

# Forensic Science Laboratory (ESL):

Forensic Science: study & application of scientific examination & evaluation of evidence for legal purposes

→ It includes:

- i) Forensic medicine — Forensic pathology  
— Forensic psychiatry
- ii) Forensic toxicology
- iii) Forensic immunology
- iv) Forensic odontology
- v) Forensic anthropology
- vi) Forensic police sciences — Criminalistics — Trace evidence  
— Questioned documents examination — Ballistics
- vii) Other forensic specialities — voice print examination — polygraph — fingerprinting.

Locard's Exchange Principle: when any 2 objects come into contact, there is always a transfer of material from each object on the other.

Ex: — traces from the scene of crime may be carried away on the criminal or his tools.  
∴ criminal's fingerprints, footprints, hair, fibres from clothes, blood, seminal stains, etc.  
⇒ silent evidence.

## Lie Detection:

1] Polygraph: an instrument used to detect lies.

→ commonly used: — Keeler Polygraph — Stoelling deceptograph.

→ Polygraph makes a continuous record of blood pressure, pulse, respiration, muscular movements & electrodermal reaction changes in response to stimuli in the form of questions.

- Principle: when a person tells a lie → fear that lie will be detected → stimulation of sympathetic nervous system → physiological (psychosomatic) reactions:
- ↑ in BP & recovery
  - suppression of involuntary muscular movements
  - erratic breathing
  - ↓ in galvanic skin resistance (↑ activity of sweat glands)
- questions are framed by the examiner in a pre-test interview with the subject's consent. (there are usually 10 questions).
- questions asked are to be answered in 'Yes' or 'No' by the subject
- relevant & irrelevant questions are mixed up.
- one question is asked every 20 to 25 seconds & the polygraph chart is recorded in 3-4 minutes.
- usually, the same test is repeated 2-3 times.

2] Narcoanalysis ['Truth Serum' Drugs]: based on the principle that — at a point very close to unconsciousness, subject will be mentally incapable of resistance to questioning & incapable of inventing the falsehoods that he has used to conceal his guilt.

→ Methods used:

i) 0.5 mg of scopolamine hydrobromide s.c. followed by 0.25 mg every 20 minutes (3-6 injections).

ii) Sodium amytal or sodium pentothal (truth serum) 2.5-5% solution i.v. ≤ 1ml

iii) 0.1g sodium secenal 90 minutes before induction → 15mg morphine sulphate + 0.5mg scopolamine hydrobromide 45 minutes later.

→ person loses inhibition & becomes talkative

- CNS depression

- ↓ heart rate

- ↓ BP

- loss of inhibition & self-control.

3] Hypnosis

4] Word Association.