

**Forensic Ballistics and Physical Sciences****Answer Key****(Correct Answers are marked in bold letters)****Section - A****Forensic Aptitude**

1. Which country won the 2019 Ice Hockey World Championship?
  - a) Russia
  - b) Finland**
  - c) Canada
  - d) Czech Republic
  
2. Which Indian state shares the longest land border with Bhutan?
  - a) Assam**
  - b) Sikkim
  - c) Arunachal Pradesh
  - d) West Bengal
  
3. Which of the following is the longest train route in the world?
  - a) Moscow to Vladivostok**
  - b) Toronto to Vancouver
  - c) Shanghai to Lhasa
  - d) Sydney to Perth
  
4. Identify the southernmost located country amongst these
  - a) Madagascar
  - b) Sri Lanka
  - c) New Zealand**
  - d) Fiji
  
5. India shares its land borders with how many countries.
  - a) 5
  - b) 7**
  - c) 9
  - d) 4
  
6. I will write a letter to you tentatively \_\_\_\_\_ the dates of the program.
  - a) involving
  - b) urging
  - c) guiding
  - d) indicating**
  
7. 2 16 112 672 3360 13440 ?

- a) 3430  
b) 3340  
c) **40320**  
d) 43240
8. 40% of 210 is same as one third of?  
a) 840  
b) 280  
c) **252**  
d) 84
9. QPO, NML, KJI, \_\_\_\_\_, EDC  
a) **HGF**  
b) CAB  
c) JKM  
d) GHD
10. Samantha is your father's mother's grandson's daughter. Therefore, Samantha is your  
a) **niece**  
b) sister  
c) uncle  
d) brother
11. The microscope which cannot be used for studying living cells is  
a) Compound microscope  
b) **Electron microscope**  
c) Fluorescence microscope  
d) Light microscope
12. What is the primary purpose of accrediting forensic labs?  
a) Financial gain  
b) Legal compliance  
c) **Quality assurance**  
d) Employee satisfaction
13. In which country did Sir William Herschel pioneer the use of fingerprints for identification in the 19th century?  
a) United States  
b) United Kingdom  
c) **India**  
d) France
14. The development of the Automated Fingerprint Identification System (AFIS) has greatly enhanced:

- a) Bloodstain pattern analysis
  - b) Fingerprints**
  - c) DNA profiling
  - d) Toxicological analysis
15. The concept of "Every contact leaves a trace" is associated with the work of:
- a) Calvin Goddard
  - b) Edmond Locard**
  - c) Alphonse Bertillon
  - d) Sir William Locard
16. Who is "Father of Forensic Entomology"?
- a) Dr. William Bass
  - b) Dr. Clyde Snow
  - c) Dr. Michael Baden
  - d) Dr. Bernard Green Berg**
17. Next number in the series 3,6,8,16,18,.....is
- a) 28
  - b) 36**
  - c) 54
  - d) 34
18. If today is Wednesday, what would be the day after 121 days
- a) Wednesday
  - b) Saturday
  - c) Sunday
  - d) Friday**
19. Which is the correct spelt word
- a) Capricious**
  - b) Cappricious
  - c) Caprisious
  - d) Caprisuos
20. During electrophoresis speed of migration of ions depends on:
- a) Shape and size of molecule
  - b) Magnitude of charge and shape of molecule
  - c) Magnitude of charge, shape and mass of molecule**
  - d) Magnitude of charge and mass of molecule
21. A bullet from scene of crime is collected by means of
- a) Forceps
  - b) Tongs
  - c) Gloved hands**

- d) Spatula
22. Chelioscopy is study of
- Foot
  - Fingers
  - Palate
  - Lips**
23. The electromagnetic spectrum's Visible region stretches from:
- 380-760 nm**
  - 500-1mm
  - 165-525 nm
  - 760-1 mm
24. Which of the following Microscope uses light as a source of illumination
- SEM
  - TEM
  - Stereo microscope**
  - Scanning probe microscope
25. What type of evidence includes tangible items such as weapons, clothing, or documents that are directly related to a crime?
- Circumstantial evidence
  - Physical evidence**
  - Testimonial evidence
  - Documentary evidence
26. A witness testifying about what they personally observed or experienced is providing:
- Circumstantial evidence
  - Hearsay evidence
  - Testimonial evidence**
  - Documentary evidence
27. Which technique involves casting three-dimensional replicas of footwear impressions found at a crime scene?
- Shoeprint analysis
  - Casting**
  - Electrostatic dust print lifting
  - Bloodstain pattern analysis
28. What is the primary purpose of creating a crime scene sketch?

- a) To replace photographs
  - b) To provide a visual overview of the crime scene**
  - c) To identify suspects
  - d) To collect physical evidence
29. The immediate surroundings of an area where a crime has been committed is referred to as:
- a) A secondary crime scene
  - b) A primary crime scene**
  - c) An auxiliary crime scene
  - d) A contained crime scene
30. What is the primary purpose of Crime Scene Photography?
- a) To document the Investigator's presence
  - b) To create artistic representations of the crime scene
  - c) To provide a visual record of the entire crime scene**
  - d) To capture only close-up shots of evidence
31. In crime scene reconstruction, what does the term "modus operandi" refer to?
- a) The suspect's motive
  - b) The method of operation used by the suspect**
  - c) The victim's actions at the crime scene
  - d) The legal procedures followed during the investigation
32. What does the term "Integrity of the Chain of Custody" refer to?
- a) Keeping the evidence in pristine condition**
  - b) Ensuring a swift transfer of evidence
  - c) Allowing multiple agencies to handle the evidence
  - d) Sharing evidence with the media
33. Which organization is responsible for accrediting forensic laboratories in India according to ISO/IEC 17025 standards?
- a) FSSAI
  - b) NABH
  - c) NABL**
  - d) BIS
34. To identify the shape of univariate data, what type of graph would be the most useful?
- a) Histogram**
  - b) Scatter plot
  - c) Bar chart
  - d) Pie chart
35. What is the purpose of staining in gel electrophoresis?

- a) To regulate temperature
  - b) To enhance electrical conductivity
  - c) To visualize separated molecules**
  - d) To control pH
36. Sum of deviations will be zero if it is taken from
- a) Mean**
  - b) Mode
  - c) Medium
  - d) Standard Deviation
37. Find the median of the given data set: 5, 8, 12, 17, 2, 14, 6, 8, 13 and 7
- a) 5
  - b) 2
  - c) 8**
  - d) 17
38. The reducing action of developing agents for Black & White film –
- a) Potassium Sulphite
  - b) Potassium Bromide
  - c) Sodium Carbonate
  - d) Sodium Thiosulphate**
39. The Exposure Triangle refer to the three major setting that effect Exposure -
- a) ISO, Aperture, Shutter Speed**
  - b) Aperture, Shutter Speed, Focal Length
  - c) Quality of Camera, Aperture, Shutter Speed
  - d) Film, Lens & Colour
40. As per Section 8 of the Indian Evidence Act, 1872 which of the following is a relevant fact:
- a) Motive
  - b) Preparation
  - c) Subsequent Conduct
  - d) All of the above**
41. Under the PFA Act, when is the food said to be adulterated
- a) if any ingredient is injurious to health
  - b) if it is obtained from a diseased animal
  - c) if spices are sold without their essence
  - d) all of these**
42. Coca, hemp and opium are defined under:
- a) The Narcotic Drugs and Psychotropic Substances Act**

- b) The Pharmacy Act
  - c) The Drugs and Cosmetics Act
  - d) The Poisons Act
43. Which of the following methods is non-destructive technique for ink identification
- a) Solubility test
  - b) Thin layer chromatography
  - c) UV-Vis spectrophotometer
  - d) Videospectral analysis**
44. Milk is deficient of which mineral?
- a) Phosphorus
  - b) Sodium
  - c) Iron**
  - d) Potassium
45. Preservation of footprint on snow can be done by
- a) Plaster of Paris Cast
  - b) Sulphur casting**
  - c) Tracing
  - d) Wax Casting
46. Ridge characteristics can be found in:
- a) Footprint
  - b) Fingerprints
  - c) Palm prints
  - d) All**
47. In which section of the CrPC provision for free legal aid is given:
- a) 314
  - b) 381
  - c) 304**
  - d) 334
48. The image seen through a compound microscope is-
- a) Virtual**
  - b) Real
  - c) False
  - d) Imaginary
49. Which of the following is a non-volatile memory?
- a) RAM
  - b) Hard Disk**
  - c) Cache
  - d) ROM**

50. What is the full form of ALU?
- a) Arithmetic Logical Unit
  - b) Arithmetic Local Unit
  - c) **Arithmetic Logic Unit**
  - d) Arithmetic Logic Unity

**Section-B**

**Forensic Ballistics and Physical Sciences**

51. Velocity of sound in air is
- a) 343 Centimeter/Second
  - b) **343 Meter/Second**
  - c) 343 Foot/Second
  - d) 343 Kilometer/Second
52. Polarized Light consists
- a) **Electric & magnetic vibrations**
  - b) Magnetic & gravitational vibrations
  - c) Electric & gravitational vibrations
  - d) Electric, magnetic & gravitational vibrations
53. The outermost layer in earth's atmosphere is
- a) **Exosphere**
  - b) Mesosphere
  - c) Ionosphere
  - d) Stratosphere
54. The difference between Rifles & Carbine is that
- a) **Carbine has shorter barrel**
  - b) Rifle has shorter barrel
  - c) Rifle use pellets instead of bullet
  - d) Carbine use pellets instead of bullet
55. Scorching in Forensic ballistics means
- a) Layering of skin by flame or hot gases
  - b) Tearing of skin by flame or hot gases
  - c) Removal of skin by flame or hot gases
  - d) **Burning of skin by flame or hot gases**
56. Country made firearms are
- a) Illegally made firearms from other countries
  - b) Locally & legally made firearms
  - c) **Locally & illegally made firearms**
  - d) Imported firearms
57. Bullet travelling with supersonic speed means that



- a) Speed of bullet is less than speed of sound
  - b) Speed of bullet is equal to speed of sound
  - c) Speed of bullet is same while travelling in air or in water
  - d) **Speed of bullet is more than speed of sound**
58. At Resonant Frequency the amplitude is
- a) 230 meters
  - b) Minimum
  - c) **Maximum**
  - d) Infinity
59. 7.65 mm calibre when converted in inch will be
- a) 0.36
  - b) 0.34
  - c) 0.32
  - d) **0.30**
60. In Phosphorescence
- a) Energy absorbed is  $h\nu$
  - b) Energy absorbed is not released
  - c) **Energy absorbed is released slowly**
  - d) Energy absorbed is released immediately
61. The values of spin quantum number are
- a) +1 & -1
  - b) +2 & -2
  - c) +1/4 & -1/4
  - d) **+1/2 & -1/2**
62. In Neutron Activation Analysis following radiations are used
- a) X rays
  - b) Alpha rays
  - c) Beta rays
  - d) **Gamma rays**
63. The Auger emission process is based on emission of
- a) **Electrons**
  - b) Protons
  - c) Neutrons
  - d) Positrons
64. Sea appears blue because of
- a) Scattering of light by both air & water molecules
  - b) **Scattering of light by water molecules**

- c) Scattering of light by air molecules  
d) None of the above
65. The symbol of integers in number system is  
a) R  
b) N  
c) I  
d) **Z**
66. One Terabyte is equal to  
a) 1000 Bytes  
b) 1000 Petabytes  
c) 1000 Megabytes  
d) **1000 Gigabytes**
67. Mean is  
a) **Average of given numbers**  
b) Sum of given numbers  
c) Lowest number in given numbers  
d) Highest number in given numbers
68. Baye's theorem is used to calculate  
a) Standard deviation  
b) Failure  
c) **Probability**  
d) Success
69. 3R rule is related to  
a) **Glass fracture**  
b) Cement fracture  
c) Soil fracture  
d) Wood fracture
70. FFT in voice spectrum analysis is  
a) First Fourier Transform  
b) **Fast Fourier Transform**  
c) First Forensic Transform  
d) Fast Forensic Transform
71. In facial recognition system  
a) No conversion is required  
b) Only analog data is used  
c) Digital data is converted into analog data  
d) **Analog data is converted into digital data**
72. The length vocal cord in men  
a) Are equal to that of in women

- b) Are less than that of in women
  - c) Are greater than that of in women**
  - d) None of the above
73. Velocity of sound is maximum in
- a) Solids**
  - b) Liquids
  - c) Gases
  - d) Plasma
74. LPC used in speech coding & synthesis is
- a) Linear Predictive Coding**
  - b) Linear Proactive Coding
  - c) Linear Presumptive Coding
  - d) Linear Preemptive Coding
75. The digital Television is
- a) Transmission of television signal using analog encoding
  - b) Transmission of television signal using digital encoding**
  - c) Transmission of television signal using Frequency modulation encoding
  - d) Transmission of television signal using Amplitude modulation encoding
76. Radio waves in Electromagnetic spectrum has wavelength range of
- a) 1 mm - 100 nm
  - b) 1 mm - 100 dm
  - c) 1 mm - 100 m
  - d) 1 mm - 100 km**
77. Interlacing in video files is
- a) Joining of two different parts**
  - b) Overlapping of two different parts
  - c) Separation in two different parts
  - d) Hash matching of two different parts
78. In SI system the unit of temperature is
- a) Celsius
  - b) Kelvin**
  - c) Coulomb
  - d) Fahrenheit
79. Fume Hood is used in laboratory for
- a) Preventing entry of fumes
  - b) Preventing entry of hazardous substances**
  - c) Removal of fumes

- d) Conversion of fumes
80. Most commonly used material in making of bullet proof jackets is
- Steel
  - Titanium
  - Kevlar**
  - Copper
81. For conversion of Alternating Current (AC) to Direct Current (DC), which circuit is used
- Converter
  - Inverter
  - Amplifier
  - Rectifier**
82. Disc braking system works on
- Friction**
  - Combustion
  - Acceleration
  - Lubrication
83. The value of Acceleration due to Gravity (g) at center of earth is
- 9.8 m/s<sup>2</sup>
  - 9.8 cm/s<sup>2</sup>
  - Infinity
  - Zero**
84. Shorter skid marks suggest
- Slower speed of vehicle**
  - Constant speed of vehicle
  - Higher speed of vehicle
  - Sudden brake applied on vehicle
85. Which of the following is required to dye leather?
- Direct dye
  - Acid dye
  - Basic dye**
  - Reactive dye
86. Three primary colors of light in color TV are
- Red, Green & Black
  - Red, Green & Yellow

- c) Red, Black & Blue  
d) **Red, Green & Blue**
87. Which of the following is not a Hash value computation algorithm
- a) **MSHA**  
b) MD5  
c) SHA1  
d) SHA256
88. Atomic Force Microscope is used to measure
- a) Surface electrochemical properties  
b) Surface electrical properties  
c) Surface chemical properties  
d) **Surface physical properties**
89. Compound Microscope consists of how many lense(s):
- a) 4  
b) **2**  
c) 1  
d) 0
90. Value of Plank's Constant (h) is
- a)  $6.6 \times 10^{34}$  Joule-Second  
b)  **$6.6 \times 10^{-34}$  Joule-Second**  
c)  $6.6 \times 10^{-34}$  Joule/Second  
d)  $6.6 \times 10^{34}$  Joule/Second
91. Polarized Light consists electric & magnetic vibrations
- a) In same plane  
b) In planes at angle of  $135^\circ$   
c) In planes at angle of  $270^\circ$   
d) **In perpendicular plane**
92. The least count of Vernier calipers
- a)  $0.1 \mu\text{m}$   
b) **0.1 mm**  
c) 0.1 cm  
d) 0.1 dm
93. The prohibited bore of firearm in India
- a) .303"  
b) **9 mm**

- c) 7.65 mm  
d) .22"
94. Revolver & Pistols are type of  
a) Shotgun  
**b) Handgun**  
c) Carbines  
d) Long barrel firearm
95. Bullet recovery box is usually filled with  
a) Water  
b) Soil  
c) cement  
**d) Cotton**
96. Boroscope is used for  
**a) Visual inspection in depth**  
b) Visual inspection in height  
c) Visual inspection in water  
d) Visual inspection in air
97. Glass Refractive Index Measure System (GRIM) use  
a) Polychromatic Light  
**b) Monochromatic Light**  
c) LASER  
d) White Light
98. Tattooing in Forensic ballistics means  
**a) Deposition of un-burnt & semi-burnt powder particles on the skin**  
b) Deposition of fully-burnt powder particles on the skin  
c) Deposition of lead particles on the skin  
d) Deposition of copper particles on the skin
99. Walker Test is used for detection of  
a) Sulphite  
b) Sulphate  
**c) Nitrite**  
d) Nitrate
100. Formant Frequency is  
**a) Resonant frequency of air in vocal tract**  
b) Resonant frequency of air in lungs  
c) Resonant frequency of air in wind pipe  
d) Resonant frequency of air in cartilage

101. CO<sub>2</sub> gas can used as propellant is
- Shotguns
  - Handguns
  - Airguns**
  - Muzzle loading guns
102. There are how many Quantum Numbers to define atomic shells
- 2
  - 4**
  - 6
  - 8
103. Advantage of Raman Spectroscopy over IR spectroscopy is
- Raman spectroscopy can be used in aqueous solutions**
  - Raman spectroscopy can be used in gaseous mediums
  - Raman spectroscopy can be used in plasma
  - Raman spectroscopy can be used in electrolytes
104. Mode is
- Most common number that appears in data**
  - Average number of data
  - Lowest number that appears in data
  - Highest number that appears in data
105. Baye's rule is used for
- Probability
  - Updated Probability
  - Positive Probability**
  - Negative Probability
106. The length vocal tract in adults ranges from
- 13 to 20 cm**
  - 13 to 20 mm
  - 13 to 20 dm
  - 13 to 20 m
107. The resonance in sound is:
- Frequency of external source is greater than the natural frequency of system
  - Frequency of external source matches with natural frequency of system**
  - Frequency of external source is lesser than the natural frequency of system
  - Frequency of external source becomes double with the natural frequency of system
108. Velocity of sound in water is
- Same as in air

- b) Less than as in air
  - c) **Greater than as in air**
  - d) Sound stops in water
109. The example of analog storage of sound is
- a) **Tape media**
  - b) Hard Disk
  - c) Memory Card
  - d) Pen Drive
110. What is synthetic voice
- a) Computer generated audio output resembling to noise
  - b) Human generated audio output resembling to computerized speech
  - c) **Computer generated audio output resembling to human speech**
  - d) Human generated audio output resembling to noise
111. Electromagnetic waves are example of
- a) **Transverse waves**
  - b) Longitudinal waves
  - c) Ripples
  - d) Stationary Waves
112. Fineness test of Cement is related to
- a) **Size of particle**
  - b) Solubility of particle
  - c) Hydration of particle
  - d) Density of particle
113. Bullet proof glass essentially consists
- a) Monocarbonate
  - b) Tetracarbonate
  - c) Tricarbonate
  - d) **Polycarbonate**
114. Collection of control soil sample at Scene of Crime is mandatory
- a) **For exclusion of false positive results**
  - b) For considering as base value
  - c) For inclusion in examination report
  - d) For retention in laboratory
115. Power transformers are used for
- a) High current from transmission line to low current on distribution line
  - b) **High voltage from transmission line to low voltage on distribution line**
  - c) Low voltage from transmission line to high voltage on distribution line
  - d) Low current from transmission line to high current on distribution line



116. Hydraulic braking system works on
- Plasma
  - Fluid**
  - Vaccum
  - Gas
117. The standard frame rate for motion pictures, video streaming, TV & smart phones is
- 48 fps
  - 24 fps**
  - 12 fps
  - 36 fps
118. Which of the following is not an image enhancement technique
- Spectral
  - Radiometric
  - Spatial
  - Hash matching**
119. In forensic examination of damaged cloth fiber, following technique will be used
- Electromagnetic exposure
  - Chromatography
  - Light microscopy**
  - Mass spectroscopy
120. Which technique is used for restoration of obliterated engraved marks
- Physical examination
  - Chemical Examination**
  - Fourier analysis
  - Watermarking

**-End of Paper-**