

All India Duty Meet  
Finger Prints Oral  
**Year 2012**

\*1. Who established the **First Finger Print Bureau** in the World ?

Sir Edward **Richard Henry** ( Father of Modern Finger Print System ) ., the Inspector General of Police, West Bengal. Established the first Official Finger Print Bureau on **12.06.1897 at Calcutta based on** a remarkable ten finger print classification system

**\*2. What is a fingerprint?**

The palmar surface of the human hand is covered by a special kind of corrugated skin with narrow ridges known as **papillary ridges**. These minute ridges are studded with sweat pores.

A fingerprint is the exact reproduction of the papillary ridges on the top of the phalange of a finger.

**3. FATHER OF**

|                                  |                                     |
|----------------------------------|-------------------------------------|
| Father of Finger Printing :      | <b>Dr. Juan Vucetich</b>            |
| Father of latent print:          | <b>Dr. Henry Faulds.</b>            |
| Father of Finger Print Science : | <b>Sir Francis Galton.</b>          |
| Father of Modern System:         | <b>Sir Edward Richard Henry.</b>    |
| Father of Telegraphic            |                                     |
| Code system for finger Print:    | <b>Sir Charles Stockley Collins</b> |
| Father of Poroscopy:             | <b>Dr. Edmond Locard</b>            |

\*4. What are the **basic principles** of Finger Print Science ?

**Permanency:**

Finger Prints never changes from birth to death till decomposition sets in.

**Individuality or Verity:**

No two Finger Prints will be Identical unless they are taken from the same finger of the same person.

**Immutability:**

Finger Prints cannot be destroyed by ordinary wounds peeling of skin growth, old age, wart, etc. If some time is allowed, the ridges will regain their normal shape.

(ie) . A criminal has cut, lacerated , burned or scarped his finger in an attempt to escape identification as an old offender, but the true pattern has always reappeared eventually.

#### **5. Argentina becoming the first country to replace Anthropometrics with finger prints.**

In 1892 , **Francesca Rojas of Buenos Aires** was found in a house with neck injuries, whilst her two sons were found dead with their throats cut. Rojas accused a neighbour but despite brutal interrogation he would not confess to the crimes. Inspector Alvarez, a colleague of Vucetich , went to the scene and found a bloody thumb mark on a door, when compared with Rojas prints it was found to be identical with her right thumb. She confessed to the murders and was eventually sentenced to imprisonment. **This landmark case resulted in Argentina becoming the first country to replace “ Anthropometrics with finger prints” .**

#### **6. Will West and William West (Twins 1<sup>st</sup> case in the World):**

The same body measurements ( Anthropometric system) and have different Finger Prints.

Around 1870, a French anthropologist devised a system to measure and record the dimensions of certain bony parts of the body. These measurements were reduced to a formula which, theoretically, would apply only to one person and would not change during his/her adult life.

This Bertillon System, named after its inventor, Alphonse Bertillon, was generally accepted for thirty years. But it never recovered from the events of 1903, when a man named **Will West** was sentenced to the U.S. Penitentiary at Leavenworth, Kansas. There was already a prisoner at the penitentiary at the time, whose Bertillon measurements were nearly the same, and his name was **William West**.

Upon investigation, there were indeed two men who looked exactly alike, but were allegedly not related. Their names were Will and William West respectively. **Their Bertillon measurements were close enough to identify them as the same person.** However, a fingerprint comparison quickly and correctly identified them as two different people. ( prison records discovered later, the West men were apparently identical twin brothers and each had a record of correspondence with the same immediate family relatives.)

#### **7. Where will you find friction skin ? How it is useful ?**

Friction skin is the corrugated skin which covers the Palms and Soles.

Friction ridges are unique in themselves and unique to ourselves.

The Finger Print system World wide works and accepts the simple truth of Uniqueness.

The scientific term for the outer or top friction ridge skin, named as **the surface skin** of the palm of the hands and soles of feet. The Friction ridge skin is divided into two main layers, an outer layer called the “**Epidermis**” and an inner layer called the “**Dermis**” (Freinkel & Woodley 2001 ; Montaga 1974).

An outer layer called the “**Epidermis** helps,

1. To grasp things.
2. Prevents from slipping.
3. Sweat pores situated.
4. Discharges sweat.
5. Sense of Nerves formed.
6. Devoid of hairs.
7. Colourless.
8. Transparent.
9. Keeps wet for wear and tear.

8. What **types of lines** are formed on the palms and soles ? Are they Permanent ?

1. Ridges (elevated lines).
2. Furrows (Depressed lines).
3. Creases (Caused due to folding of skin).

Ridges and Furrows are permanent.

But the creases are not Permanent.

9. Which lines appear as black and white in a finger print impression ? Explain same in detail?.

If finger prints are prepared by using the black printers ink, the **ridges** will appear as black lines and the white space in between black line ridges are **furrows**.

The narrow lines which are completely corrugated on the friction skin are called “**ridges**” and they are studded with sweat pores.

10. How do the **creases** appears in a Finger prints, Palm prints & sole prints ?

Creases appear as white lines in the impressions of the Finger prints , Palm prints , toe prints & sole prints. They are not permanent.

11. Where do the **Finger Print patterns** form ? Name them ?

Finger print patterns form on the first phalange( distal area) of the fingers& thumbs.

They are,

1. Arches,( Plain arch, arch with radial trend , arch with ulnar trend and Tented Arch)
2. Loops -
  - (a) Radial Loop @ Plain , converging & Nutant &
  - (b) Ulnar Loop @ Plain , converging & Nutant
3. whorls ( clockwise core , anti-clock wise core, circular core , circular with some character core & elongated core or almond )
4. Composites.( central pocket loop, twinned loop, lateral pocket loop & accidental )

12. What is meant by **Ridge Characteristics** ? (**Minutiae**)

Ridges are not straight lines. They have characteristics like,

1. Ridge Terminations,
2. Ridge Bifurcations,
3. Short Ridges,
4. Enclosures,
5. Hook,
6. Deviated Break,
7. Change over,
8. Recurring, and
9. finally they form patterns in the first phalange or distal area of the fingers, in toe, palm & sole.

13. What are the uses of finger print patterns and characteristics ?

(a)Patterns are helpful for classification ( both single digit and 10 digit Henry classifications) and

(b) Ridge characteristics are helpful for comparing the specimen and disputed finger impressions and for fixing the exact match of the impressions.(ie) identification.

(ie) The shape and location of a similar ridge characteristics in two impressions having the same pattern and general configuration of ridges

within the pattern area prove conclusively that the impressions are identical with each other.

**Hints:** The method of identifying the persons by palm / Toe / Sole prints is the same as that of finger prints. (i.e.) comparison of ridge characteristics, the axioms of finger print science hold good for identifying palm / Toe / Sole prints also. The early case of palm prints identification seems to be State V. Kuhl, 42 New 185 Bac 190 (1918).

**\*14. How many ridge characteristics are necessary for positive identification as per Indian standard & supreme court ruling?**

As per Indian standard **8 to 12 ridge characteristics** found in the relative positions are necessary for positive identification.

According to Supreme Court ruling, 8 points are sufficient to prove identity. (AIR July 1978, Supreme Court of India 1183 at page No.1195 para No.45. presided over by a Bench of Two Judges - Justice P.N. Shinghal and Justice D.A. Desai) In Mohanlal Vs Ajit Singh – criminal appeal No.377 of 1975. Punjab and Haryana High court

**15. What are the materials required to take finger prints?**

1. Black Printers ink.
2. Glass Plate.
3. Rubber Roller.
4. A table of 3 1/2 feet height.
5. Soap Water.
6. Duster Cloth.
7. Paper (FP form).

**16. What are the different methods of taking finger prints ?**

1. Rolled Prints.
2. Plain Prints (or) Dab Prints (or) Sequence or slab Prints.
3. Vertically rolled Prints.

**17. What are the uses of Rolled Finger Prints?**

In the Rolled print,

- a) The full pattern including Delta and Core are brought out which are required for classification.
- b) It gives more number of Ridge characteristics for comparison.  
(Ridge Characteristics © Minutiae)
- c) Useful for classification.
- d) Compare SOC Prints. (Comparison & Identification)

18. Why the **Dab impressions** are taken in the Finger Print Slip ?

The Dab impressions are taken at the bottom of the Finger Print slip in sequence.

- 1. It helps to check the correct order of Rolled prints in the Finger Print Slip.
- 2. The sequence prints found in the scenes of crime can be compared in natural order.

19. How the Vertically rolled prints are helpful?

In the rolled finger prints the tip portions are not brought out. If tip portions are found in the scene of crime, the vertically rolled prints will yield the characteristics of tip portions.

20. Why the palm, toe and sole prints are taken?

Palm, toe and Sole Prints are taken by using black printers ink for comparing with the palm prints, toe and Sole prints traced or developed from the Scene of Crime.

21. Which is the **best medium** for taking finger prints and Why ?

{1. Fountain Pen Ink, 2. Stamp Pad Ink, & 3. Black Printer's Ink}

Black Printer's Ink is the best medium because,

- 1. It dries quickly,
- 2. Never fades away,
- 3. Gives good contrast,
- 4. Fit for permanent record.
- 5. Will not run in to Furrows
- 6. Will not smudge.

The Fountain pen ink and Rubber stamp pad ink are unfit for taking finger prints because,

- 1. They produce Smudges,
- 2. Do not dry quickly,

3. Fades away,
4. Run into furrows and create ridges as white lines,
5. Unfit for permanent record.

22. What are the **sub ♣ divisions of Finger print Patterns** ?

The **sub ♣ divisions of Finger print Patterns** are

1. Arches- ( Plain arch, arch radial trend , arch ulnar trend and Tented Arch)
2. Loops -
  - (a) Radial Loop ◎ Plain , converging & Nutant &
  - (b) Ulnar Loop ◎ Plain , converging & Nutant
3. Whorls ( clockwise core , anti-clock wise core, circular core , circular with some character core & elongated core or almond )
4. Composites.( central pocket loop, twinned loop, lateral pocket loop & accidental )

23. What are the different group of **finger print patterns**? Explain its uses?

Finger print patterns are divided as two groups.

1. Arches and Loops are **no value group** of patterns.
2. Whorls and composites **are numerical valued group** of patterns.  
(VALUES for Whorl pattern) 16      8      4      2      1      =      31

These numerical values facilitate to workout 1024 finger print classification. (ie) 10 digit - Henry classification.

In order to compare a set of finger prints with a set taken previously, it is first necessary to locate this earlier set in the files. The classification makes this possible.

Primary classification:

(i). If all fingers with whorl patterns

|                              |    |    |    |    |    |   |    |
|------------------------------|----|----|----|----|----|---|----|
| Numerator(Even fingers) :    | RI | RR | LT | LM | LL |   |    |
|                              | 16 | 8  | 4  | 2  | 1  | = | 31 |
|                              |    |    |    |    |    |   |    |
| Denominator ( Odd fingers) : | RT | RM | RL | LI | LR |   |    |
|                              | 16 | 8  | 4  | 2  | 1  |   | 31 |

(i). If all fingers with Loops & Arch patterns

$$\begin{array}{rcccccc}
 \text{Numerator (Even fingers)} & : & \text{RI} & \text{RR} & \text{LT} & \text{LM} & \text{LL} & & \\
 & & 0 & 0 & 0 & 0 & 0 & = & 0 \\
 \hline
 \text{Denominator ( Odd fingers)} & : & \text{RT} & \text{RM} & \text{RL} & \text{LI} & \text{LR} & & 0 \\
 & & 0 & 0 & 0 & 0 & 0 & & 
 \end{array}$$

WHY 1 / 1 IS ADDED?

To avoid the classification 0 / 0 in a set of prints where no whorl patterns appear. [(ie) Arch, Tented Arch, Loop ( Radial or Ulnar ) appear.]

$$\begin{array}{l}
 \frac{1 + 31}{1 + 31} = \frac{32}{32} \quad \text{Therefore, the primary classification is } \underline{1} \text{ to } \underline{32} \\
 \frac{1 + 31}{1 + 31} = \frac{32}{32}
 \end{array}$$

$$1 \quad 32$$

32 x 32 = 1024 classification.

24. For what **purposes** the **finger prints** are taken?

Finger Prints are taken,

1. To know the antecedents when arrested.
2. For records when convicted.
3. Suspects for comparison.
4. For elimination of inmates.
5. As signature for illiterates.
6. In service books.
7. Pension sheets.
8. Verification of Police Recruits.
9. On pronotes and on documents.
10. For unknown dead bodies.
11. On passports and identity cards.
12. For S.I.T. act conviction for women.
13. For Hijackers.
14. In USA for mother and children in Hospitals.
15. In USA civilian collection.

\*25. How the **Finger Print Bureau** helps to trace the Ex-convict ?

1. A report regarding the missing ex-convict is to be sent to finger print bureau with his FPB serial number and other particulars.
2. His finger Print Slip will be located from the records and a red slip will be affixed with details.

3. If any search finger print slip of the ex-convict is received from any place, the arrest particulars will be intimated.

**26. As a police officer, what precautions should be taken when one arrive at the SOC ?**

The primary duty of the first officer at the scene is to secure the site by setting a boundary within which no unauthorised person may pass.

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The goal of the evidence-collection stage is to find, collect and preserve all physical evidence that might serve to recreate the crime and identify the perpetrator in a manner that will stand up in court. Evidence can come in any form. Some typical kinds of evidence a CSI might find at a crime scene include:

Trace evidence (gunshot residue, paint residue, broken glass, unknown chemicals, drugs)

Impressions (fingerprints, footwear, tool marks)

Body fluids (blood, semen, saliva, vomit)

Hair and fibers

Weapons and firearms evidence (knives, guns, bullet holes, cartridge casings)

Questioned documents (diaries, suicide note, phone books; also includes electronic documents like answering machines and caller ID units)

With theories of the crime in mind, CSIs begin the systematic search for incriminating evidence, taking meticulous notes along the way. If there is a dead body at the scene, the search probably starts there.

- (i). Reconstruct the scene of occurrence mentally. Imagine himself in the role of the culprit and check the possible articles which he could have touched in the commission of crime.
- (ii). Not leave his own finger prints on the articles.
- (iii). Photograph all developed prints along with proper identification marks
- (iv). The scene of crime should be preserved till the arrival of finger print expert and others.

(v). The members of the house burgled and out lookers should not be allowed to handle the crime scene articles.

(vi). The crime scene articles may be kept away from heat, dust, wind and rain.

27. **In a dacoity case, a severed right thumb finger is found, How the identity of the criminals can be established ?**

After finger printing the right thumb, it can be searched in the single digit collection and identity can be established. List of MO Criminal Finger prints can also be compared for identification.

28. An unidentified dead body was found in a river **with out right hand** ? How will you fix up identity?

In this case, the left hand fingers of the dead person are to be finger printed. Since finger prints of five fingers are available,

1. This can be searched in the 10 digit records by working out the permutation and combination method of classification for the missing right hand fingers.
2. In Single Digit collection can be searched.
3. If any suspected left thumb found in any documents or pronotes can also be compared and identified.

29. **What are the types of dead bodies ?**

1. Presently Dead.
2. Rigor Mortis stage.
3. Decomposition stage.

30. **How will you take prints in the first stage ?**

By ordinary method of taking finger prints.

31. **How will you take finger prints in Rigor Mortis stage ?**

1. Finger Joints and Wrist should be massaged to over come the rigidity. It should be treated in Luke warm water for few minutes.

2. If the fingers are stiff and not bending a deep cut in the second joint is to be made and straightened for taking prints.
3. Cadaver spoon or shoe horn is used for inking and printing on bit papers. Then they are pasted on finger print slip.
4. A match box or a small pad can also be used to roll over the finger after inking the finger with the rubber roller.
5. Concave metal roller on cylindrical slab can also be used for inking the fingers direct.

The examination of a body usually takes place with the deceased positioned on his or her back for eventual autopsy. This position makes it difficult or nearly impossible for the examiner to apply ink to the fingers using an inking plate, and thus requires that ink be rolled onto a spatula and applied to the fingers. The application of too much ink may result in distorting/smudging of the recorded prints. It is also **not feasible to roll** the finger impressions onto a fingerprint card, especially when rigor mortis has set in the body. The recording of inked impressions is thus accomplished using a tool called a spoon that can be placed on the end of the finger. Fingerprint blocks are held in the spoon and are used to capture friction ridge detail and create a complete fingerprint record.

32. **What are the different conditions of dead bodies in decomposition stage ? Explain the various methods of taking finger prints in dried fingers ?**

1. **Dried Fingers:**

To regain normal shape, the fingers are to be distended in the second joint and then the fingers are to be kept in Sodium Hydroxide solution.

2. **Flabby Embalmed and swollen fingers:**

Flabby embalmed and swollen fingers (abnormal size) should be treated in Formaldehyde solution. Fingers will come to normal size.

3. **Shriveled fingers (being in water):**

These fingers should be brought to normal size by injecting some liquid Paraffin, Glycerin, Gelatin (or) hot water into the tip of the fingers. The finger will regain its normal size.

4. **Burnt Fingers:**

Burnt fingers are to be brushed with Lead Carbonate or with Bismuth salt. Then X-ray Electranography is taken.

**5. Highly Decomposed:**

In this stage the skin on the finger will be loosened. It is to be removed and clothed (wrapped) on the operators finger like a thimble and finger printed.

**6. Peeled off skin:**

The skin is removed and wrapped on a pad or kept in between two pieces and photography is made.

**\*33. A dead body is found in a decomposed stage. As an Investigating Officer, how will you send the fingers for experts examination?**

The Medical Officer who performs the post-mortem is to be requested to cut the fingers in the second joint. Prior to cutting 10 labeled bottles with the names of the digit is to be kept ready with proper preservative solution. Then the severed fingers are duly packed, Sealed and sent to the Director Finger Print Bureau for experts examination.

**34. Which is the best preservative solution ? Why ?**

Equal parts of Phenol, Alcohol and Glycerin is the best preservative solution. Because Phenol is a strong disinfectant, Alcohol is the dehydrating agent and the Glycerin keeps the finger pliable and soft.

**\*35. Define “ BURGLARS VISITING CARD” and how it happens & uses?.**

Sweat glands become active, when one is nervous or excited and the hands perspire more than normal during that period. Hence , whatever precautions are taken by the criminals, Latent Prints or chance prints are left often upon articles in a moment of hurry.

(ie). An impression made from an un-inked or colorless residue pattern on any object and therefore invisible. Detection involves conversion of the colourless residue into a coloured pattern , so that what is invisible becomes visualized.

A finger print left at SOC is a definite match to a suspect , with no possibility of error ” .

**Definition:**

A well developed latent fingerprint or chance print from the scene of crime is the “ **Burglars visiting card**” of the concerned burglar. It proves the presence of the person who made the impressions, it establishes the fact that accused was at the scene (ie) A finger print left at SOC is a definite match to a suspect , with no possibility of error ” and it open the way to a successful prosecution.

**36. Super imposed or overlapped impression**

An impression taken on a already existing impression is called “ Super imposed or Overlapped” impression.

- \*37. **What types of prints will be found in the Scene of Crime (SOC)? Explain in detail?**

#### **OILY IMPRESSION**

Chance prints are traced on greasy or oily surface.  
Iodine fumes can be used to fill the depression.  
Photograph these impression immediately.

#### **VISIBLE IMPRESSION**

Visible impressions are caused by fingers contaminated with coloured materials such as (i). Paints (ii). Blood (iii). Grease (iv). Ink (v). Tar (vi). Dirt etc.  
Prints are easy to find out but they are generally indistinct.  
No chemical test should be made.  
Print can be easily be photographed by reflection.

#### **DUST IMPRESSION**

Traced at the scenes of crime belong to two categories.  
(i). Finger moistened with sweat coming into contact with any outside surface such  
(a). Window panes  
(b). Glass bottles  
© Polished wood.  
Finger contaminated with sweat and dust leave visible impressions on polished surfaces.

#### **Plastic Finger Print:**

These impressions found on such objects as  
(i). Soap (ii). Melted Wax (iii). Melted Candle (iv). Wet Paints (v). Grease (vi). Tar (vii). Mud (viii). Pitch (ix). Paraffin (x). Adhesives etc.  
Plastic print is in reality the mould of the friction skin ridges appearing as furrows (depression) and furrows appear as ridges (elevations).

38. **How do the latent print cause on the objects?**

When the fingers come into contact with the objects the latent prints are caused due to the sweat available on the friction skin.

- \*39. **What are the contents of the sweat?**

Sweat contains      99% Water.  
                              0.1% Urea and other salts.  
                              0.4% Fat and Fatty acids and Amino Acid.  
                              0.5% Sodium Chloride.

40. **What are the methods of developing latent finger prints?**

1. Powder Method.
2. Fuming Method.
3. Solution Method or Liquid Method.
4. Laser Print Finder Developing. © Facts finder (500 times powerful)

41. **What powders are used to develop latent finger prints ?**

**White Powders:**

White powder, Grey powder, Aluminium powder, Universal powder, and Anthracene powder.

**Black Powders:**

Manganese-di-oxide, Charcoal, and Graphite powder.

42. **What are the good qualities of ideal finger print powders?**

1. Finely grained.
2. Should adhere to the latent prints.
3. Devoid of lumps.
4. Should not have painting effect.
5. Should give colour contrast.
6. The developed print should have clear ridges.

43. **How will you select powder for each object?**

For light colour object dark colour powders are used. For dark colour objects light colour powders are used. For Multi colour objects Anthracene powder is used. In general the powder should give contrast for photograph.

44. **What are the factors that creates latent prints ?**

**FACTORS AFFECTING DEVELOPMENT**

There are various factors which influence the processes of development and the ultimate results.

Some of them are.

- (i). The nature of the object touched.
- (ii). Physical condition of the person leaving the impression.
- (iii). Condition of the skin leaving the impression.
- (iv). The amount of pressure used while leaving the impression and
- (v). The atmospheric condition of the surroundings.

If the surface of the object touched is polished, smooth and non-absorbent, they will last longer and will be clearer than if it is on rough and absorbent surface.

Example: Highly glazed paper @ three years.

Tracing paper - three weeks.

Ordinary unglazed paper - few days.

**45. What powder you will use on the following articles ?**

- |                            |   |                                                |
|----------------------------|---|------------------------------------------------|
| 1. Gold cup                | - | Manganese-di-oxide.                            |
| 2. Glass                   | - | Grey or White.                                 |
| 3. Tube light              | - | Manganese-di-oxide or according to the colour. |
| 4. Silver cup              | - | Grey.                                          |
| 5. Plastic Purse           | - | According to colour.                           |
| 6. Mirror                  | - | Grey.                                          |
| 7. Wooden Tray             | - | Universal.                                     |
| 8. Multi colour tin        | - | Anthracene.                                    |
| 9. Engine wheel            | - | Oil prints @ No development.                   |
| 10. Egg Shell              | - | Manganese-di-oxide.                            |
| 11. White paper            | - | Manganese-di-oxide.                            |
| 12. Ivory Toy              | - | Manganese-di-oxide.                            |
| 13. Wall                   | - | No powder (Iodine fumes).                      |
| 14. Telephone Receiver     | - | According to colour.                           |
| 15. Leather Bag            | - | Universal.                                     |
| 16. Brass Lock             | - | Grey.                                          |
| 17. Blood strained knife   | - | Visible prints no development.                 |
| 18. Blotting Paper         | - | Iodine fumes.                                  |
| 19. Stainless Steel Vessel | - | Grey.                                          |
| 20. Multi Colour Magazine- | - | Anthracene.                                    |
| 21. Wet Soap               | - | Moluded prints .No developement.               |
| 22. Olive Green Table      | - | Grey.                                          |
| 23. Currency Note          | - | Anthracene powder, X-ray Electranography.      |
| 24. Wax Cup                | - | Moulded prints.                                |
| 25. On Plantain Leaf       | - | Copper Powder.                                 |

|                       |   |                                            |
|-----------------------|---|--------------------------------------------|
| 26. Human Body        | - | Lazer Print Finder, X-ray Electranography. |
| 27. Aluminium Vessel  | - | Grey.                                      |
| 28. On Calender Sheet | - | Anthracene powder.                         |
| 29. Yellow Colour Box | - | Manganese-di-oxide.                        |

**46. Prints on dust :**

Direct photography – Prints on dust Cellulose Acetate solution is sprayed on the mark. It will dry and form transparent covering.

**47. Absorbent white paper :**

If a latent print on paper is powered with Calomal or lead actate and exposed to the fumes of hydrogen sulphide or ammonia sulphide, a dark and permanent image will emerge. (or) Metallic antimony Powder

**\*48. Skin of a dead body : Laser Print Finder , X-ray Electronography**

**49. Prints under water :**

The article under water is carefully taken out and the water is allowed to dry by keeping the article under a shade. Then the developing powders may be applied to get the prints visible.

**50. Double side prints( Both sides of the glass ):**

If finger prints exist on both sides of a transparent surface, such as glass etc., and these are to be developed and photographed separately, the prints on one side developed first with white powder such as white lead etc., and then photographed. These are finally coloured black with the vapours of ammonium sulphide and dark coloured paper is put against them , to render them invisible . Next the prints on the otherside are developed with white lead etc., and photographed properly.

**51. Reason for powdering the latent finger prints:**

There are three reasons for powdering latent finger prints namely,

(a). To make the images visible.

(b) To develop contrast for photographic purpose and

©. To develop powdered images for lifting and preserving.

**52. If chance prints are found on a beam or on a curved surface. What will you do ?**

The chance prints found on a beam and on the curved surface, could not be photographed directly. Hence those prints are to be lifted after developing. The prints are developed with metallic powders viz., Manganese-di-oxide or Aluminium powders and lifted with transparent cellulose tape, in the presence of witness.

**53. What precautions are necessary for lifting latent finger prints ?**

1. Prints should be developed with metallic powders .
2. Air bubbles should not be allowed.
3. Lifted prints should be pasted on contrast surface.
4. Should not slip while lifting.
5. It should be done in the presence of witnesses.

**54. What are different ways or methods of lifting of prints developed at scene of crime?**

Damp Gelatine process

Berlin leaf method

Dr. Luing' s Collodin

Folien Paper

Dactyloscopic Foil

Scotch Cellulose Tape

Silver Foil

A unique liquid siliceous rubber.

**55. What will you do if there are chance finger prints on Candle ?**

Chance prints on a candle is a Moulded print. No development is necessary.  
Direct photography can be made.

**56. How will you develop Chance finger prints on starched cloth ?**

Chance finger prints on a starched cloth can be developed by treating it in Silver Nitrate Solution (10%) and exposing to 1000 watts light or Sun light.

**57. How will you examine latent finger prints on a wall ?**

1. By using Iodine Crystals and Calcium Chloride in a fuming Gun-Iodine fume is produced. It is exposed on the suspected surfaces of the wall. The Latent finger prints will appear as brown colour prints. They should be photographed before fading.
2. It can also be lifted by pressing polished silver plates over the print and exposing to Sun light.
3. With the help of Laser beam technique.
4. With the help of Poly rays.

58. **What will you do if there are chance finger prints on window glass with dust ?**

The dust on the window glass is removed by the touch of the fingers. Hence photo should be taken directly. These chance prints are to be preserved by spraying the cellulose acetate solution. It will dry and form transparent covering.

59. **Can you develop chance print on a knife thrown into a tub of water ?**

The knife is to be dried under shade and grey powder is used to develop the prints.

\*60. **Some brown marks suspected as blood prints are found on a Sword. What you will do ?**

A mixture of Leucomalachite Green 1 gram + Ether 50 grams + Glacial Acetic Acid 10 drops + Hydrogen Peroxide 25%. Finger prints shows up in Green colour.

If the prints are by human blood, ridges will appear as **Green lines**. Then the prints are photographed directly.

\*61. **Blood prints on dead human skin.**

**AMIDO BLACK: ( DEAD HUMAN SKIN)**

Amido black reacts with proteins found in blood to form a blue-black reaction product. Amido black is useful only on blood contaminated prints. It is useful on non-porous and some slightly porous surfaces. It is highly sensitive. It some times offers successful development of blood prints on dead human skin.

**The following table gives the proper filters and plates required for different colours ( for taking photography)**

| Sl. No. | Colour                        | Filter | Plates          |
|---------|-------------------------------|--------|-----------------|
| 1       | To Photograph - blue as black | Yellow | Green sensitive |

|   |                                |       |                 |
|---|--------------------------------|-------|-----------------|
| 2 | To Photograph - blue as white  | Blue  | Ordinary        |
| 3 | To Photograph - green as black | none  | Ordinary        |
| 4 | To Photograph - green as white | Green | Green sensitive |
| 5 | To Photograph - red as black   | none  | Ordinary        |
| 6 | To Photograph - red as white   | red   | Red sensitive   |

62. **How will you develop chance finger prints on a telephone left by a Criminal ?**

The telephone may be in different colours, **according to colour**, White powder or Manganese-di-oxide powder can be used.

\*63. **Under what methods the chance finger prints on old documents can be developed?**

The best solution to develop chance finger prints on old documents is **Ninhydrin solution**. It is sprayed on the suspected area. The old prints will appear as brown prints. It should be photographed.

**Silver Nitrate solution** 3% to 5% will also develop chance finger prints on old documents. It is done in the dark room. The solution is to be kept in a tray and the document is to be bathed in it. Then the document is placed in between two blotting papers and then exposed to 1000 watts light or Sun light. The prints will appear as brown prints and they should be photographed immediately.

64. **How the Ultra Violet lamp is useful in finger print work ?**

The chance finger prints on multi coloured object will be developed with Anthracene powder. The prints developed with this powder will fluorescence under U.V Light. But the Multi colours of the object will not be visible. Then prints can be Photographed using fingerprint camera.

65. **Age of the latent print :**

Application of **CHROMATOGRAPHY** in determining the rate of propagation of the chemicals in print may help in determining the age of the latent print scientifically.

**66. Single Digit Finger Print Classification:**

Single Digit classification means finger print of only one finger is taken into account and for every person a separate file of each finger is maintained. Classification of print is done according to certain value.( Battly system of classification)

#### **\*67. ADVANTAGES OF SDFP Bureau.**

Chance prints of criminals can be traced from the SD record / collections within a very short period. Owing to the speed with which offenders can be fixed, they can be located early before they make their escape. This also enables for the early and complete recovery of stolen properties from the offenders.

It narrows down the field of enquiry , saving a lot of labour and time to fix up the criminal in a particular offence. The rapid location and detection of crime through the SDFP system can win public appreciation and co-operation.

#### **68. Under Identification of Prisoners Act :**

##### **Section 2:**

Under section 2 of this act, measurements include finger impressions and foot impressions within its definition.

##### **Section 3:**

Every person who has been arrested in connection with or convicted of any offence punishable with rigorous imprisonment for a term, of one year or upwards, or of any offence which would render him liable for enhanced punishment on a subsequent conviction or ordered to give security for his good behaviour under section 118 of code of criminal procedure 1898 shall if so required by police officer, allow his finger impressions and photographs to be taken in the prescribed manner.

#### **SECTION 4**

Empowers Police Officers for taking measurements, Finger Prints , Photographs etc. of non-convicted persons who have been arrested in connection with an offence punishable with RI for a term of one year or more.

## **SECTION 5**

A Magistrate of the first class, if satisfied, that for purpose of investigation or proceedings under the code of criminal procedure 1898, it is expedient to direct an accused arrested in this connection to allow his finger impressions to be taken may order accordingly and the person so ordered shall be produced or present himself at the specified time and place to this effect. (Empowers a magistrate of 1<sup>st</sup> class to order a person be measured, finger printed etc., for the purpose of any investigation or proceeding).

### **Section – 6.**

If a convict refuses to give his finger prints, What action you will take ?

If such a person refuses or resists to allow his finger impression to be taken, it shall be lawful to use all means necessary to secure the taking thereof. This refusal or resistance shall also be deemed to be an offence under section 186 of the IPC.

## **SECTION 7**

Where any person who has had his finger impression taken or has been finger printed in accordance with the provisions of this act, and has not been previously convicted of an offence punishable with rigorous imprisonment for a term of one year or upwards, **is released without trial or discharged or acquitted by any court, all his finger impressions so taken, shall be destroyed or handed over to him**, unless the court or in a case where such person is released without trial the District or Sub-divisional officer directs otherwise.

For the latter type of order the reasons for it are to be given in writing. (Destruction of Photographs, measurements, Finger Prints etc., on acquittal or on discharge or is released without trial)

69. **Under what section of law the court can direct to take the finger prints of the under trial prisoner for the purpose of comparison ?**

As per **Section 73 of Indian Evidence Act**.

**Section 73 of Indian Evidence** Act as amended by Act 5 of 1899, permits the use of these specimen under 73 of the Indian Evidence Act Any Person present in a court can be directed to give his finger impression for purpose of comparison.

- \*70. **Under what section of law the finger print expert's evidence is admitted in court ?**

**Section 45 of Indian Evidence Act.**

Finger Print Expert means an officer who is specially skilled in Finger Print Science and whose opinion on the question of identity or otherwise of disputed finger prints is taken as relevant by the courts as per **section 45 of Indian Evidence Act.** ( making the testimony of finger print examination of Finger Print Expert relevant and admissible in Law ). •In the year 1899 that **section 45 and 73 of the Indian Evidence Act** were amended by Act V of 1899 so as to include the Finger Print Expert Opinion on Finger impressions as well.

### **EXPERT:**

A person who has acquired **special skill** or superior knowledge or practical experience in a particular branch of knowledge is an Expert. Similarly a person who has made a systematic study of Finger Print Science is an **Finger Print Expert.**

**Special Skill:** Special skill may have been acquired by practice, observation, research or careful study.

### 71. **The first All India Forensic Science Conference :**

The first All India Forensic Science Conference held in Srinagar in 1973 , recommended Eight points as a uniform minimum number for Experts in India, to give a positive opinion of identity of two prints. ( disputed and admitted impressions). Its implementation became effective from 1975 onwards only.

### 72. **Who was the first criminal in the World arrested on the basis of a chance print and punished from the court of law ?**

**The first published case in India** in which chance prints fixed up the identity of the murderers as early as 1898, was in a case in which the manager of a tea estate was murdered in the District of Jalpaiguri town , Bengal where on the cover of the calendar available from the dispatch box , the bloody in print of a finger was traced and it was identified as the right thumb impression of an ex-servant. Rajan Kanagali Charan , native of Bengal was **the first criminal in the World arrested on 9.9.1897 on the basis of a chance print and punished from the court of law on 25.5.1898 in theft charge and sentenced to two years imprisonment.** It is also significant that as such useful and practical application of the finger print science continued its acceptance and official recognition came in the form of an amendment to Section 45 of the Indian Evidence Act in the year 1899 making the testimony of finger print examination of Finger Print Expert relevant and admissible in Law.

### 73. **Article 20(3) of Constitution of India.**

The question arose as to whether taking of the finger prints of the accused and using them as evidence against him is violative of article 20(3) of the Constitution of India.

Art. 20(3) of Constitution of India - No person accused of any offence shall be compelled to be a witness against himself. The application of finger prints in the identification of person does not violate the fundamental rights under Art. 20(3) of Constitution.

**\*74. If any person claims that his fundamental rights are affected as per 20(3) of Constitution of India. ? What is your answer ?**

As per the judgment of the Supreme court in **Bombay Vs Kathi Kallu** the taking of Finger prints is not against the fundamental rights of 20(3) of Constitution of India.

**75. CT Act 3 of 1911 and Act 33 of 1920:**

Finger Print slips taken in accordance with the provisions, contained in the acts are “ **Public Document**” .

**76. Section 62 explanation 2 and illustration (a) under Section 63 of the Indian Evidence Act:**

**Photo copy of the finger print slip** is primary evidence of a document and can be admitted as evidence by court but proof must be let in that it was the photo of the Original which can be got if necessary.

**\*77. Which section of law empowers the opinion of the Director as a testimony in the court ?**

**As per Sec.293 amended Cr.PC.**

The certificate of FP Examination furnished by the Director / Superintendent of Police (FP) , Finger Print Bureau is admissible in Law. It can be filed as evidence without examining the Director / S.P.(FP) and the said certificate will have the same value and weight, as it would have, if it was formally proved by shown testimony.

**78. An Expert can be called as a witness under section 293 Crpc Clause (2) .**

If any of the parties so desire the Expert can be called for evidence under clause(2) of the 293 Crpc., which reads, “ The court shall summon and examine the Expert, should either the prosecution as the accused apply to the court to summon and examine the Expert. The court, likewise, may call the Expert for evidence” .

**79. Which law provides enhanced conviction for the ex-convict ?**

**Section 75 IPC.**

**80. Leprosy person – finger print should not be taken.**

Leprosy person finger print should not be taken according to Police Standing Order 815(4)(J).

**81. How the Chance finger prints are helpful in investigation and for conviction ?**

The appearance of finger print of a person in the scene of crime proves that he is the agency of the crime, and finally it leads to connect the person as accused for conviction.

**82. Under what methods the scene of crime prints are identified ?**

1. By comparison of suspect's finger prints.
2. Comparison of daily arrested person's finger prints.
3. Direct search from single digit records.
4. Inter se comparison.
5. Sight memory method.
6. M.O criminals check.
7. Permutation and combination method of classification.
8. Search in other states (FPB records).

**83. What are the uses of finger print Bureau ?**

1. Finger print Bureau is the bank for keeping the finger prints of the criminals.
2. Previous conviction particulars are furnished for Ex-convicts.
3. O.V criminals are identified.
4. Unidentified dead persons finger prints are searched and identification established.
5. Finger prints of Interpol Criminals, hi-jackers and dismissed police persons FP's are kept in the records.
6. F.P opinion furnished on disputed finger prints in civil and criminal cases.
7. Dead body finger prints prepared.
8. Scene of crime finger prints comparison done.

**84. What are the advanced Electronic methods used in finger print work ?**

1. Computerization of Finger Print Systems.
2. MIRA code II system (Microfilm Information Retrieval Access).
3. Laser Print Finder. (in dead body).
4. FACTS{Finger Print Analyzer and Criminal Tracing System}- An Automated Finger Print Identification System.
5. Livescan

**85. When do the ridges are destroyed ?**

When the dermis is destroyed, due to decomposition or due to accident or injuries, Ridges will be destroyed.

**86. What is Permutation and Combination method ?**

In the absence of one or two fingers classification can be calculated. The Corresponding pattern will be assigned to missing fingers. They will be classified under all possible classifications and search is made.

**87. What is fixed Point? What is its usefulness?**

Both **core** and **delta** are called fixed point. It is useful to device the **classification**.

**88. How long the criminal Finger Prints can be retained in record ?**

- 1) Till 80 years for grave offences.
- 2) Till 10 years for petty offences.

**89. What are the qualities of a good developing powder for latent finger prints ?**

The qualities of a good powder is that, it should produce no smudging or paint like effect as in the case of Aluminium base powder. The developed print should have clear ridges.

**Development :**

Brushes with very soft hair should be selected for finger print work. When a quantity of powder is picked up with the brush , the powder may be brushed over the suspected area very carefully, it may be spread across the surface very lightly with the brush until recognizable ridges begin to appear. Development should be concentrated and carefully controlled as soon as any ridges on pattern formation appears until peak development is reached.

If a latent finger print is visible to the eye, it is good procedure to photograph the image before it is powdered or a lift is attempted. Before an attempt is made toward development by powder, any finger print evidence which is at all visible , should be photographed if there is any chance of the powdering being unsuccessful or of the evidence being destroyed in the attempt.

Latent finger prints on some surfaces may be revealed by reflected light. A strong light sources is a valuable aid in a search for finger print evidence.

A Finger print man must know which method is best in each situation as it arises , what procedure to apply and when. He must be quick to recognize the point at which a print is developed to its peak so that he will not inadvertently or unwittingly destroy it.

90. **Is there any finger print without any ridge characteristics ?**

There may not be any Galton details but there are other permanent characteristics such as sweat pores and edge characteristics.

**Adermatoglyphia**



Dr. Sprecher' s team studied a Swiss family, half of whose members have adermatoglyphia. All of those affected members have been without fingerprints since birth. The palms, fingers, toes and soles of an affected person are smooth, devoid of the subtle ridges that others have.

When a fingerprint is taken, “ instead of having a nice, regular pattern of concentric circles, you see a smear,” Dr. Sprecher said. Those affected also have fewer sweat glands on their hands and feet. The researchers found that the affected members of the family all had a mutation in the gene called Smarcd1. Specifically, they had this mutation in a version of the gene that is expressed only in skin.

91. **Which area of the finger print is more suitable for comparison work ?**

Every part of the print is suitable if clear ridge characteristics are available there.

**92. Finger abnormalities:**

Every system is subject to exception and in the Finger Print system, physical abnormalities of the fingers are encountered which make classification - and even the taking of prints - difficult.

**93. DACTYL**

Means finger or Toe

**\*94. Dactylography:**

The study of finger prints for the purpose of identifications.

**\*95. Dactyloscopy.**

It is the science that deals with the identification by means of finger prints.

**\*96. Poly Dactyly.**

The occurrence of more than five digits on a hand or foot.

Super-numerary fingers which though normally appendage to the thumb or little finger, can occasionally manifest as six or more fully formed fingers.

**97. Syn Dactyly.** ( webbing of digits).

Commonly called Webbed Fingers where the digits are joined together with in the condition can be found in only the lower one or two joints, or as fusing the whole length of the fingers. Cases have been recorded where all four fingers have been joined together in this way. A rarer abnormality occurs when the fingers are fused together not by skin but by the bones.

**98. Dermatoglyphics.**

The study of the skin patterning of fingers , palms , soles and toes is called DERMETOGLYPHICS.

DERMA- Skin. GLYPHE- A carving.

(ie).DERMATOGLYPHIC refers to the branch of science in the study of the patterns of skins (dermal) ridges present on the fingers, palms, toes and the soles of human

**99. Dermal Papillae.**

Dermal papillae , that determine the form and pattern of the ridges on the surface of the skin.

Once the dermal papillae develop in the human fetus, the ridge patterns will remain unchanged through out life except to enlarge during growth.

**100. SPLITTHUMB**

A split thumb is a thumb which has two nail joints. All efforts must be made to print such a thumb as completely as possible.

In classifying a split thumb, the outer joint is completely disregarded, while the inner joint , close to the other fingers, is classified.

Proper notation of a split thumb must be made on the finger print card.

**101. Ectro Dactyly.**

The congenial absence of one or more digits in right and left hands and also foot.(ie). Where one or more digits have been absent from birth.

A finger missing from birth is classified as if it had been amputated. Occasionally a finger may not have developed – may have been missing from birth – thus a print is not obtainable. Proper notation should be made on the card.

## **102. Definitions**

(a) ‘ **Bureau**’ means a Fingerprint Bureau.

(b) ‘ **Fingerprints**’ are impressions of the papillary ridges on the fingers including thumb, either ‘ rolled’ or ‘ plain’

(c) **Rolled Print**:- A rolled print is obtained by placing the thumb or the finger upon a tin, glass or metal slab over which a thin film of printer’ s ink has been spread by means of the roller, the plane of the nail being at right angles to the plane of the slab, and then the thumb or the finger is turned over until the bulb surface which originally faced to the left now faces to the right, the plane of the nail again being at right angles to the slab. By this means the whole ridge surface of the thumb or fingers between the boundaries of the nail is evenly inked and then pressing it lightly upon the paper in the same way as it was pressed upon inked slab, a clear rolled impression of the thumb or the finger is obtained.

(d) **Plain or slab or sequence Print**:- A plain print is obtained by lightly pressing the inked bulb of thumb or finger upon the paper, without any turning movement.

(e) ‘ **Unidentified**’ means a person whose residence and antecedents are not known.

(f) ‘ **Identified**’ means a person whose residence and antecedents have been verified to be true by the police.

(g) ‘ **Untraced**’ means a person against whom no previous convictions could be established from the records of the Bureau.

(h) ‘ **Traced**’ means a person whose antecedents and previous history have been established from the records of the Fingerprint Bureau.

(i) ‘ **Suspect**’ means any person under arrest or liable to be arrested for a criminal offence on suspicion of his being involved in a crime.

(j) ‘ **Convicted**’ means a person who has been found guilty for the first time by any court of law for any offence.

(k) ‘ **Reconvicted**’ means a person who, having been convicted on one or more previous occasions, is again convicted.

(l) ‘ **Fingerprint Slips**’ are of two kinds: (1) Fingerprint Record Slip and (2) Fingerprint Search Slip.

(i) ‘ **Fingerprint Record Slip**’ is the fingerprint slip of a person prepared in a prescribed Form immediately after he is convicted or reconvicted and sent for record to the Bureau along with Conviction Memorandum

(ii) ‘ **Fingerprint Search Slip**’ is the fingerprint slip of a suspect taken on a prescribed Form , by the Station House Officer and sent for search to the Bureau , in order to know his antecedents.

(m) ‘ **Proficient to take impressions**’ means an officer who has been declared by a Superintendent of the district or by the Commissioner in City, to be qualified to take clear and well rolled finger impressions and clear impressions of the palms and soles of feet, on passing a test to be held by the Director, Fingerprint Bureau.

(n) ‘ **Searcher/SI(FP)**’ means an officer who has been trained in the Finger print Science and declared by the appointing authority to be competent to examine and classify finger impressions.

(o) ‘ **Expert/INSPR.(FP)**’ means an officer(SI(FP)), who has been trained in the Finger print Science for 3 YEARS continuous training from the date of appointment or joining as SI(FP) in the Tamilnadu Finger Print Bureau and after the completion three years practical training , an officer(SI(FP)) who is eligible to appear for the exam and then who passes the examination held by the All-India Board for Examination of Fingerprint Experts, CFPB, NCRB, New Delhi and then declared by the competent authority(NCRB, CFPB, New Delhi) as an Expert. At present , in Tamilnadu State “Expert” was re-designated as Inspector of Police(Finger Print ) since, 1993 as per G.O. 811/1997.

(p) **Absconder’ s Slip**:- This is a special form (Red slip) used in the Bureau. This slip is attached to the original F.P. Slip of the convict who is reported to be an absconder, O.V. or wanted in any crime.

### **103. Photography:**

#### **THE NEED OF PHOTOGRAPHY FOR FINGERPRINT EXPERTS:**

- Can make permanent copies.
- To bring out faint fingerprints.
- To magnify fingerprint.
- To be used as evidence in the court of law.

In terms of **section “ 9” of Indian Evidence Act** Photography is always admissible in the court of law as evidence. Negatives are to be produced Before the judicial authorities along with photographs to prove accuracy

#### **VIABILITY OF DIGITAL IMAGE**

DIGITAL IMAGE CANNOT BE MANIPULATED IF PROCEDURES ARE FOLLOWED.  
 EVERY DIGITAL IMAGE HAS A METADATA STORED IN IT.  
 META DATA ARE STRUCTURED ENCODED DATA WHICH GIVES EVERY IMAGE ITS OWN CHARACTERSTIC.  
 ANALOG IMAGES CAN BE MANIPULATED AND IS MANIPULATED SINCE ITS DISCOVERY

### INFORMATION TECHNOLOGY ACT:

INFORMATION TECHNOLOGY ACT ITA-2000 section 4 Where in any law provides that information or any other matter shall be in writing or in the type written or printed form, then notwithstanding anything contained in such law, such requirement shall be deemed to have been satisfied if such information or matter is:-

Rendered or made available in electronic form

Accessible, so as to be useful for subsequent references.

#### **\*104. How fingerprints became the best means for personal identification?**

Fingerprints are unique in nature and permanent from birth to death. It has been proven by Sir Francis Galton that the ridges are persistent from birth until they are destroyed by decomposition after death.

1. In crime investigation. Fingerprints are the cheapest and best means to prove the identity of a criminal. Most of the crime cases, like murder and theft cases, do not have an eye witness or other evidence. Even the testimony of an eye witness can be strongly challenged in a court of law. But one can never deny his presence at a crime scene if his fingerprints are collected there. A fingerprint itself is conclusive evidence.

2. To prevent impersonation. Fingerprints can be included with social security cards, passports, driving licenses, bank accounts etc. to prevent unauthorised use.

3. To prove the identity of an unidentified dead body. Fingerprint comparison is one way to prove the identity of a dead body when it is mutilated or decomposed, thus making difficult to identify the person. It becomes useful when a natural calamity occurs or a war breaks out. The mutilated bodies of the victims may be identified with the use of earlier recorded fingerprints.

4. In biometrics based electronic gadgets. Fingerprints play a vital role in the manufacturing of the biometric based electronic gadgets, such as door security systems, finger impression locking systems, door access control systems, automatic safe boxes, fingerprint attendance systems, fingerprint security systems, etc.

#### **105. Mobile identification (MobileID) Technology**

A new fingerprinting device using mobile identification (MobileID) technology lets police check a person's identity on the street within minutes, and is now being used. The technology is a powerful tool in the fight against criminals who trade on anonymity – one of the most powerful weapons criminals have is their ability to hide their true identity and avoid arrest. The technology can also be used to identify dead bodies, so that the police can inform the relatives as quickly as possible.



### **106. AFIS:**

Automated Fingerprint Identification system based on minutiae

**Purpose:** is designed to identify persons who are trying to hide their identity.

The heart of AFIS technology is the ability of a computer to scan and digitally encode finger prints so that they can be subject to high speed computer processing

### **107. FACTS :** Fingerprint Analysis and Criminal Tracing System.

An fully automated fingerprint identification system

### **108. Livescan:**

An image of the fingerprint acquired using an electronic scanner for the purpose of real-time fingerprint processing or matching.

Live Scan is a inkless optical used for scanning the ten prints , palm prints and latent print images. Preparing the fingerprint slips (record slips) after checking the digit order.

A total database can be maintained and images can also be transferred to a central database, being compatible with AFIS for identification of criminals. This can be used as a mobile unit.

### 109. Cardinal points , namely, the cores and deltas.

The cardinal points are of so much importance in finger print classification and search that all officers responsible for taking finger prints should be able readily to recognise them.

### **110. POSITIVE**

A print in which ridges are black and furrows are white.

### **111. What is the latest methods of identifications of individuals?**

The latest method of identification of individuals, being used by banks, sensitive security areas like Military, Govt. and intelligence agencies, nuclear power plants is by their **retinas**. The uniqueness of retinal blood vessels patterns has been known to ophthalmologists for over 50 years.

Every person even in **identical twins** has a widely divergent ,unalterable retinal eye pattern. Through precision optics and sophisticated computer technology it is possible to read an individual' s retinal eye pattern and distinguish it from all.

112. **Super imposed or overlapped impression**

An impression taken on a already existing impression is called “ Super imposed or Overlapped” impression.

113. **Why the Anthropometry system was totally discarded for Criminal Investigation at the beginning of 19<sup>th</sup> Century?.**

A detailed description of precise body measurements and profile photographs are known as “ **Anthropometry**” .

Anthropometry system was considered as the most accurate method of criminal identification for two decades from 1883 to 1901.

This method was also time consuming and the measurements were not taken consistently. Because of this reason , Anthropometry was totally discarded for Criminal Investigation at the beginning of 19<sup>th</sup> Century by the **Troup Committee**.

114. **Why the left thumb impression was taken in the documents ?.**

For both men and women, while working hard , minimum force can be used in the left hand ( in thumb or in fingers ) . Hence, the ridge details are more clear in left hand thumb or in left hand fingers . Hence, all the countries in the world are considering the left thumb impression and taken for comparison purpose in all kind of documents. The impression taken in different kinds of document are dispute one. Hence, the taken dispute impression will help to minimize time when comparing with the admitted impression.

**115. HINTS:**

**Epidermis:** the outermost layer of skin; acts as a protective layer for the dermis.

**Feature:** a characteristic; pores and minutia points are fingerprint features.

**Inked fingerprint:** an image of the fingerprint resulting from applying ink to the surface of the finger and then rolling the finger on paper; results in a rolled fingerprint impression unlike a live-scan fingerprint.

**Latent:** the fingerprint impression left on an object' s surface resulting from contact with a finger.

**Pore:** opening of a sweat gland that is visible on the surface of the finger ridges.