Sl. No. : 10000149

JSOF16

Register Number

2016

Paper I

FORENSIC SCIENCE

(PG Degree Standard)

Time Allowed : 3 Hours] **[Maximum Marks : 300**

Read the following instructions carefully before you begin to answer the questions.

IMPORTANT INSTRUCTIONS

1. This Booklet has a cover (this page) which should not be opened till the invigilator gives signal to open it at the commencement of the examination. As soon as the signal is received you should tear the right side of the booklet cover carefully to open the booklet. Then proceed to answer the questions.
2. This Question Booklet contains **200** questions. Prior to attempting to answer the candidates are requested to check whether all the questions are there in series without any omission and ensure there are no blank pages in the question booklet. In case any defect in the Question Paper is noticed it shall be reported to the Invigilator within first 10 minutes.
3. Answer **all** questions. **All** questions carry equal marks.
4. You must write your Register Number in the space provided on the top right side of this page. Do not write anything else on the Question Booklet.
5. An Answer Sheet will be supplied to you separately by the Invigilator to mark the answers.
6. You will also encode your Register Number, Subject Code, Question Booklet Sl. No. etc. with Blue or Black ink Ball point pen in the space provided on the side 2 of the Answer Sheet. If you do not encode properly or fail to encode the above information, action will be taken as per commission's notification.
7. Each question comprises *four* responses (A), (B), (C) and (D). You are to select ONLY ONE correct response and mark in your Answer Sheet. In case you feel that there are more than one correct response, mark the response which you consider the best. In any case, choose ONLY ONE response for each question. Your total marks will depend on the number of correct responses marked by you in the Answer Sheet.
8. In the Answer Sheet there are **four** circles Ⓐ, Ⓑ, Ⓒ and Ⓓ against each question. To answer the questions you are to mark with Blue or Black ink Ball point pen ONLY ONE circle of your choice for each question. Select one response for each question in the Question Booklet and mark in the Answer Sheet. If you mark more than one answer for one question, the answer will be treated as wrong. *e.g.* If for any item, Ⓑ is the correct answer, you have to mark as follows :

   Ⓐ ● Ⓒ Ⓓ

9. You should not remove or tear off any sheet from this Question Booklet. You are not allowed to take this Question Booklet and the Answer Sheet out of the Examination Hall during the examination. After the examination is concluded, you must hand over your Answer Sheet to the Invigilator. You are allowed to take the Question Booklet with you only after the Examination is over.
10. The sheet before the last page of the Question Booklet can be used for Rough Work.
11. Failure to comply with any of the above instructions will render you liable to such action or penalty as the Commission may decide at their discretion.
12. Do not tick-mark or mark the answers in the Question booklet.

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1. Once the crime scene area is defined, forming ———— point reduces the potential for contamination of the scene by limiting access of personnel to the scene and identifying who is entering and leaving it.

(A) Intersection
(B) Rendezvous
(C) Guard
(D) Screening

2. Match List I with List II and choose the correct code from the options given below.

	List I – Type of physical evidence		List II – Examination sought
(a)	Cigarette buffs	1.	Authenticity
(b)	Handwriting	2.	Involvement in crime
(c)	Physiological fluids	3.	Identity
(d)	Gasoline residues	4.	Existence of drugs

	(a)	(b)	(c)	(d)
(A)	3	1	4	2
(B)	2	4	1	3
(C)	1	3	4	2
(D)	4	3	2	1

3. One of the methods listed below is a special method for developing the latent fingerprints. Choose the correct answer from the options given below.

(A) Chemical processing
(B) Laser imaging
(C) Alternative imaging
(D) Scotch tape lifter

4. ———— is the only discipline in the forensic sciences that include a wide range of examined materials that are unrelated

(A) Trace evidence
(B) Toxicology
(C) Serology
(D) Arson

5. Which of the following physical evidences are pattern evidence. Choose the correct code from the options given below the list.

(1) Plastic bag
(2) Paint
(3) Serial number
(4) Tools

(A) 1, 2 and 3
(B) 1, 2 and 4
(C) 1, 3 and 4
(D) 2, 3 and 4

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6. The examination of evidence, whether it is soil, glass, hair, blood, fibres and so on often requires comparison with a

(A) Standard sample

(B) Substrate controls

(C) Unknown sample

(D) Questioned sample

7. Match List I with List II and choose the correct code from the options given below the List.

List – I (Specimen)	List – II (Packing)
(a) Abrasive	1. Mailing tube
(b) Sample liquid blood	2. Cotton or soft paper
(c) Powders	3. Reversible plastic bags
(d) Bullets	4. Pill box

	(a)	(b)	(c)	(d)
(A)	1	2	3	4
(B)	3	1	4	2
(C)	2	4	1	3
(D)	4	3	2	1

8. An individual whom the court determines possesses knowledge relevant to the trial that is not expected of the average lay person is

(A) Scientific witness

(B) Scientific Assistant

(C) Expert witness

(D) Expert Testimony

9. Arrange jumbled sentences in the order of sequence that a lead investigator does while evaluating crime scene area.

(1) Establishing perpetrator's path of entry and exit

(2) Documentation and photograph.

(3) Determining the boundaries of the scene

(4) Logically identities on crime – scene evidence

(A) 4, 2 , 3, 1

(B) 1, 2, 3, 4

(C) 3, 1, 4, 2

(D) 4, 3, 2, 1

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10. ● Pick the odd one out

The planar movement of the foot is in

(A) Transverse plane

(B) Frontal plane

(C) Sagittal plane

(D) Optical plane

11. What is step length?

(A) The linear distance between the point of initial contact of one foot and the same of the opposite foot

(B) The length of the steps in a staircase at the crime scene

(C) The length measured between the right hand and the left foot while walking

(D) The length measured between the middle of the eyes and the middle of the right foot

12. What is a Gait cycle?

(A) The walking pattern of an old man who does not know to ride a cycle

(B) The position of the hand and feet while running fast

(C) The time interval from starting point to end point in cycling

(D) The time interval between successive instances of initial foot to floor contact for the same foot

13. What is video grammetry in walking pattern analysis?

(A) The video recording with Hi-D camera of a running person

(B) On screen measurement of the walking pattern

(C) Viewing the walking pattern video in slow motion

(D) Taking measurement of the person's dresses

14. What is the foot line in walking pattern analysis?

(A) The straight line running through both the shoulders

(B) The straight line running through the longitudinal axis of the footprint

(C) The straight line running through the thighs and knees

(D) The straight line running through the centre of the chest to stomach

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15. The basic patterns used in the identification of fingerprints are

(A) Arch, loop, whorl and composites

(B) Arch, loop, circles and composites

(C) Loop, circles, bends and composites

(D) Bends, circles, loops and composites

16. A finger print will not change

(A) An individual's life time

(B) During only adult time

(C) After twelfth week of embryonic stage

(D) After sixteenth week of embryonic stage

17. If soil or debris from the tyre impression area gets adhered when a casting is taken the cast should be

(A) Cleaned by using water

(B) Cleaned by using alcohol

(C) Cleaned by using ether

(D) Left as such – No attempt should be made

18. A footprint found on a soft or loose substance is called

(A) Surface print

(B) Sunken print

(C) Soft print

(D) Hard print

19. The class characteristics of footprints are

(A) Shape and size

(B) Colour and texture

(C) Shape and colour

(D) Colour and size

20. The black lines of the inked fingerprint impression is formed by contact of

(A) Ridges

(B) Grooves

(C) Sweat pores

(D) Dermis

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Identification mark, a special feature in intaglio on the left of the watermark window will not be found on

(A) Rs. 10 notes
(B) Rs. 20 notes
(C) Rs. 50 notes
(D) Rs. 100 notes

22. Villela's reagent is probably the best reagent used in the restoration of erased numbers on

(A) Iron and steel
(B) Zinc and zinc alloys
(C) Aluminium and aluminium alloys
(D) Brass

23. Match the following :

(a)	Dental plaster	1.	Friction marks
(b)	Marks left by an axe	2.	Compression marks
(c)	Marks left by a hammer head	3.	Die marks
(d)	Marks on wires	4.	Material used for casting toolmark

	(a)	(b)	(c)	(d)
(A)	4	1	2	3
(B)	3	2	1	4
(C)	4	3	2	1
(D)	1	2	3	4

24. The casting material which can be used to cast a tool mark for obtaining most of the fine details of the mark is

(A) Liquid silicone
(B) Plaster of Paris
(C) Semi-hydrated calcium sulphate
(D) Plasticine

25. The microscope which is more suitable for studying the class characteristics of a tool mark is

(A) Compound microscope
(B) Stereo microscope
(C) Polarizing microscope
(D) Phase-contrast microscope

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26. The bullet in which the rear portion is reduced so that the case diameter is same the driving surface of it is called

(A) Heeled bullet
(B) Saboted bullet
(C) Dum-Dum bullet
(D) Wad cutter

27. The bullets recovered at the scene of crime are marked with the investigator's initials, for identification

(A) Either on the base or on the nose of the bullets
(B) Either on the base or on the sides of the bullets
(C) Either on the nose or on the sides of the bullets
(D) Only on the nose of the bullets

28. The surfaces of the original bore remaining between grooves of the barrel of a gun are called

(A) Rifling
(B) Lands
(C) Calibre
(D) Bore

29. The term "————————" refers to a rifle that is capable of loading ammunitions automatically, having detachable magazine with 20 rounds or more capacity, capable of firing in full-automatic mode and fires intermediate rifle cartridge.

(A) Sporting rifle
(B) Automatic firearm
(C) Assault rifle
(D) Self-loading rifle

30. The pistol which has one firing chamber integral with the barrel and must be loaded manually each time when it is to be fired is called as

(A) Single-shot pistol
(B) Derringer
(C) Revolver
(D) Semi-automatic pistol

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31. The identity of a volatile petroleum residue is determined by ———— of its gas chromatogram.

(A) Peak size
(B) Peak height
(C) Peak pattern
(D) Peak area

32. Find the statement which is not correct.

The balance required for spontaneous ignition is

(A) Insufficient Surface Area
(B) Too low ambient temperature
(C) Sufficient oxygen
(D) Insufficient insulation (heat radiates away)

33. The petroleum distillate containing $C_8 - C_{13}$ hydrocarbon is commonly classified as

(A) light
(B) heavy
(C) medium
(D) de-aromatised

34. Pyrolysis is the decomposition of material by heat

(A) in the absence of oxygen
(B) in the presence of oxygen
(C) in the presence of accelerants
(D) in the absence of accelerants

35. Find the odd one out.

Heat Release Rate [HRR] is controlled by the

(A) Chemical properties of the fuel
(B) Physical properties of the fuel
(C) Surface area of the fuel
(D) Thermal conductivity of the fuel

36. The Degree of purity of an explosive can be determined by

(A) Thermo Gravimetric Analysis (TGA)
(B) Differential Thermal Analysis (DTA)
(C) Differential Scanning Calorimetry (DSC)
(D) Thermal Analysis (TA)

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37. In pyrotechnic composition Barium salts are employed for ———— coloured lights.

(A) Blue
(B) Green
(C) Red
(D) Yellow

38. Dogs possess highly developed senses. The sniffer dogs can smell ———— times better than human beings.

(A) 20
(B) 10
(C) 40
(D) 30

39. Mixture of NGNC and Ammonium Nitrate is called

(A) Gelatine
(B) ANFO
(C) Emulsion
(D) Water gels

40. The role of safety fuse in an explosion train is

(A) Flame producer
(B) Conversion of flame to detonator
(C) Flame carrier
(D) Detonation wave carrier

41. Explosives made onsite by immersing a cartridge of absorbent charcoal in liquid oxygen is called as

(A) Liquified carbon explosives
(B) Liquid oxygen explosives
(C) Low oxygen explosives
(D) Limited oxygen explosives

42. The assasination of India's Ex Prime Minister Tr. Rajiv Gandhi was executed by a 'human bomb' using RDX in which of the following device

(A) Military explosive device
(B) Industrial explosive device
(C) Improvised explosive device
(D) Improvised incendiary device

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43. Hieroglyphic is

(A) Study of stones

(B) Evaluation of diamonds

(C) Different spelling for a word

(D) Egyptian ancient writing system of symbols

44. Holographic will is a

(A) document with a hologram

(B) a 'will' that weighs 10 gm

(C) document written and signed entirely by its author

(D) the paper is made of hollow fibres

45. Match the following

Moderators used in Nitrocellulose based propellants with their purpose. Select the correct answer using the codes given below the lists.

	List I		List II
(a)	Resorcinol	1.	To increase rate of burning
(b)	Barium Nitrate	2.	Plasticiser
(c)	Graphite	3.	Gelatiniser to slow rate of burning
(d)	Carbamate	4.	Surface moderator

	(a)	(b)	(c)	(d)
(A)	2	1	4	3
(B)	1	2	3	4
(C)	3	4	1	2
(D)	4	3	2	1

46. What is exemplar writing?

(A) Ancient form of writing on the walls

(B) An example of persons writing, a standard

(C) Describing an answer with examples

(D) The manner of writing style during exams

47. Comparison of typescript can be performed by

(A) Looking at all the typewriters

(B) Observation side by side, misalignments, variables noted in a document

(C) Looking at all the typists

(D) Getting print outs from the computers

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48. What is platen?

(A) A round plate with letter 'n' etched

(B) A paper weight

(C) White paper with a watermark

(D) A name given to the roller on the typewriter around which the paper is wound

49. What is 'bleeding' in document examination?

(A) The presence of dried blood stain on the book

(B) The subject on the document is about blood

(C) The seepage of colour from an ink line

(D) The accidental injury caused while writing a book

50. When the hand stamp die is made of natural rubber, the stamp pad ink is?

(A) Water based

(B) Oil based

(C) Paste based

(D) Gel based

51. What is manuscript writing?

(A) The original first edition of a book

(B) The writings of neolithic period in vellum

(C) A disconnected form of writing using many printed letter forms

(D) The writings with lot of shading in the strokes

52. Graphonym means

(A) Statistics represented as graphs

(B) A disconnected style of ancient writing

(C) Words that sound alike but have different spelling or meaning

(D) Two different words or letter combinations that when cursively written appear nearly identical

53. What is kerning?

(A) The part of the hand stamp that is held while making the impression

(B) The manufacturing process using heat and pressure

(C) A date stamp showing month, day and year

(D) In typesetting adjustment of space between pairs of characters by subtracting space making them closer together

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54. What is slant or slope in handwriting?

(A) when the letter is diminished both in height and width

(B) the connecting strokes between letters in handwriting

(C) the angle or inclination of the axes of letters relative to the baseline

(D) the manner of holding the pen while writing

55. Pick the odd one out.

This is not a class characteristic in handwriting

(A) Copy book form

(B) Spelling

(C) Capital letters

(D) Pen pressure

56. What is a 'minim' in English handwriting?

(A) A cross stroke

(B) The small letters

(C) A loop extending below the baseline

(D) A short vertical stroke on the baseline

57. A holographic label is manufactured by

(A) Spectrophotometry

(B) Mass spectroscopy

(C) Laser photography method

(D) Electrostatic Detection

58. Texture of soil does not depend on one of the following

(A) Sand

(B) Silt

(C) Clay

(D) Minerals

59. _____ is defined as a product of fusion which has coded to a rigid state without crystallisation

(A) Glass

(B) Ice

(C) Fibre

(D) Paint

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60. Match the following List 1 and 2 and select the correct code from the options given below the list

List – 1	List – 2
(a) Soda lime glass	1. Sandwiched
(b) Pyrex glass	2. Dices
(c) Laminated glass	3. CaO
(d) Tempered glass	4. Borosilicate

	(a)	(b)	(c)	(d)
(A)	4	3	1	2
(B)	3	4	1	2
(C)	3	4	2	1
(D)	4	2	1	3

61. The process of separating light into its component colors or frequencies is known as

(A) Diffraction
(B) Dispersion
(C) Interference
(D) Refraction

62. The bending of light wave because of change in velocity is called

(A) Reflection
(B) Diffraction
(C) Refraction
(D) Interference

63. Which of the following glass fragments can be recognised readily in the field during forensic investigation by using a hand-held short - wave ultraviolet lamp

(A) Tempered
(B) Float
(C) Pyrex
(D) Soda lime

64. One of the following is not a major type of specific counter measures in a polygraph examination administered to a guilty suspect

(A) Physical activities such as muscular movements
(B) Respiration measure
(C) Self-induced pain
(D) Mental activities such as thinking, relaxing

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65. Match the following :

	List I		List II
(a)	Cardiac	1.	Brucine
(b)	Deleriant	2.	Calotrpin
(c)	Spinal	3.	Aconitine
(d)	Irritant	4.	Cannabinoids

	(a)	(b)	(c)	(d)
(A)	2	3	4	1
(B)	3	4	1	2
(C)	4	1	3	2
(D)	1	2	3	4

66. Chronic lead poisoning, occurring among painters and plumbers is known as

(A) Plumbism (B) Ergotism

(C) Vampirism (D) Morphinism

67. The name of antabuse drug for treatment of chronic alcoholism is

(A) Methyl alcohol (B) Asprin

(C) Disulfiram (D) Diazepam

68. A type of food poisoning results from contamination of food which has been improperly preserved and canned in which toxins of bacteria is elaborated is known as

(A) Verdigris (B) Botulism

(C) Decomposition (D) Ergotism

69. Plasma choliresterase level is greatly reduced in the poisoning by

(A) Rodenticides

(B) Zinc phorphide

(C) Calcium carbide

(D) Organo phosphorous insecticides

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70. The toxicity of cyanide is due to inhibition of enzyme

(A) Cytochrome oxidase

(B) α -lavelunage

(C) Glucoridinase

(D) Alcohol dehydrogenase

71. A naturally occuring alkaloid in the opium poppy plant is

(A) Heroin (B) Morphine

(C) L.S.D (D) Phencyclidine

72. On the plant ganja the claw shaped curved structures with broad circular base is known as

(A) Villai Hairs (B) Cystolithic Hairs

(C) Biological Hairs (D) Synthetic fibers

73. The toxicity of carbon monoxide is due to formation of

(A) Heamoglobin

(B) Carboxy heamoglobin

(C) Oxy heamoglobin

(D) Methheamoglobin

74. To establish the presence of ethyl alcohol the test usually performed is

(A) Chloroform reaction (B) Haloform reaction

(C) Iodoform reaction (D) Fluroform reaction

75. What is the chronic poison which results characteristic symptom of wrist drop and foot drop?

(A) Lead (B) Copper

(C) Arsenic (D) Mercury

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76. Alcohol is oxidised to acetaldehyde in the liver by

(A) Peroxidase
(B) Glyoxylase
(C) Phosphoglucomutase
(D) Alcohol dehydrogenase

77. Who introduced the DNA profiling technique applied for paternity test?

(A) Kary Mullis
(B) Gregor Mendal
(C) Alex Jeffreys
(D) Landsteiner and Wiener

78. Where is DNA found in humans?

(A) All nucleated cell
(B) Red blood cells
(C) Nerve cells
(D) Golgi bodies

79. CODIS stands for

(A) Combined DNA Index System
(B) Combined Database Index System
(C) Computer Database Information System
(D) National DNA Index System

80. What is Amelogenin?

(A) Stutter peak
(B) Quencher
(C) Sex locus
(D) False peak

81. Who elucidate the structure of DNA?

(A) Budowle B and Smith J.A.C
(B) Gill P and Kirkham
(C) James Watson and Francis Crick
(D) Wiegand P and Kleiber M.

82. Pick out the incorrect sentence

(I) Nuclear DNA is described as a double helix
(II) The DNA is arranged into 46 structures called chromosomes
(III) Within the long strands of DNA are sections called genes
(IV) The DNA base pairs are adenine-guanine, uracil and thymine

(A) I
(B) II
(C) III
(D) IV

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83. The fluid portion of blood is called plasma. Plasma is composed principilly of water and accounts for

(A) 45 percent of blood content

(B) 55 percent of blood content

(C) 35 percent of blood content

(D) 25 percent of blood content

84. Blood group 'A' individual blood contains to which of the following antibodies in serum

(A) Anti – A

(B) Anti – B

(C) Neither anti – A nor anti – B

(D) Both anti – A and anti – B

85. The quantity of seminal fluid ejaculated by a normal male is

(A) 2.5 ml to 6.0 ml

(B) 6.0 ml to 12.0 ml

(C) 12.0 ml to 18.0 ml

(D) 4.0 ml to 12.0 ml

86. Spermatozoa can be present

(A) In cases of oligospermia

(B) In cases of aspermia

(C) When a suspect undergone vasectomy

(D) When evidence is collected by using a sexual assault evidence kit

87. The medullary index of human scalp hair is

(A) Less then one fourth

(B) Half of the hair's diameter

(C) Less than one-third

(D) Total width of the Hair

88. Hair shaft is composed of

(A) Growing tissue

(B) Dead tissue

(C) Dead and growing tissue

(D) Nerve fibres

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89. In Emission spectrograph the excitation of specimen is done by passing current are through two

(A) Iron electrodes
(B) Carbon electrodes
(C) Copper electrodes
(D) Lead electrodes

90. X-ray diffraction can be used to study the samples in

(A) Gaseous state
(B) Liquid state
(C) Solid state and liquid state
(D) Solid state

91. Radioactivity is composed of three types of radiation – alpha, beta and gamma. The radiation used in NAA is

(A) Alpha rays
(B) Beta rays
(C) Alpha and Beta rays
(D) Gamma-rays

92. The Retardation factor R_f is ———— in TLC

(A) Distance travelled by the solute/Distance travelled by solvent
(B) Distance travelled by the solvent/Distance travelled by solute
(C) Breadth of the chromatographic plate/Distance travelled by solute
(D) Distance travelled by the solute/Length of the chromatographic plate

93. In Beer-Lambert law the absorbance A = ———— where a is the molecular absorptivity b is the path length and 'c' is the concentration

(A) a/bc
(B) b/ac
(C) a/b^2c
(D) abc

94. The region of spectrum obtained in the change in amount of vibration

(A) Infrared
(B) Microwave
(C) X-ray
(D) Ultraviolet

95. In thin layer chromatography the inert adsorbent used is

(A) Silver Nitrate
(B) Aluminium Carbonate
(C) Silica Gel
(D) Bentonite

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96. The bitemark analysis is done by

(A) Forensic odontologist
(B) Forensic Biologist
(C) Forensic Pathologist
(D) Forensic Anthropologist

97. The measurements of body parts which is an exclusive domain of forensic science is

(A) Coulometry
(B) Polygraph
(C) Anthropometry
(D) Physiometry

98. The office of controller of explosives in South circle is in

(A) Bangalore
(B) Hyderabad
(C) Chennai
(D) Tiruvanandapuram (or) Trivandrum

99. The place in which there is no forensic science laboratory

(A) Tiruppur
(B) Salem
(C) Vellore
(D) Ramanathapuram

100. Examination of tool marks are done in ———— division of the forensic science department/laboratory

(A) Ballistics
(B) Physics
(C) Documents
(D) Photographics

101. Examination of Diatoms are done in ———— division of forensic sciences laboratories

(A) Biology
(B) Serology
(C) Anthropology
(D) Chemistry

102. ———— must be established whenever evidence is presented in court

(A) Origin of sample
(B) Chain of custody of samples
(C) Location of samples
(D) Time of examination of samples

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103. Match List I with List II and choose correct code from the options given below the List.

List I		List II	
(a)	Exchange principle	1.	General acceptance
(b)	Frye standard	2.	Electrostatic imaging
(c)	Indented writing	3.	Reliability and validity
(d)	Dauberts ruling	4.	Cross- transfer of evidence

	(a)	(b)	(c)	(d)
(A)	4	1	2	3
(B)	1	2	3	4
(C)	3	1	2	4
(D)	2	4	1	3

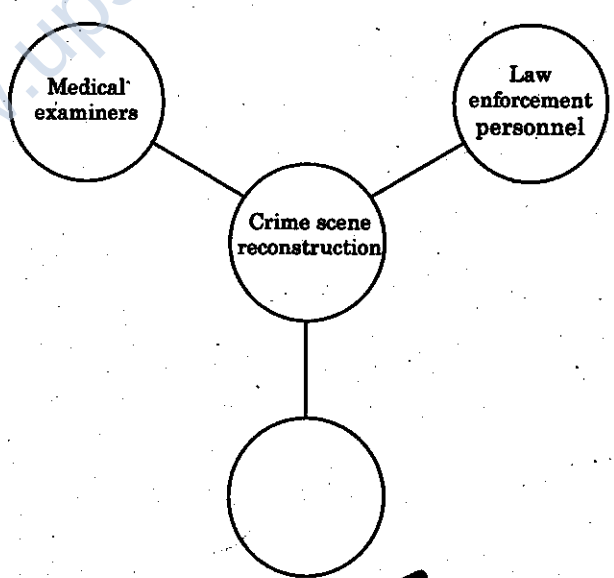
104. One of the following technique is heavily relied upon, especially for altered documents, identify it from the options given below

(A) Alternate light source imaging
(B) Magnetic strip decoding
(C) Stereomicroscopic inspection
(D) Visual inspection

105. ———— is the frequency of occurrence of an event.

(A) Proportionality
(B) Probability
(C) Product rule
(D) Time period

106. Identify the missing words from the options given below



(A) Scientist
(B) Criminalists
(C) Lab technicians
(D) Perpetrator

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107. Indian hemp called as

(A) Cannabis sativa
(B) Cannabis indica
(C) Marijuana
(D) Hashish

108. Which type /mode of examination is most suitable for crime scene investigation?

(A) Spiral
(B) Grid
(C) Block
(D) Random

109. Forensic Science examination duly rely upon

(A) Chemical analysis
(B) Instrumental analysis
(C) Physical analysis
(D) Colon techniques

110. Which of the following method is advantageous while note taking of the crime scene?

(A) Detailed written description of crime scene
(B) Narrating a videotape
(C) Tape-recording notes at scene
(D) Transcription of the tape-recording

111. Choose the 'dont' from the list of items given below while photographing the crime scene

(A) Entire room should be photographed to show each wall area
(B) Photographs must be taken to show body's position and location
(C) After removing the body, no need to photograph the surface beneath body
(D) Close-up photos of injuries and weapons lying near the body

112. What is supination in walking pattern?

(A) When feet are tied together
(B) When feet are folded
(C) When feet roll outwards, placing weight on the outside of the feet
(D) When feet roll inwards placing weight on the inside of the feet

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113. What is stance in walking?

(A) The phase in which the face of the person is bent

(B) The phase in which the limb is in contact with the ground

(C) The phase in which the person moves his hand forward

(D) The phase in which the person is moving his hip

114. On nonporous surfaces such as metals, leather and plastic bags the method for developing finger prints is

(A) Ninhydrin method

(B) Silver nitrate method

(C) Super glue fuming method

(D) Spectrometric method

115. In fingerprints the presence or absence of the ———— pattern is the basis of the determination of primary classification

(A) Whorl (B) Arch

(C) Loop (D) Convoluted

116. The form and pattern of skin ridges are determined by the

(A) Epidermis (B) Dermal papillae

(C) Dermis (D) Glands of sweat pores

117. The iodine fuming method of development of fingerprints is due to ———— of prints

(A) Sodium chloride (B) Amino acids

(C) Fatty acids (D) Salt

118. The pattern that permits to classify the finger prints are

(A) Curve pattern (B) Circling pattern

(C) Ridge pattern (D) Valley pattern

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119. When more number of class and individual characteristics identified on a footwear impression by the examiner, the evidential value of the footwear impression will

(A) Constant
(B) Fluctuate
(C) Decrease
(D) Increase

120. Which of the following pattern, with its presence or absence, is the basis for the determination of the primary classifications of finger print?

(A) Loop
(B) Ulnar loop
(C) Arch
(D) Whorl

121. ———————— form the arch of the foot and help to transmit the weight of the body through the foot

(A) Tarsal bones of the midfoot
(B) Talus and calcaneous in the hindfoot
(C) Metatarsal bones and phalanges
(D) Sesamoid bones

122. Which of the following casting material is considered more appropriate for casting three-dimensional footwear impressions on soil?

(A) Silicone based materials
(B) Paraffin wax
(C) Plaster of Paris
(D) Dental stones

123. The lifting film used for lifting foot impressions on porous surface with the aid of electrostatic lifting device, is made of

(A) Black vinyl film coated on one side with a conductive metal laminate
(B) Photographic film coated with a conductive metal laminate
(C) Aluminium foil coated with a conductive metal laminate
(D) Tin foil coated with a conductive metal laminate

124. The most appropriate technique that can be used for recovering foot or shoe prints on carpets which are otherwise invisible, is

(A) Holography
(B) Electrostatic detection apparatus
(C) Electrostatic lifting device
(D) Periphography

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125. When a hammer strikes on a surface at a glancing angle, the type of marks produced on the surface of impact will be

(A) Compression marks

(B) Indented marks

(C) Striated marks

(D) Combination of compression and striated marks

126. A bullet found at a scene can be linked to the specific individual through which the bullet had passed by examining ———— deposited on it.

(A) Fibre pieces

(B) Tissue

(C) Paint

(D) Trimmed pieces hair

127. A flat-nosed bullet with a sharp shoulder designed to produce a clear cut punched out hole in paper targets, is called

(A) Wad cutter

(B) Spitzer

(C) Rifted slug

(D) Flechette

128. The bullets with tapered rear portion / section can overcome ———— during their flight.

(A) Base drag

(B) Air-resistance

(C) Gravity

(D) Yaw

129. Match the following :

(a)	Shot	1.	Dummy cartridges
(b)	Cartridges deroid of primer/propellant	2.	Bullet
(c)	Cannelure	3.	Blank ammunitions
(d)	Cartridges without missile	4.	Pellet

	(a)	(b)	(c)	(d)
(A)	3	2	4	1
(B)	2	3	1	4
(C)	4	3	2	1
(D)	4	1	2	3

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130. Match List I with List II :

List I	List II
(a) Single base smokeless powder	1. A mixture of Aluminium or magnesium powder with potassium per chlorate or barium nitrate
(b) Double base smokeless powder	2. A mixture of potassium nitrate charcoal and sulphur
(c) Black powder	3. Cellulose nitrate
(d) Flash powder	4. A mixture of cellulose nitrate with glyceryl trinitrate

	(a)	(b)	(c)	(d)
(A)	3	4	2	1
(B)	1	2	3	4
(C)	4	3	2	1
(D)	1	2	4	3

131. Identification of the firearms is done by comparing the marks on the crime and test cartridges usually through

(A) a comparison microscope
(B) micrometer
(C) binocular microscope
(D) travelling microscope

132. The fundamental chemical reaction of fire is

(A) Exothermic
(B) Endothermic
(C) Oxidation
(D) Reduction

133. The combined ability or potential of a system to perform work with fullest capacity is considered as

(A) Activity
(B) Efficiency
(C) Exertion
(D) Energy

134. Arson is defined as the ———— and malicious burning of another's property or the burning of one's own property for some illegal purpose.

(A) Reckless
(B) Negligent
(C) Illegal
(D) Willful

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135. ———— is considered as the measurable effect of the absorption of energy by matter.

(A) Temperature
(B) Pressure
(C) Power
(D) Vapour density

136. Chemical composition of safety fuse

(A) Sulphur, carbon and potassium nitrate
(B) Sulphur and aluminium
(C) Sulphur and red phosphorous
(D) Potassium nitrate, carbon and aluminium

137. The combination of potassium nitrate, carbon and sulphur is known as

(A) Percussion powder
(B) Single base powder
(C) Black / gun powder
(D) Double base powder

138. IED is known as

(A) Improved Explosive Device
(B) Improvised Explosive Device
(C) Ignited Explosive Device
(D) Inflammatory Explosive Device

139. Molecular formula of Trinitro Toluene (TNT)

(A) $C_7H_5N_3O_6$
(B) $C_6H_5N_3O_6$
(C) $C_7H_4N_2O_6$
(D) $C_7H_5N_2O_6$

140. The first most important step in the detection of explosive residues is the ———— of appropriate samples from the explosion site.

(A) Preservation
(B) Collection
(C) Isolation
(D) Conservation

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141. Heating or cooling a test sample (explosive) and an inert reference sample under identical conditions and recording any temperature difference between them is called

(A) Differential Gravimetric Analysis (DGA)

(B) Differential Thermal Analysis (DTA)

(C) Differential Scanning Calorimetry (DSC)

(D) Differential Performance Analysis (DPA)

142. Which is used to check whether suspected articles contains clock mechanism for triggering the bomb?

(A) Image storage panel

(B) Lixi fluoroscope

(C) ECM frequency jammer

(D) Electronic stethoscope

143. Small explosive devices similar in appearance to a detonator, but loaded with low explosive is called

(A) Electric match

(B) Squibs

(C) Fuse caps

(D) Shock tube

144. RDX refers to

(A) Research and Development Explosive

(B) Research and Detonating Explosive

(C) Rapid Development Explosive

(D) Rapid Detonating Explosive

145. Hand writing is a

(A) Neuro – muscular activity

(B) Oral activity

(C) Nasal activity

(D) Vascular activity

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146. Examination of charred documents can be carried out by

(A) Visible light
(B) U-V fluorescence
(C) Oblique lighting
(D) Infrared radiation

147. The most important instrument used in document examination is

(A) Video spectral comparator
(B) X – ray machine
(C) Gas chromatography combined with mass spectroscopy
(D) Microtome

148. What is patching in a forged signature?

(A) Remodelling the strokes in a signature
(B) Retouching or going back over a defective portion of a writing stroke
(C) Sticking a white paper on a signature
(D) Dabbing with a wet cloth on the signature

149. What are receipt signatures in handwriting examination?

(A) The signatures of an accountant
(B) The signatures written while practising
(C) The signatures hastily written under adverse writing conditions to acknowledge a courier, mail or merchandise
(D) The signatures written in a will

150. What is splicing in handwriting examination?

(A) Basic designing of the letters in writing
(B) The slight overlapping of two strokes after an interruption in the writing
(C) The writing with irregularly sized letters
(D) The writing which is illegible

151. Handwriting identification is mainly based on

(A) Dating characteristics
(B) Nationality characteristics
(C) Personal characteristics
(D) Style characteristics

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152. Dandy roll is

(A) The bale of paper

(B) A cylinder used in papermaking process to create a watermark

(C) The handwriting of an individual with lot of circular letter formation

(D) The type of printer

153. Erasure by abrasion or scratching can be detected by

(A) Observing the writing in darkness

(B) Observing the disturbed paper fibres in the area

(C) Observing the writing in a standing position

(D) Observing the writing after placing a blade below the erased area

154. Pick the odd one out.

This is not a characteristic of line quality

(A) Speed and skill

(B) Freedom of movement

(C) The ornamental designing of a letter

(D) Pen pressure

155. What is Rhythm in handwriting?

(A) The text that is legible in hand

(B) Retouched letters in handwriting

(C) The manner of holding the pen while writing

(D) The element of the writing movement marked by regular or periodic recurrences

156. Pick the right one.

This causes an increase in writing size.

(A) inhalation of sulphur gas

(B) inhalation of oxygen

(C) inhalation of nitrous oxide

(D) inhalation of methane gas

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157. Examiners apply both ———— and ———— techniques when comparing two voice samples.

(A) Aural and oral

(B) Aural and visual

(C) Mural and oral

(D) Visual and mural

158. Find the one which is not recorded by a polygraph instrument

(A) Electro dermal activity

(B) Relative blood pressure

(C) Changes in breathing activity

(D) Changes in brain activity

159. The most important instrument for locating and comparing paint specimens is

(A) Micrometer

(B) Spectroscope

(C) Microscope

(D) Comparator

160. In examination of the head light's filaments may resolve questions such as the issues given below in an hit-and-run accident cases

(A) Whether the vehicle was running at high speed before impact

(B) Whether an automobile's headlights were on or off before the impact

(C) Whether the driver applied break before the impact

(D) Whether the lamps were hit by a projectile

161. The fracture bones radiating outward from a crack in glass are known as

(A) Concentric fractures

(B) Radial fractures

(C) Rib fractures

(D) Conical fractures

162. ———— is a bright halo that is observed near the border of a particle that is immersed in a liquid of a different refractive index.

(A) Match point

(B) Becke line

(C) Pulfrich

(D) Abbe

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163. Thermal effect from a bomb made of TNT explosive is

(A) 3000 – 4000° C
(B) 1000 – 1500° C
(C) 2000 –2500° C
(D) 4000 – 5000° C

164. Speech production is composed of two basic mechanical functions they are

(A) Phonetics and accostics
(B) Phonation and articulation
(C) Semantic and syntactic
(D) Lexical and semantic

165. Prosecutors and defence attorneys routinely make use of polygraph examinations and judges regularly use them, to help

(A) decide issues of interest in pretrial stage
(B) decide issues of interest in trial stage
(C) decide issues of interest in post trial stage
(D) decide issues of interest in pretrial, trial, post trial stages

166. ———— was the first to use objective measurement of physiological changes for detecting deception in persons involved in the commission of offences.

(A) Lombroso
(B) Marston
(C) Larson
(D) Keeler

167. Wide variation in ———— formulations provides particularly significant information with respect to the forensic comparison of automobile finishes

(A) Pigment
(B) Printer
(C) Additives
(D) Resins

168. The first layer applied to the steel body of a car is the

(A) Primer surfacer
(B) Electro coat primer
(C) Base coat
(D) Clear coat

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169. Paralysis of the motor nerve ending of voluntary muscles are caused by

(A) Curare
(B) Digitalis
(C) Strychnine
(D) Oleander

170. Datura seed resemble another plant seed; they can be differentiated by seeing them through microscope. The other plant seed is

(A) Mustard seeds
(B) Pepper
(C) Chilly seeds
(D) Cumin seeds

171. Usually arsenic poisoning may be mistaken for a case of

(A) Malaria
(B) Jaundice
(C) Typhoid
(D) Cholera

172. Match List I with List II correctly and select your answer using the codes given below

List I	List II
(a) Potatoes	1. Rum
(b) Grapes	2. Beer
(c) Barley	3. Wine
(d) Molasses	4. Vodka

	(a)	(b)	(c)	(d)
(A)	4	3	2	1
(B)	4	1	2	3
(C)	3	2	1	4
(D)	1	2	3	4

173. The following test can be employed to detect sample of cannabis

(A) Duquenois – Levine test
(B) Marquis test
(C) Ferric chloride test
(D) Mayer's test

174. The plant name from which mescaline is extracted is

(A) Ergot
(B) Peyote
(C) Foxglove
(D) Dathura

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175. Although called an acid poisoning by phenol is termed as

(A) Penology
(B) Carbolism
(C) Carborendum
(D) Carbonization

176. Which one of the following is not an insecticide of vegetable origin?

(A) Nicotine
(B) Pyrethrins
(C) Rotenone
(D) Chlorodane

177. Considering mode of administration poison acts more readily when

(A) Inhaled in gaseous state
(B) Injected intramuscularly
(C) Injected subcutaneously
(D) Applied to skin

178. Lead pencil contains which of the following

(A) Lead
(B) Graphite
(C) Chromium
(D) Manganese

179. Which of the following symptom is more prominent in Dhatura poisoning?

(A) Convulsions
(B) Paralysis
(C) Delirium
(D) Coma

180. In starch-iodine test, the starch turns in the following colour on addition of iodine

(A) Purple
(B) Blue
(C) Green
(D) Pink

181. The following colour tests is applied for the detection of Halogenated hydrocarbons

(A) Fujiwara
(B) Koppanyi-Zwikker test
(C) Sodium nitroprusside
(D) Cobalt thiocyanate

182. A mixture of four basic drugs

(A) Cannot be separated
(B) Can be separated using T.L.C
(C) Must be separated using liquid extraction
(D) Would show no peaks in chromotogram

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183. We have two copies of every sequence in our DNA (except for the sex chromosomes in males). Each copy of a particular sequence is called for

(A) Autosomes
(B) Chromosomes
(C) Locus
(D) Allele

184. It is not possible to extracte DNA from

(A) Tissue
(B) Bone
(C) Seminal stain
(D) Completely burnt (or) Charred bones

185. Human osteology is the study of

(A) Human organs
(B) Human skin
(C) Human bones
(D) Human tissues

186. Lacrimal bone is a part of

(A) Ear ossides
(B) Nasal bone
(C) Eye orbit
(D) Cheek bone

187. The largest bone of the foot

(A) Calcaneus
(B) Talus
(C) Cuboid
(D) Cuneiform

188. The best method for the sub adult age estimation is from

(A) Dentition
(B) Cranial suture closure
(C) Pubic symphysis surface
(D) Sternal rib end

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189. To analyse the samples by GLC, the analyte should be

(A) Volatile

(B) Volatile and thermally stable

(C) Non volatile and thermally stable

(D) Thermally stable

190. The Electron Ionization in mass spectral analysis requires

(A) A very high pressure

(B) A very low pressure

(C) Constant pressure

(D) High pressure and high temperature

191. What is a molecular ion?

(A) A compound that has gained a pair of electron

(B) A compound that has gained an electron

(C) A compound that has lost an electron

(D) A compound that has lost a pair of electrons

192. In which order are the various parts of a mass spectrometer found?

(A) Sample – Ionization Chamber – Collector – Magnet – Recorder

(B) Sample – Ionization Chamber – Magnet – Collector – Recorder

(C) Ionization Chamber – Sample – Magnet – Collector – Recorder

(D) Ionization Chamber – Sample – Collector – Magnet – Recorder

193. For absorption in the region of Ultra Violet the molecules should have

(A) O-H group

(B) Conjugated double bond

(C) Non conjugated double bond

(D) Saturated compounds

194. Nernst glower is used as the radiation source in

(A) ICP – AES

(B) Atomic Emission Spectroscopy

(C) Flame Ionisation Spectrophotometer

(D) Infra Red Spectrophotometer

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195. Which of the following is correctly matched?

(A) Seed fibres – cotton and coir

(B) Bast (stem) fibres – manila, sisal

(C) Leaf fibres – Flex, Hemp

(D) Hair fibres – Bombyx mori

196. Cashmere was the name given to hair from the

(A) Rabbit

(B) Camel

(C) Asiatic goat

(D) Angora goat

197. The pattern of interlacing of warp and weft is described as

(A) The plain weave

(B) Twill weave

(C) The weave of a woven fabric

(D) Atlas weave

198. As both the force and velocity of impact increase, the diameter of the blood drops

(A) Increases

(B) Elongated in shape

(C) Decreases

(D) Not changed

199. Humans have the following forms of Heamoglobin during their development

(A) Embryonic Hb

(B) Fetal Hb

(C) Embryonic, Fetal and adult Heamoglobin

(D) Embryonic and fetal Hb

200. During gel electrophoresis, the antigen usually migrates towards

(A) Cathode

(B) The wells

(C) Agarose

(D) Anode

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