Laboratory	**State Forensic Science Laboratory, Shimla Hills, Junga, District Shimla, Himachal Pradesh**		
Accreditation Standard	**ISO/IEC 17025: 2005**		
Certificate Number	**TC-7858**	**Page 1 of 21**	
Validity	**26.09.2018 to 25.09.2020**	**Last Amended on --**	

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection

FORENSIC TESTING

I.	**CHEMICAL SCIENCES**			
A.	**Chemistry**			
1.	**Clothes, Soil, Skin, Hair, Paint**	**Detection of HCl**		
		pH Test	WPM on Chemistry2005/ DFS Section 5 – 5.5.1.1a	Qualitative
		Litmus Test	WPM on Chemistry2005/ DFS Section 5 – 5.5.1.1b	Qualitative
		Chloride ion	WPM on Chemistry2005/ DFS Section 5 – 5.5.1.2	Qualitative
		Detection of H_2SO_4		
		pH Test	WPM on Chemistry2005/ DFS Section 5 – 5.5.2.1a	Qualitative
		Litmus Test	WPM on Chemistry2005/ DFS Section 5 – 5.5.2.1b	Qualitative
		Sulphate ion	WPM on Chemistry2005/ DFS Section 5 – 5.5.2.2	Qualitative
		Detection of HNO_3		
		pH Test	WPM on Chemistry2005/ DFS Section 5 – 5.5.3.1a	Qualitative
		Litmus Test	WPM on Chemistry2005/ DFS Section 5 – 5.5.3.1b	Qualitative
		Nitrate ion	WPM on Chemistry2005/ DFS Section 5 – 5.5.3.3	Qualitative
2.	**Residues of Petrol, Kerosene, Diesel in Fire Debris**	**Detection of Petrol/ Kerosene/Diesel**		
		TLC	WPM on Petroleum Products 2005/ DFS Section 2 – 2.3.1	Qualitative
		GC	WPM on Chemistry2005/ DFS Section 2 – 2.6 – 2.6.1	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
3.	**Hand Wash, Shirt/ Pant Pocket Wash, Currency Notes, Wheat Floor**	**Detection of phenolphthalein**		
		pH Test	WPM on Chemistry2005/ DFS Section 6 – 6.7.1.1.1	Qualitative
		Acid-Alkali Test	WPM on Chemistry2005/ DFS Section 6 – 6.7.1.1.2	Qualitative
		TLC	WPM on Chemistry2005/ DFS Section 6 – 6.7.1.3	Qualitative
		Spectrophotometric examination	WPM on Chemistry2005/ DFS Section 6 – 6.7.1.4	Qualitative
		Detection of carbonate		
		Hydrochloric acid Test	WPM on Chemistry2005/ DFS Section 6 – 6.7.3.1.1	Qualitative
		Silver Nitrate Test	WPM on Chemistry2005/ DFS Section 6 – 6.7.3.1.1	Qualitative
		Detection of sodium ions		
		Uranyl Zinc Acetate Test	WPM on Chemistry2005/ DFS Section 6 – 6.7.4.1.1	Qualitative
		Flame Test	WPM on Chemistry2005/ DFS Section 6 – 6.7.5	Qualitative
B.	**Toxicology**			
1.	**Human/ Animal Viscera**	**Detection of Ethyl alcohol**		
		Dichromate Test	SFSL/SML/SOP/Chem-1 Issue no. 1/2018	Qualitative
		Iodoform Test	WPM on Toxicology2005/ DFS Section 4 – 4.6.2.4.1	Qualitative
		Detection of Methanol		
		Schiff's Test	WPM on Toxicology2005/ DFS Section 4 – 4.6.2.6.1	Qualitative
		Chromotropic acid Test	WPM on Toxicology2005/ DFS Section 4 – 4.6.2.6.2	Qualitative
		Detection of Turpentine		
		Sulphuric acid test	WPM on Toxicology2005/ DFS Section 4 – 4.6.2.8.1	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Marquis test	WPM on Toxicology2005/ DFS Section 4 – 4.6.2.8.2	Qualitative
		Vanallin test	WPM on Toxicology2005/ DFS Section 4 – 4.6.2.8.3	Qualitative
		Detection of Hydrocyanic acid		
		Purssian blue Test	WPM on Toxicology2005/ DFS Section 4 – 4.6.2.14.1 & 5.5.2.10.1	Qualitative
		Detection of Phenol		
		Ferric chloride	WPM on Toxicology2005/ DFS Section 4 – 4.6.2.15.1	Qualitative
		Libermann's test	WPM on Toxicology2005/ DFS Section 4 – 4.6.2.15.2	Qualitative
		Detection of Phosphine (Phosphide)		
		Mercuric chloride/bromide test	WPM on Toxicology2005/ DFS Section 4 – 4.7.2	Qualitative
		Detection of Carbon monoxide		
		Hoppe-Seyler's test	SFSL/SML/SOP/Chem-2-1 Issue no. /2018	Qualitative
		Carbon monoxide-carboxy haemoglobin test	SFSL/SML/SOP/Chem-2-2 Issue no. 1/2018	Qualitative
		Detection of Zinc		
		Sodium hydroxide test	SFSL/SML/SOP/Chem-3 Issue no. 1/2018	Qualitative
		Pot. Ferrocyanide test	WPM on Toxicology2005/ DFS Section 5 – 5.5.1.15.2	Qualitative
		Detection of Copper		
		Ammonium hydroxide test	WPM on Toxicology2005/ DFS Section 5 – 5.5.1.9.A (1)	Qualitative
		Pot. Ferrocyanide test	WPM on Toxicology2005/ DFS Section 5 – 5.5.1.9.A(2)	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Detection of Aluminium		
		Lake Test	SFSL/SML/SOP/Chem-4 Issue no. 1/2018	Qualitative
		Detection of Organo-Phosphorous Insecticides		
		Colour test	SFSL/SML/SOP/Chem-5 Issue no. 1/2018	Qualitative
		TLC	WPM on Toxicology2005/ DFS Section 6 – 6.6.2.1	Qualitative
		FTIR	SFSL/SML/SOP/Chem-6 Issue no. 1/2018	Qualitative
		GC-MS	WPM on Toxicology2005/ DFS Section 6 – 6.14	Qualitative
		Detection of Organo-chloro Insecticides		
		Colour test	WPM on Toxicology2005/ DFS Section 6 – 6. 8.2.1	Qualitative
		TLC	WPM on Toxicology2005/ DFS Section 6 – 6.6.2.1)	Qualitative
		FTIR	SFSL/SML/SOP/Chem-6 Issue no. 1/2018	Qualitative
		GC-MS	WPM on Toxicology2005/ DFS Section 6 – 6.14	Qualitative
		Detection of Carbamate Insecticides		
		Colour test	WPM on Toxicology2005/ DFS Section 6 – 6.9.3.1	Qualitative
		TLC	WPM on Toxicology2005/ DFS Section 6 – 6.9.3.1	Qualitative
		FTIR	SFSL/SML/SOP/Chem-6 Issue no. 1/2018	Qualitative
		GC-MS	WPM on Toxicology2005/ DFS Section 6 – 6.14	Qualitative
		Detection of Synthetic Pyrethroids		
		TLC	SFSL/SML/Chem & Tox No.01- 6.4a Issue no. 1/2018	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		GC-MS	WPM on Toxicology2005/ DFS Section 6 – 6.14	Qualitative
		Detection of Basic drugs/ poisons		
		Mayer's Reagent Test	WPM on Toxicology2005/ DFS Section 7 – 7.7.1-A	Qualitative
		Dragendorff's reagent Test	WPM on Toxicology2005/ DFS Section 7 – 7.7.4	Qualitative
		Marquis test	WPM on Toxicology2005/ DFS Section 7 – 7.7.2	Qualitative
		Nitric acid test	WPM on Toxicology2005/ DFS Section 7 – 7.7.2	Qualitative
		Formaldehyde-Sulphuric acid test	WPM on Toxicology2005/ DFS Section 7 – 7.7.4	Qualitative
		TLC	WPM on Toxicology2005/ DFS Section 7 – 7.7.5	Qualitative
		FTIR	SFSL/SML/SOP/Chem-6 Issue no. 1/2018	Qualitative
		GC-MS	SFSL/SML/SOP/Chem-7 Issue no. 1/2018	Qualitative
		Detection of Barbiturates		
		Dille - Koppayani test	WPM on Toxicology2005/ DFS Section 8 – 8.5.1.1.2	Qualitative
		TLC	WPM on Toxicology2005/ DFS Section 8 – 8.5.1.1.5	Qualitative
		FTIR	SFSL/SML/SOP/Chem-6 Issue no. 1/2018	Qualitative
		GC-MS	SFSL/SML/SOP/Chem-7 Issue no. 1/2018	Qualitative
		Detection of Cannabinoids		
		Fast blue B test	WPM on Toxicology2005/ DFS Section 9 – 9.7.5.1	Qualitative
		Duquenois-Levine Test	WPM on Toxicology2005/ DFS Section 9 – 9.7.5.2	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		TLC	WPM on Toxicology2005/ DFS Section 9 – 9.9.2	Qualitative
		FTIR	SFSL/SML/SOP/Chem-6 Issue no. 1/2018	Qualitative
		GC-MS	SFSL/SML/SOP/Chem-7 Issue no. 1/2018	Qualitative
2.	**Blood, Urine Samples**	Ethyl alcohol Quantification	WPM on Toxicology2005/ DFS Section 4 –4. 6.3	5% -800mg%
C.	**NDPS**			
1.	**Opium, Morphine, Poppy Straw & Poppy Plants**	a) Colour test b) TLC c) FTIR d) UV-VIS Spectrophotometry e) HPLC f) GC-MS	NDTL Manual, US, 1998. Isolation and Identification of Drugs, Clarke, E.G.C, London, Pharmaceutical Press, 1986. SFSL/SML/SOP/NDPS Issue no 1/2018. SFSL/SML/SOP/NDPS-2 Issue no. 1/2018. DFS Manual, 2005	a) Qualitative LOD: 1µg/1µl b) Qualitative LOD: 0.5µg/1µl c) Qualitative LOD: 1µg/1µl d) Qualitative LOD: 0.01µg/1µl Quantitative 0.01 – 1.0µg/1µl e) Qualitative LOD: 0.05µg/1µl Quantitative 0.05-1.0µg/1µl f) Qualitative 0.2µg/1µl (LOD) Quantitative 0.2-1.0µg/1µl
2.	**Heroin**	a) Colour test b) TLC c) FTIR	NDTL Manual, US, 1998. Isolation and Identification of Drugs, Clarke, E.G.C,	a) Qualitative LOD: 1µg/1µl b) Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		d) UV-VIS Spectrophotometry e) HPLC f) GC-MS	London, Pharmaceutical Press, 1986. DFS Manual, 2005	LOD:0.5µg/1µl c) Qualitative LOD: µg/1µl d) Qualitative LOD:0.01µg/1µl Quantitative 0.01 – 1.0µg/1µl e) Qualitative LOD:0.05µg/1µl Quantitative 0.05-1.0µg/1µl f) Qualitative LOD:0.2µg/1µl Quantitative 0.2-1µg/1µl
3.	**Cannabis Products: Charas, Ganja, Bhang & Cannabis Plants**	a) Microscopy b) Colour tests c) TLC d) FTIR e) GC-MS	Manual of National Narcotics Laboratories, US 1987. SFSL/SML/SOP/NDPS-3 Issue no. 1/2018 DFS Manual, 2005	a) Qualitative LOD: 1mg b) Qualitative LOD: 1µg/1µl c) Qualitative LOD: 0.5µg/1µl d) Qualitative LOD: 1µg/1µl e) Qualitative LOD: 0.2µg/1µl
4.	**Cocaine**	a) Colour test b) TLC c) FTIR d) UV-VIS Spectrophotometry e) GC-MS	Manual of National Narcotics Laboratories, US 1986. Isolation and Identification of Drugs, Clarke, E.G.C, London, Pharmaceutical	a) Qualitative LOD: 1µg/1µl b) Qualitative LOD: 0.5µg/1µl c) Qualitative LOD: 1µg/1µl

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			Press, 1986. DFS Manual, 2005	d) Qualitative LOD: 0.01µg/1µl Quantitative 0.01-1µg/1µl e) Qualitative LOD: 0.2µg/1µl
5.	**Amphetamine/ Methamphetamine**	a) Colour tests b) TLC c) FTIR d) UV-VIS Spectrophotometry e) GC-MS	Manual of National Narcotics Laboratories, US 1986. Isolation and Identification of Drugs, Clarke, E.G.C, London, Pharmaceutical Press, 1986. DFS Manual, 2005	a) Qualitative LOD: 1µg/1µl b) Qualitative LOD: 0.5µg/1µl c) Qualitative LOD: 1µg/1µl d) Qualitative LOD: 0.01µg/1µl Quantitative 0.01-1µg/1µl e) Qualitative LOD: 0.2µg/1µl
6.	**Methaqualone/ Mecloqualone**	a) Colour tests b) TLC c) FTIR d) UV-VIS Spectrophotometry e) GC-MS	Manual of National Narcotics Laboratories, US 1988. Isolation and Identification of Drugs, Clarke, E.G.C, London, Pharmaceutical Press, 1986. DFS Manual, 2005	a) Qualitative LOD: 1µg/1µl b) Qualitative LOD: 0.5µg/1µl c) Qualitative LOD: 1µg/1µl d) Qualitative LOD: 0.01µg/1µl Quantitative 0.01-1µg/1µl e) Qualitative LOD: 0.2µg/1µl
7.	**Barbiturates**	a) Colour tests b) TLC c) FTIR d) UV-VIS Spectrophotometry	Manual of National Narcotics Laboratories, US 1989. Isolation and Identification of Drugs, Clarke, E.G.C,	a) Qualitative LOD: 1µg/1µl b) Qualitative LOD: 0.5µg/1µl c) Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		e) GC-MS	London, Pharmaceutical Press, 1986. DFS Manual, 2005	LOD: 1µg/1µl d) Qualitative LOD: 0.01µg/1µl Quantitative 0.01-1µg/1µl e) Qualitative LOD: 0.2µg/1µl
8.	**Benzodiazepines**	a) Colour test b) TLC c) FTIR d) UV-VIS Spectrophotometry e) HPLC f) GC-MS	Manual of National Narcotics Laboratories, US 1988. Isolation and Identification of Drugs, Clarke, E.G.C, London, Pharmaceutical Press, 1986. DFS Manual, 2005	a) Qualitative LOD: 1µg/1µl b) Qualitative LOD: 0.5µg/1µl c) Qualitative LOD: 1µg/1µl d) Qualitative LOD: 0.01µg/1µl Quantitative 0.01 – 1.0µg/1µl e) Qualitative LOD: 0.05µg/1µl Quantitative 0.05-1.0µg/1µl f) Qualitative LOD: 0.2µg/1µl Quantitative 0.2-1µg/1µl
9.	**Lysergide (LSD)**	a) Colour test b) TLC c) FTIR d) UV-VIS Spectrophotometry e) GC-MS	Manual of National Narcotics Laboratories, US 1989. Isolation and Identification of Drugs, Clarke, E.G.C, London, Pharmaceutical Press, 1986. Drug Monograph, Scientific Working Group for the	a) Qualitative LOD: 1µg/1µl b) Qualitative LOD: 0.5µg/1µl c) Qualitative LOD: 1µg/1µl d) Qualitative LOD: 0.01µg/1µl Quantitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			Analysis of Seized Drugs (SWGDRUG), Drug Enforcement Administration Office of Forensic Sciences Arlington, Virginia. DFS Manual, 2005	0.01-1µg/1µl e) Qualitative LOD: 0.2µg/1µl
10.	**Miscellaneous Drugs**	a) Microscopy b) Colour test c) TLC d) FTIR e) UV-VIS Spectrophotometry f) HPLC g) GC-MS	Rapid Testing Methods of Drugs of Abuse, Manual for use by National Law Enforcement and Narcotics Laboratory Personnel, United Nations, New York, 1994.Isolation and Identification of Drugs, Clarke, E.G.C, London, Pharmaceutical Press, 1986.Indian Pharmacopoeia, 1996Indian Pharmacopoeia, 2010 British Pharmacopoeia, 2009 US Pharmacoepia, 2007 SWGDRUG, Virginia DFS Manual, 2005	a) Qualitative LOD: 1 mg b) Qualitative LOD: 1µg/1µl c) Qualitative LOD: 0.5µg/1µl d) Qualitative LOD: 1µg/1µl e) Qualitative LOD: 0.01µg/1µl Quantitative 0.01-1µg/1µl f) Qualitative LOD: 0.05µg/1µl Quantitative 0.05-1µg/1µl g) Qualitative LOD: 0.2µg/1µl Quantitative 0.2-1µg/1µl
II.	**BIOLOGICAL SCIENCES**			
A.	**Biology**			
1.	**Blood/Blood Stains on Different Substrates**	Detection by i)Benzidine Test or ii) Phenolphthalein Test	DFS Manual, 2005	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
2.	**Semen stains on Different Substrates**	Detection by i) UV light examination ii) Acid Phosphatase Test iii) Confirmation by i) Microscopy	DFS Manual, 2005	Qualitative
3.	**Hair from Crime Scene, Clothes or any Other Object**	Identification & Comparision by i) Morphology ii) Microscopy	DFS Manual, 2005	Qualitative
4.	**Saliva Stains on Different Substrates**	**Detection of Saliva Stains by** Starch Iodine Test	DFS Manual, 2005	Qualitative
5.	**Diatoms (Bone, Water Sample)**	**Detection of Diatoms by**Acid digestion method	Forensic Science Laboratory Procedure Manual, Forensic Biology: 2005	Qualitative
B.	**Serology**			
1.	**Blood/Blood Stains on Different Substrates**	**Species of Origin by**		
		Gel-Diffusion Test	DFS Manual, 2005	Qualitative
		Blood Grouping by		
		Absorption-elution method	DFS Manual, 2005	Qualitative
C.	**DNA Profiling**			
1.	**Biological Material of Human origin viz. Blood, Saliva, Tissue, Bones, Teeth, Hairs, Biological stains.**	DNA profiling (Autosomal STR & Y STR based)	DFS Manual, 2005 **For Autosomal STRs** : i). SFSL/SML/SOP/DNA-1Issue no. 1/2018 ii**). SFSL/SML/SOP/DNA-2** Issue no. 1/2018 **For Y- STRs** :	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			i). SFSL/SML/SOP/DNA-3Issue no. 1/2018 ii). SFSL/SML/SOP/DNA-4Issue no. 1/2018	
2.	**Skin, Tissue, Horns, Hoofs, Hair, Meat, Bone, Teeth from Wildlife**	DNA profiling for species identification	DFS Manual, 2005 SFSL/SML/SOP/DNA-5 Issue no. 1/2018	Qualitative
III.	**PHYSICAL SCIENCES**			
A.	**Physics**			
1.	**Foot Prints/ Shoe/Shoe Prints/ Tyre/Tyre Marks/**	Side by side comparison	DFS Manual, 2005 Section 1.2, 1.3, 1.4, 1.5, 1.6	Qualitative
		Superimposition		Qualitative
		Comparison of impressions		0 to 30 cm
2.	**Tools/Tool marks on Different Substrates**	Photography	DFS Manual, 2005 Section 2.3.1	Qualitative
		Examination of foreign material/materials on tool	DFS Manual, 2005 Section 2.4	Qualitative
		Taking test impressions	DFS Manual, 2005 Section 2.5	Qualitative
		Comparison with test marks caused by weapon of offence / tool using comparison Microscope	DFS Manual, 2005 Section 2.6	Qualitative
3.	**Paint/Paint on Different Substrate**	Visual Examination by Microscopy	DFS Manual, 2005 Section 5.2	Qualitative
		Micro-Chemical Test	DFS Manual, 2005 Section 5.4	Qualitative
		Elemental Analysis of Pigments by XRF	DFS Manual, 2005 Section 5.7.3	Atomic number from 11 to 103

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
4.	**Chassis, Engine of Vehicles/ Firearms**	Chemical Etching for Restoration of identification marks	DFS Manual, 2005 Section 6.5,6.6,6.7	Qualitative
5.	**Glass/Glass Fragments**	Physical Comparison	DFS Manual, 2005 Section 7.3.1	Qualitative
		Physical Measurement	DFS Manual, 2005 Section 7.3.2	0 to 15 cm
		Physical matching using comparison microscope	DFS Manual, 2005 Section 7.3.4	Qualitative
		Density comparison by density Gradient tubes	DFS Manual, 2005 Section 7.6	Qualitative
		Refractive index by Refractometer	DFS Manual, 2005 Section 7.7	1.31 to 1.71
		Elemental Analysis By XRF	DFS Manual, 2005 Section 7.8	Atomic number from 11 to 103
		Glass fracture examination	DFS Manual, 2005 Section 7.9	Qualitative
6.	**Soil /Sand**	Microscopic Examination for color, size and shape	DFS Manual, 2005 Section 9.2.1	Qualitative
		Sieving for sampling	DFS Manual, 2005 Section 9.2.2, 9.2.3	Qualitative
		Particle size distribution	DFS Manual, 2005 Section 9.2.7	Sieves of size (BSS 8, 16, 22, 72, 100)
		Microscopically examination with Chemical reagents	DFS Manual, 2005 Section 9.2.6	Qualitative
		Ignition test	DFS Manual, 2005 Section 9.2.8	0 to 200 gm Upto 1200 °C
		Density distribution of soil particles	DFS Manual, 2005 Section 9. 2.9	Qualitative
		pH	DFS Manual, 2005 Section 9.2.10	1 to 14
		Elemental analysis by XRF	DFS Manual, 2005 Section 7.8	Atomic number from 11 to 103

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
7.	**Cement**	Bromoform Test	DFS Manual, 2005 Section 10.3.1	Qualitative
		Fineness test	DFS Manual, 2005 Section 10.3.2	0 to 200 gm
		Loss on Ignition	DFS Manual, 2005 Section 10.3.3	0 to 200 gm Upto 1200 °C)
		Gravimetric Test (analysis of chemical Constituents i.e. insoluble residue, silica and lime	DFS Manual, 2005 Section 10.3.4	0 to 200 gm Upto 1200 °C
8.	**Mortar/Plaster**	Gravimetric Test (analysis of chemical Constituents i.e. insoluble residue, silica and lime to find out the ratio of cement and sand	DFS Manual, 2005 Section 11.3	0 to 6000 gm Upto 1200 °C
9.	**Concrete**	Gravimetric Test (analysis of chemical Constituents i.e. insoluble residue, silica and lime to find the ratio of cement, sand and stone	DFS Manual, 2005 Section 12.2	0 to 6000 gm Upto 1200 °C
10.	**Fibers/Fabric**	Physical matching	DFS Manual, 2005 Section 13.3.1	Qualitative
		Comparison Microscopy	DFS Manual, 2005 Section 13.3.2	Qualitative
		Chemical test	SFSL/SML/SOP/PHY-1, Issue no. /2018	Qualitative
		Burning Test	SFSL/SML/SOP/PHY-1, Issue no. 1/2018	Qualitative
11.	**Broken Objects**	Physical measurements and mechanical fit	DFS Manual, 2005 Section 14.2.1	0 to 30 cm
		Side by side comparison by Microscope	DFS Manual, 2005 Section 14.2.2	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
12.	**Telephone Cables/Electric Wires**	Number of strands	DFS Manual, 2005 Section 15.2.1	Qualitative
		Diameter of strands		0 to 15 cm
		Dye marks		Qualitative
		Twist		Qualitative
		Color, mark on insulation		Qualitative
		Elemental analysis with XRF	DFS Manual, 2005 Section 15.2.2	Atomic number from 11 to 103
13.	**Bitumen**	Chemical treatment with Benzene/Trichloroethylene and separation by Bitumen extractor Machine (centrifugal Machine)	SFSL/SML/SOP/PHY - 2 Issue no. 1/2018	0 to 6000 gm Upto 120 °C
14.	**Metals**	Elemental Analysis By XRF	DFS Manual, 2005 Section 7.8	Atomic number from 11 to 103
15.	**Ligature Material**	Tensile Strength using Universal Tensile Machine	SFSL/SML/SOP/PHY-3 Issue no. 1/2018	0 to 1000 kgf
16.	**Cut marks on Clothes and Different Substrates**	Examination of weapons of offence	DFS Manual, 2005 Section 2.4	0 to 30 cm
		Examination of clothes and different substrates		0 to 1500 cm
		Trail Cut	DFS Manual, 2005 Section 2. 5	Qualitative
		Comparison of crime cut marks with the trial cut marks	DFS Manual, 2005 Section 2.6	Qualitative
17.	**Electric Wires for Short Circuiting**	Physical Appearance 1- Beads formation 2- Insulation of wire	SFSL/SML/SOP/PHY-4 Issue no. 1/2018	Qualitative
		Microscopical Examination 1- Beads formation 2- Insulation of wire		Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
B.	**Ballistics**			
1.	**Fire arms/ Parts thereof**	Barrel wash/ swab for detection of discharge Residues and perform Chemical tests	DFS Manual, 2005	Qualitative
		Examination of firearm or parts thereof/ manufacturing tools Whether the articles come under the purview of the Arms Act	DFS Manual, 2005	Qualitative
		Serviceability or working condition of firearms	DFS Manual, 2005	Qualitative
		Examination of Firearm, prone to accidental discharge	DFS Manual, 2005	Qualitative
		Identification of Firearm for type, make and model of firearm	DFS Manual, 2005	Qualitative
		Examination of Firearm, whether its parts tampered with	DFS Manual, 2005	Qualitative
		Restoration of erased marking on firearm	DFS Manual, 2005	Qualitative
2.	**Cartridge/ Cartridge Case/ Parts thereof**	Test firing	DFS Manual, 2005	Qualitative
		Measurement of physical parameters.		0 to 15 cm
		Characteristics matching using comparison microscope.		Qualitative
3.	**Bullets/Pellets/ Shots/Slugs parts thereof**	Measurement of Physical Parameters.	DFS Manual, 2005	0 to 15 cm
		Test firing		Qualitative
		Examination of number of		Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		land and grooves/ striations under comparison microscope.		
		Chemical tests		Qualitative
4.	**Wads/ parts thereof**	Measurement of physical parameters.	DFS Manual, 2005	0 to 15 cm
		Visual Examination by Microscope		Qualitative
		Chemical tests		Qualitative
5.	**Propellant Charge**	Visual Examination, Physical Dimensions by Microscope	DFS Manual, 2005	Qualitative
		Composition by Chemical tests		Qualitative
6.	**Cloth/ Targets/ Parts thereof**	I- Examination of Holes/ tears on clothes and targets Measurement of Physical Parameters Visual Examination by Microscope.	DFS Manual, 2005	0 to 15 cm
		II- Examination and Analysis of gunshot discharge residues. Visual Examination by microscope. Colour/ chemical tests		Qualitative
		III- Determination of Range, Direction & Angle of Firing. Visual Examination Chemical tests and spread of pellets.		Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
C.	**Questioned Documents**			
1.	**Writings & Signatures on Paper, Black Board, Wall, Shoes, Clothes, Mirror, Body Parts, Photographs of Writings & Signatures**	Class & Individual writing characteristics by using different magnifiers, Different light sources.	SWGDOC: Standard for Examination of Handwritten Items Version 2013-1 ASTM:E2290-07a: Standard Guide for Examination of Handwritten Items	Qualitative
2.	**Alteration (addition, substitution, obliteration, overwriting, erasures)**	Decipherment of original writings and detection of erasures using different light sources:-Spot Light-Transmitted Light-IR Light-UV Light-Oblique Light	SWGDOC: Standard for Examination of Altered Documents Version 2013-1 ASTM : E2331-04: Standard Guide for Examination of Altered Documents	Qualitative
3.	**Indentations**	Physical Examination using Oblique Light and Electrostatic Detection Apparatus	SWGDOC: Standard for Indentation Examination Version 2013-1 ASTM : E2291-03: Standard Guide for Indentation Examination	Qualitative
4.	**Ink**	Examination for tint of ink by different light sources: IR, UV, and comparing Reflectance & Absorbance Spectra.For composition of ink TLC & spot testing	SWGDOC: Standard for Writing Ink Examination Version 2013-1 SWGDOC: Standard for Test Methods for Forensic Writing Ink Comparison Version 2013-1 ASTM: E1789-04: Standard Guide for Writing Ink Identification ASTM: E1422-05:	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			Standard Guide for Test Methods for Forensic Writing Ink Comparison	
5.	**Paper**	1- Physical examination-Color -Size 2-UV Features 3-Water mark 4-Paper Fibers 5-Printted Matter	SWGDOC: Standard for Non-destructive Examination of Paper Version 2013-1 SWGDOC: Standard for Physical Match of Paper, Cuts, Tears and Perforations in Forensic Document Examination Version 2013-1 SWGDOC: Standard for Preservation of Charred Documents Version 2013-1 ASTM : E2325-05: Standard Guide for Non-destructive Examination of Paper ASTM: E2288-09: Standard Guide for Physical Match of Paper, Cuts, Tears and Perforations in Forensic Document Examination	Qualitative
6.	**Printed Matter**	Printing Defects, Size, Shape, Design of printed matter, Comparison of printed matter with standards and superimposition.	SWGDOC: Standard for Examination of Documents Produced with Liquid Ink Jet Technology Version 2013-1 SWGDOC: Standard for Examination of Documents Produced with Toner Technology Version 2013-1	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
			SWGDOC: Standard for Examination of Typewritten Items Version 2013-1 ASTM: E2389-05: Standard Guide for Examination of Documents Produced with Liquid Ink Jet Technology ASTM: E2390-06 Standard Guide for Examination of Documents Produced with Toner Technology ASTM:E2494-08: Standard Guide for Examination of Typewritten Items	
7.	**Rubber Stamp Impressions and Dry Seal**	-Physical examination-Side-by-side Comparison-Super-imposition	SWGDOC: Standard for Examination of Rubber Stamp Impression Version 2013-1 SWGDOC: Standard for Examination of Dry Seal Version 2013-1 ASTM: E2289-08: Standard Guide for Examination of Rubber Stamp Impression ASTM: E2286-08a: Standard Guide for Examination of Dry Seal Impression.	Qualitative
8.	**Security Documents:** **a) Counterfeit Currency** **b) Certificates, Cheques,**	-Physical Examination-Water Marks-UV Features-Security Thread-Intaglio Printing-Micro lettering-OVI Features-Latent Image-See Through	SWGDOC: Standard for use of Image Capture and Storage Technology in Forensic Document Examination, Version 2013-1	Qualitative

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
	Traveller's Documents, Access Products and other security documents	Window-Comparison with genuine Currency	ASTM: E2288-09: Standard Guide for Physical Match of Paper Cuts, Tears and Perforations in Forensic Document Examination, ASTM: E2331-04: Standard Guide for Examination of Altered Documents ASTM: E2325-05: Standard Guide for Non-destructive Examination of Paper.	
IV.	**FORENSIC ELECTRONICS & COMPUTER FORENSICS**			
1.	**Digital Storage Media i.e. Hard Disk, Pen Drive, Memory Card, CD, DVD, Memory Cards and any other Digital Storage Device**	Imaging, Indexing, Analysis of retrieved (live/deleted) data.	SWGDE Model Standard Operation Procedures for Computer Forensics Version 3.0/ Version 3.1/ Version 1.0	Qualitative
2.	**Cell Phone (Android, Basic, Tabs, i-phones)**	Data Extraction and Analysis	SWGDE Model Standard Operation Procedures for Computer Forensics Version 3.0 SWGDE Best Practices for Mobile Phone Forensics Version 2.0	Qualitative
3.	**SIM Cards**	Data Extraction and Analysis	SWGDE Model Standard Operation Procedures for Computer Forensics Version 3.0 SWGDE Best Practices for Mobile Phone Forensics Version 2.0	Qualitative