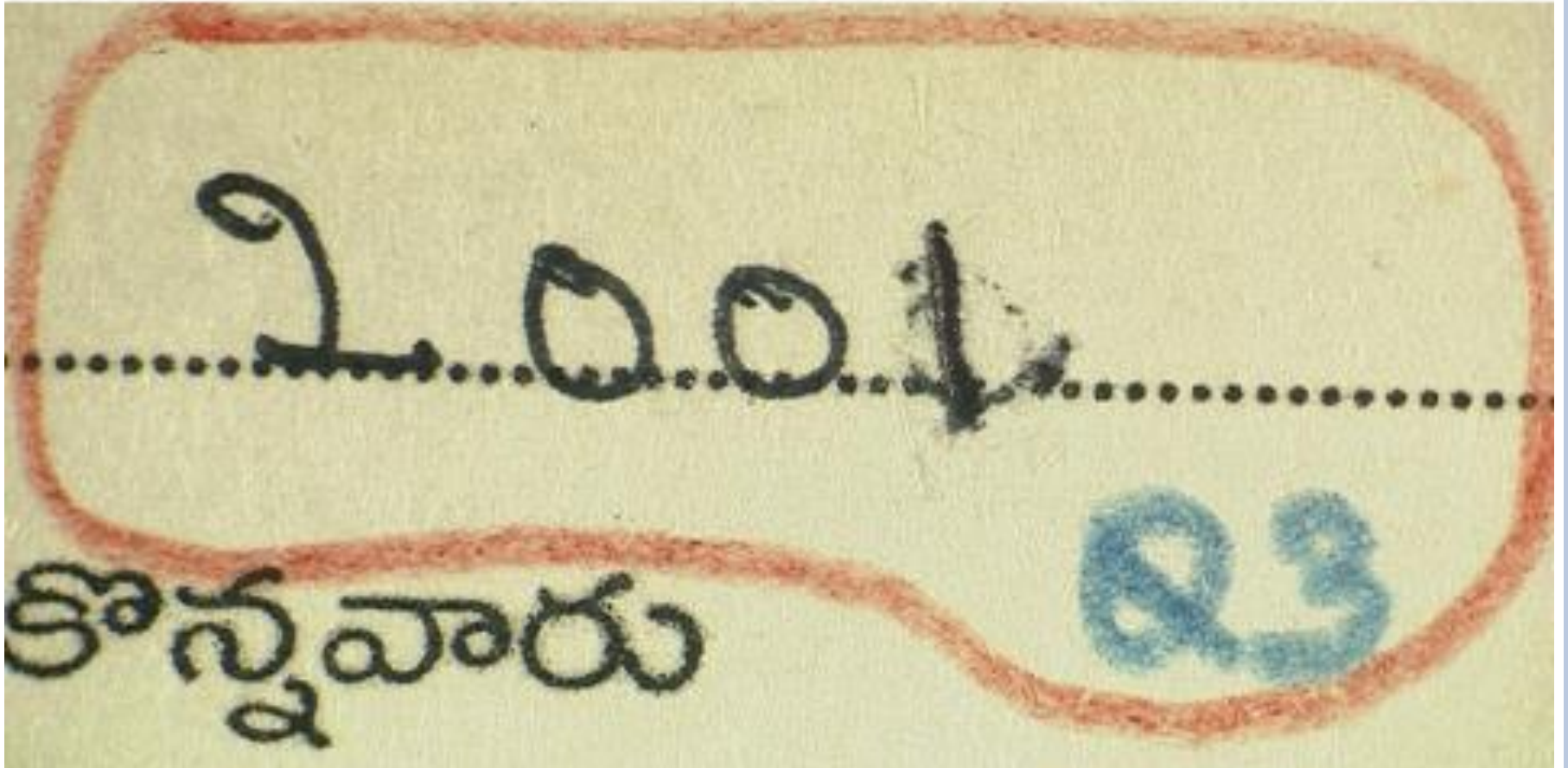
# EXAMINATION OF TAMPERED DOCUMENTS

- Addition of words/lines/pages can be deciphered with the help of *IR, UV, and Oblique Lighting*.
- Mechanical Erased writings can be deciphered by *Oblique lighting*.
- Chemically erased writings are observed under *UV light*.
- Obliterated writings are examined under *transmitted light* and *IR Lights*.
- Indentations are observed with the help of *oblique light and Electrostatic Detection Apparatus (ESDA)*



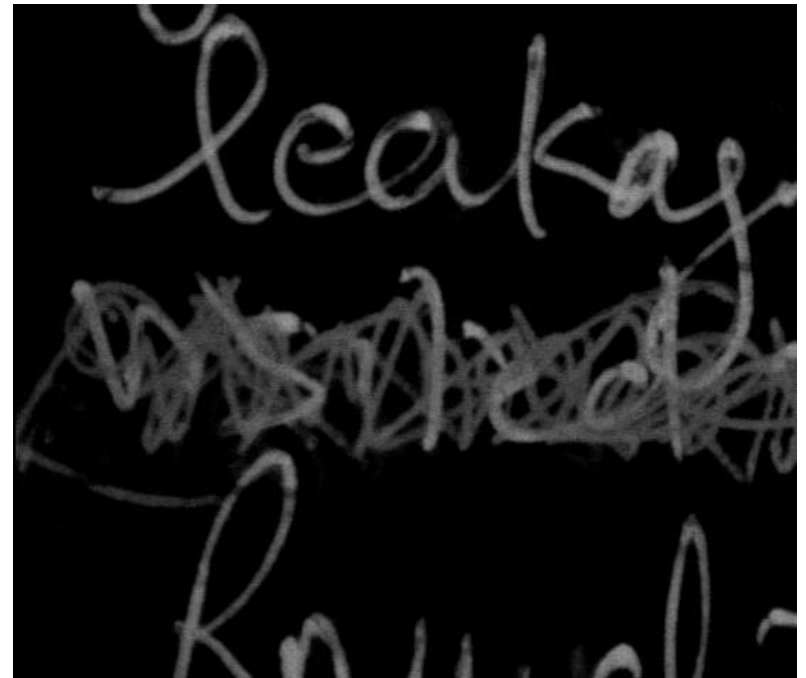
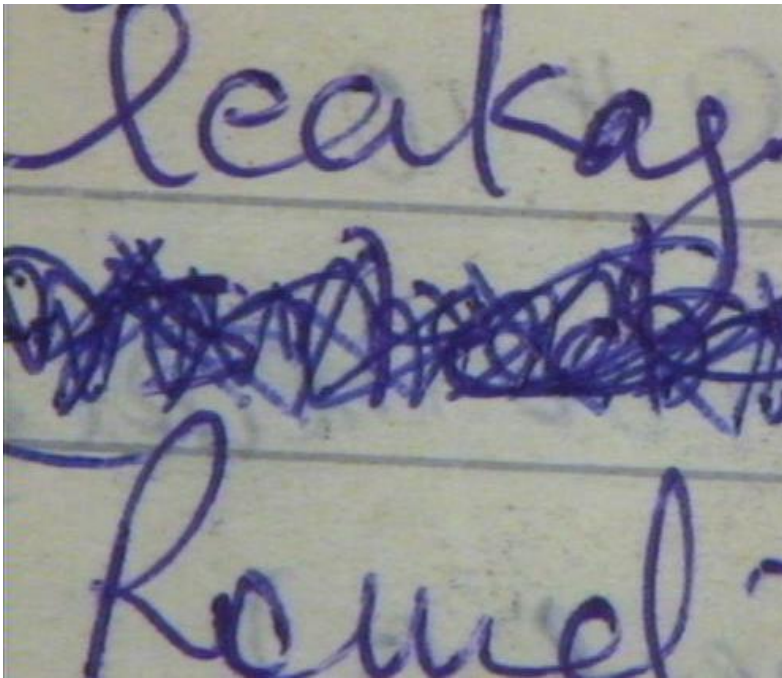


# Erasure and *Alteration*

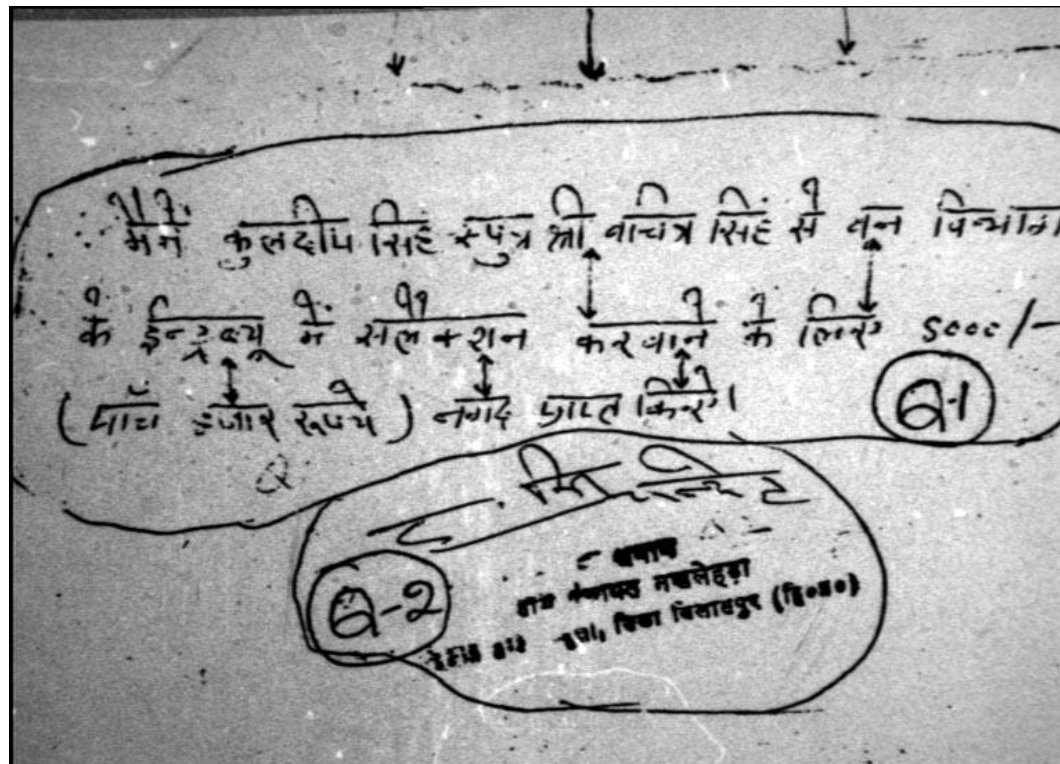




# **OBLITERATION**



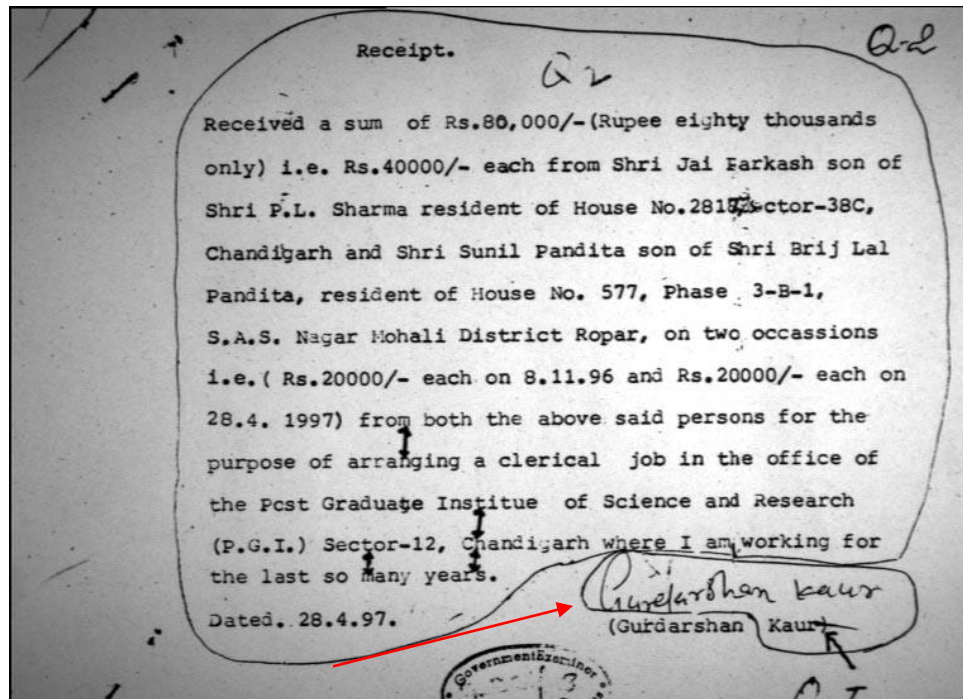
# SOME SPACE LEFT ABOVE A SIGNATURE IS UTILIZED



16:09 06/09/2002 Lights=Infra Red, Longpass=LP, Bandpass=OFF, Mag=2.45  
Integration=OFF, Gain=Auto, Brightness=40, Contrast=54



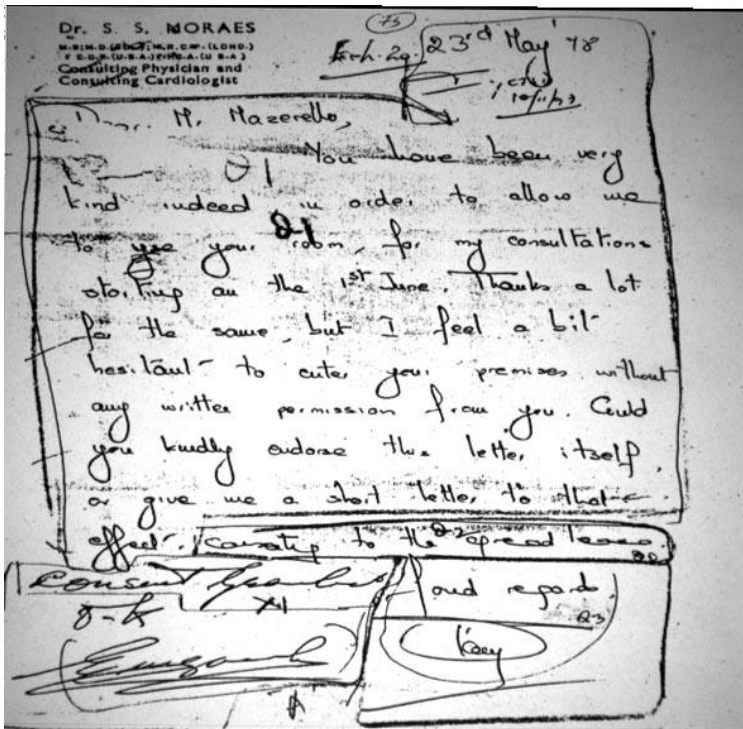
# SIGNATURE ON A BLANK SHEET



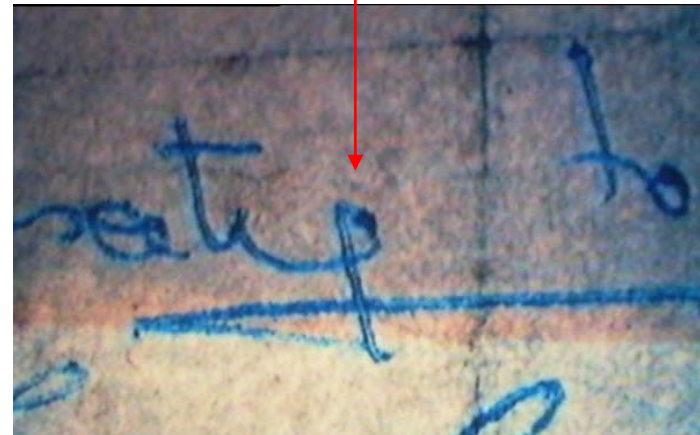
11:12 14/10/2002 Lights=Infra Red, Longpass=LP, Bandpass=OFF, Mag=2.11  
Integration=OFF, Gain=Auto, Brightness=40, Contrast=54



# ORIGINAL CONTENTS ALTERED SUBSEQUENTLY



Sequence of  
crossed stroke



# COUNTERFEITING

CURRENCY

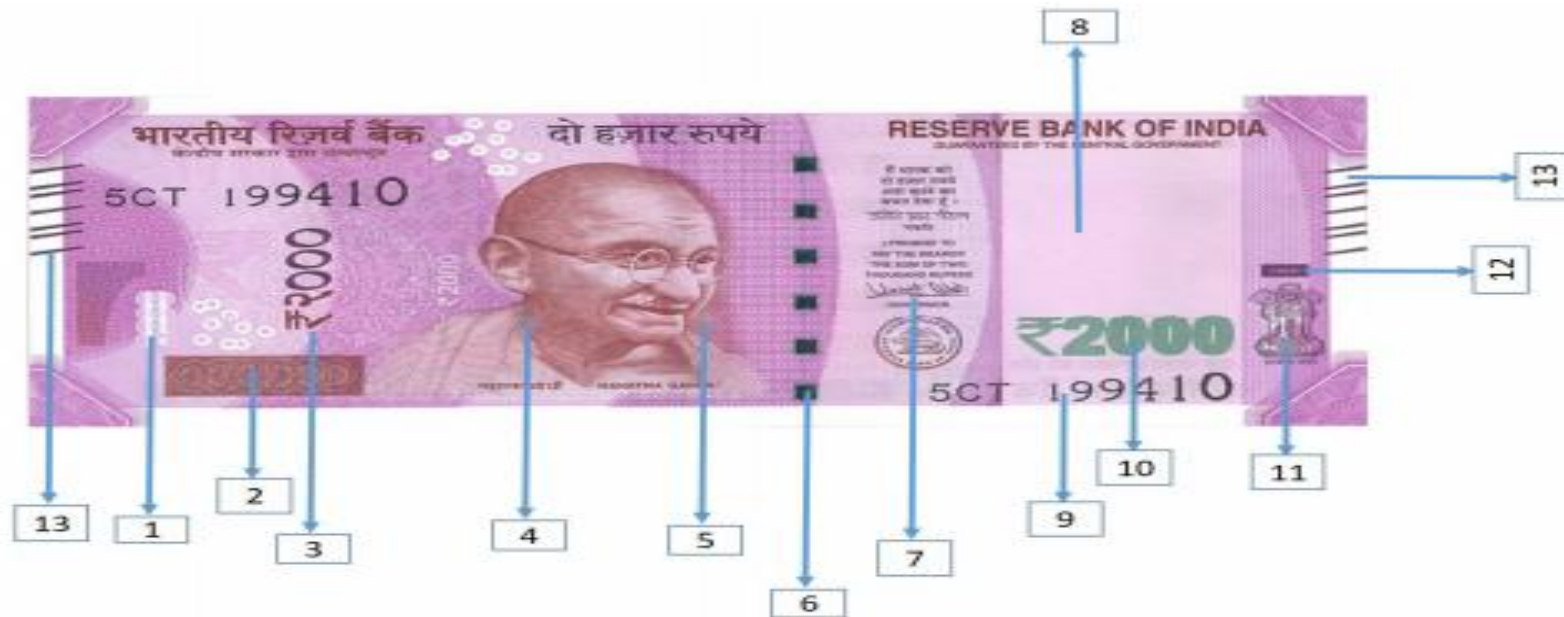
PASSPORT/VISA

CREDIT/DEBIT CARDS

STAMPS

SEALS





- 7) Guarantee Clause, Governor's signature with Promise Clause and RBI emblem towards right.
- 8) Mahatma Gandhi portrait and electrotype (2000) watermarks.
- 9) Number panel with numerals growing from small to big on the top left side and bottom right side.
- 10) Denominational numeral with Rupee Symbol.2000 in colour changing ink (green to blue) on the bottom right.
- 11) Ashokan Pillar emblem on the right.
- 12) Horizontal rectangle with 2000 in raised print on the right.
- 13) Seven angular bleed lines on left and right side in raised print.







- 14) Year of printing on the note
- 15 ) Swachh Bharat logo with the slogan
- 16) Language panel towards the centre
- 17) Motif of Mangalyan - reflecting country's first venture in the interplanetary space



# WATERMARKS

Watermarks are the designs that are generated in the currency notes incorporated during the manufacturing process by varying the distribution of fibres in the given space. The various watermarks that are present in the 2000 denomination note are:

- Mahatma Gandhi Portrait
- 2K Watermark
- RBI watermark
- 2000 Watermark
- Electrotypes watermark



Figure 2B: 2K watermark

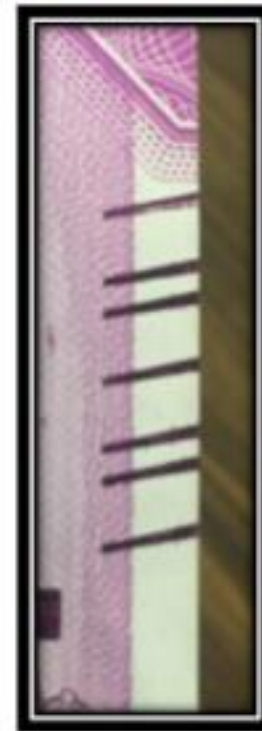


Figure 2A: Mahatma Gandhi watermark



# BLEED LINES

Seven angular bleed lines in 5 sets of 1-2-1-2-1 are printed on the obverse in both, the upper left and the right hand edge of the notes to aid the visually impaired



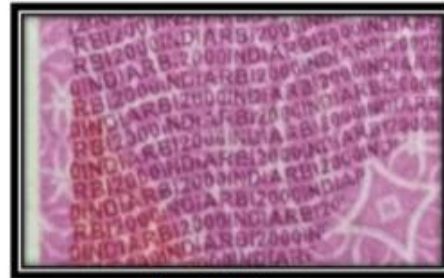
## IDENTIFICATION MARK

Identification marks are made on banknotes to help the visually impaired identify the denomination of notes. On Indian banknote of denomination value 2000 it appears on the right side of the watermark window. The mark in this denomination is a rectangle located above the Ashoka Pillar Emblem on the right side and has 2000 numeral written in the rectangle



# MICRO LETTERING

- Micro lettering refers to the minute inscriptions that can only be read under a microscope or by using a hand lens/ magnifier. On the Indian currency note of denomination value 2000 are encrypted “RBI 2000 INDIA”. These words are written alternatively on the left side of the currency note



# Omron Feature

- Omron feature refers to the circle-shaped anti-copy feature located on the left side of the note just above the latent image



# OPTICALLY VARIABLE INK

- The denomination value 2000 in the Mahatma Gandhi watermark window of the 2000 currency note is printed on the obverse using optically variable ink.
- The numerals change its colour when viewed at various angles.



Figure 8A: Optically variable ink (green)

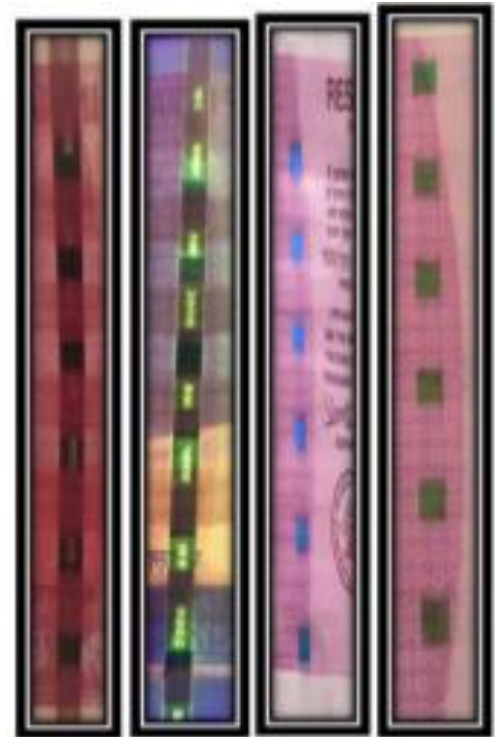


Figure 8B: Optically variable ink (blue)



# SECURITY THREAD

- The security thread in the 2000 denomination currency note is a 3mm wide strip, usually 6 windowed and reads three words particularly “RBI”, “BHARAT” and “2000” imprinted on it alternatively with the security thread changing its colour from green to blue on being held at an angle and tilted



## SEE THROUGH REGISTER

The see through register refers to the denomination numeral 2000 that is printed on both sides of the note, on one side, it is hollow and on the other side it is filled up. It is written horizontally just along the micro lettering and above the latent image on the left side of the currency note. It looks like one single design when seen against the light





# INTAGLIO PRINTING

- Inscriptions or motifs printed using the Intaglio printing or raised printing technique can be felt by touch. On Indian banknote of denomination ₹ 2000, the portrait of Mahatma Gandhi, the Reserve Bank seal, guarantee and promise clause, Ashoka Pillar Emblem on the right, RBI Governor's signature are printed in intaglio



# OPTICAL FIBRES

- Optic fibres are the small fibres that are randomly distributed on both the obverse and reverse of the currency note. These fibres, only visible when the note is viewed under a UV trans-illuminator, are yellow, blue and orange in colour



# LATENT IMAGE

- The latent image is a safety feature that is covered within the note. It is visible only when it is held horizontally at eye level. The obverse of Rs.2000 currency note come with a horizontal band towards the down left of the currency note and encompasses a latent image featuring the denominational value in numeral



# LANGUAGE PANEL

- On the reverse side of the note is present the language panel displaying the denomination of the note in 15 of the 22 official languages of India.
- The languages are displayed in alphabetical order- Assamese, Bengali, Gujarati, Kannada, Kashmiri, Konkani, Malayalam, Marathi, Nepali, Oriya, Punjabi, Sanskrit, Tamil, Telugu and Urdu



# NEW NUMBERING PATTERN

- The numbers in both the number panels tends to increase from left to right while the first three alpha numeric characters remains constant in size.
- Inset Letter: The inset is a capital letter and appears on the number panel and is indicative of the printing press where the notes have been printed. Presence or absence of the same does not guarantee the authentication of the denomination



# GEOMETRICAL PATTERNS

- The note exhibits other designs and geometrical patterns aligning with the overall colour scheme. The geometric pattern on the left and the right corner of the note when joined forms a complete pattern



- The word RBI is written on the inside of the frame of the spectacles of Mahatma Gandhi.
- The words INDIA BHARAT (Hindi) are alternatively inscribed on the left and right side of the clothes of Mahatma Gandhi near the neck



# UV LIGHT



- OPTICAL FIBRES
- FLUORESCENT NUMERAL DENOMINATION
- SECURITY THREAD






# SECURITY FEATURES OF INDIAN PASSPORTS

- Substrate: Ashok Pillar cylinder water marks.
- Cover page: Ashok Chakra printing (visible in 365 nm).
- First page-body printing: Black in visible light and green in Luminescence.
- Heat Activated Ultra Violet (HAUV) film: Printing visible in red and yellow in UV.
- Data page: Micro line, text, tint, design (Emblem, Govt. of India), Passport printing, rainbow printing: Blue and orange printing, gothic numbering, bifluorescent invisible design, invisible fibers (green and blue).
- Page numbering: Micro lines on all pages visa visible and invisible.
- Passport number: 8 digit alphanumeric laser perforated conicals of passport booklet



# CHECKLIST FOR FORENSIC SCREENING/EXAMINATION OF PASSPORTS

- Bio data: photograph, name, date of birth, issue and expiration date, signature
  - General inspection: exterior view, binder thread, numbering by perforation, watermark
  - Transmitted light examination: all the pages, fibres, printing processes, substrates, laminations under 10X magnification
  - UV light examination: fibres, printing inks, paper including overt and covert security features
  - Visible light examination: security features such as passport papers/pages, gothic/punched number, biographical/bio data page, LSI, barcode, micro printing, fugitive/sensitizing ink
  - Stereomicroscopic examination: document number, substrate elements, print processes, lamination
  - Oblique light examination: dicuts
- 



# LETTER SCREEN IMAGE (LSI)

- The Ministry of External Affairs launched a new series of passport booklets in April 2013 with the Letter Screen Image (LSI) of the holders.
- In LSI passport booklets, the personal data such as name, address, date of birth, file number, etc. of the applicant are embedded in tiny fonts, which forms the ghost/shadow image of the holder.
- The LSI passport is now being issued by all passport issuing authorities in India and abroad. LSI is appearing as ghost images of the applicant and it is the replica of the applicant's original photograph.

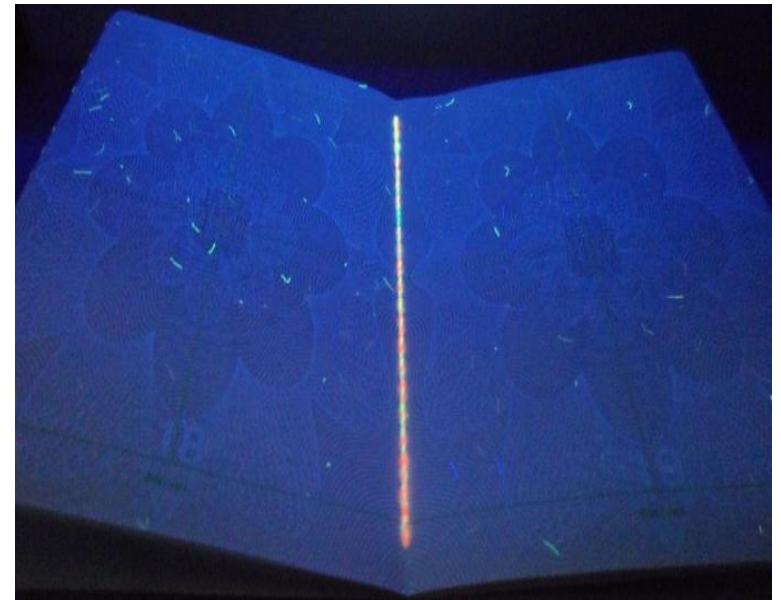


Letter Screen Image on  
Front Bio Data Page



# GUILLOCHES/FINE LINE PATTERN-

Guilloches are decorative engraving technique by which a very precise intricate repetitive pattern or design is mechanically engraved into an underlying material with fine detail. They are the traditional elements of the document design comprising regular geometrical patterns of fine lines, which are produced by special machines or on a computer.



# BOOKS

- Scientific Examination of Questioned Documents – Ordway Hilton
- Scientific Examination of Documents: Methods and Techniques – David Ellen
- Forensic document examination – Katherine M. Koppenhaver
- Criminalistics: An Introduction to Forensic Science – Richard Saferstein



**THANK  
YOU!**

