

ANSWER KEYS

(Correct Answers are marked in Bold Letters)

SECTION-A

1. **Which statement regarding admissibility of forensic evidence is most accurate?**
 - a. Forensic evidence is admissible only if collected under the Exchange Principle (Locard), regardless of chain of custody.
 - b. Reports of Senior Scientific Officers (SSO) in State Forensic Science Laboratories are automatically admissible under Section 293 CrPC and Section 329 BNSS.**
 - c. Admissibility of forensic evidence is governed by the Best Evidence Rule and requires proper chain of custody and expert testimony.
 - d. Digital evidence is admissible only if accompanied by oral testimony of the investigating officer, not under Section 65B of the Indian Evidence Act
2. **Which statement regarding expert opinion under the Bharatiya Sakshya Adhiniyam is correct?**
 - a. Expert opinion is conclusive proof
 - b. Expert testimony is inadmissible
 - c. Expert opinion assists the court in technical matters**
 - d. Courts are legally bound by expert conclusions
3. **While Calvin Goddard is popularised as the 'father of modern ballistics,' the critical instrumentation, the comparison microscope adapted specifically for comparing bullets side-by-side, was primarily engineered by which of his colleagues at the Bureau of Forensic Ballistics?**
 - a. Alexandre Lacassagne and Victor Balthazard
 - b. Charles Waite and Philip Gravelle**
 - c. Albert S. Osborn and John Wigmore
 - d. Paul Kirk and August Vollmer
4. **Dr. E.H. Hankin served as a renowned Chemical Examiner and Bacteriologist in the late 19th and early 20th century. In which Indian city was his laboratory located, famously known for its rigorous medico-legal analysis and foundational work on cholera bacteriophages?**
 - a. Agra**
 - b. Madras
 - c. Lahore
 - d. Bombay
5. **Grammar:Language::Formula: ?**
 - a. Equations
 - b. Calculations
 - c. Mathematics**
 - d. Numeral
6. **Which of the following best explains the role of the sympathetic nervous system?**
 - a. Regulation of digestion during rest
 - b. Control of voluntary skeletal movements only
 - c. Activation of the fight-or-flight response**
 - d. Long-term memory storage
7. **Under the Bharatiya Sakshya Adhiniyam (BSA), 2023, what is the evidentiary status of a video recording that is simultaneously stored on a server and broadcast live?**
 - a. The server recording is primary; the broadcast is secondary
 - b. Both are considered primary evidence**
 - c. Only the server recording is admissible

- d. Both are secondary evidence requiring 65B certification
8. **Bandura's Social Learning Theory emphasizes the importance of which mechanism in the acquisition of behavior?**
- Genetic predisposition
 - Observational learning and modeling**
 - Unconscious childhood conflicts
 - Direct reinforcement only
9. **Which constitutional amendment reduced the voting age in India from 21 years to 18 years?**
- 42nd Amendment
 - 44th Amendment
 - 61st Amendment**
 - 73rd Amendment
10. **The headquarters of the World Trade Organization (WTO) is situated in:**
- Brussels
 - Geneva**
 - Paris
 - New York
11. **Which of the following gases is NOT categorized as a greenhouse gas?**
- Methane
 - Nitrogen**
 - Carbon dioxide
 - Nitrous oxide
12. **If observed frequencies and expected frequencies are nearly identical, the Chi-square value will generally be:**
- Very high
 - Negative
 - Equal to one
 - Very low**
13. **Choose the antonym of the word "Ephemeral":**
- Fleeting
 - Temporary
 - Transient
 - Eternal**
14. **Which of the following correctly matches the typical magnifying powers of microscopes commonly used in forensic science?**
- Stereo microscope – up to 1000× magnification
 - Compound light microscope – up to 100× magnification
 - Comparison microscope – up to 400× magnification
 - Electron microscope – up to 1,000,000× magnification**
15. **Which casting material is most suitable for recovering fine tool marks from a steel surface at a crime scene?**
- Plaster of Paris
 - Dental stone
 - Mikrosil / Silicone-based casting compound**
 - Alginate
16. **In forensic analysis, systematic error produces:**
- Random fluctuations
 - Increased objectivity
 - Greater precision only
 - Consistent deviation from the true value**
17. **McNaughten's Rule is primarily associated with:**

- a. **Determination of criminal insanity and understanding of the nature of the act**
 - b. Victim compensation mechanisms
 - c. Witness examination procedure
 - d. Police investigation methods
18. **Which search technique is generally considered most appropriate for a large outdoor crime scene with limited investigators?**
- a. Zone search
 - b. Spiral search
 - c. **Strip/Line search**
 - d. Wheel search
19. **The Scheimpflug principle used in forensic photography states that:**
- a. The lens must shift laterally to increase focal depth
 - b. Lens tilt should remain orthogonal to the subject
 - c. Hyperfocal distance determines tilt angle
 - d. **Lens plane, image plane, and subject plane intersect along a common line**
20. **In forensic photogrammetry, which intrinsic camera parameter is essential for extracting accurate three-dimensional measurements?**
- a. Camera XYZ coordinates
 - b. **Principal point and lens distortion coefficients**
 - c. Tripod pitch-roll-yaw angles
 - d. Focal plane distance to evidence marker
21. **The first practical application of fingerprinting in criminal identification in India is associated with:**
- a. Lord Curzon
 - b. **Sir William Herschel**
 - c. Lord Dalhousie
 - d. Lord Cornwallis
22. **Adipocere formation is seen in:**
- a. Dead body exposed to air
 - b. **Dead body buried in damp, clay soil**
 - c. Burial in dry hot air
 - d. All
23. **To accurately photograph bite marks using reflected short-wave ultraviolet radiation (254 nm), the camera lens must be manufactured from which specialized optical material?**
- a. Extra-low dispersion glass
 - b. **Quartz or fluorite**
 - c. Polycarbonate-coated optics
 - d. Barium crown glass
24. **Which of the following is NOT recognized as a metabolite of diazepam?**
- a. **Lorazepam**
 - b. Temazepam
 - c. Oxazepam
 - d. Desmethyldiazepam
25. **The classical confirmatory test for arsenic poisoning is known as:**
- a. Marquis test
 - b. Mandelin's test
 - c. **Marsh test**
 - d. Vitali's test
26. **Which of the following alkaloids belongs to the Isoquinoline group?**
- a. Morphine
 - b. Cocaine

- c. **Papaverine**
d. Reserpine
27. **Which of the following compounds belongs to the class of polychlorinated hydrocarbons?**
a. Malathion
b. Parathion
c. **Endrin**
d. Diazinon
28. **Which among the following poisons is volatile in nature?**
a. **Cyanide**
b. Methyl parathion
c. Brucine
d. All of the above
29. **The Bharatiya Nyaya Sanhita primarily governs:**
a. Civil disputes
b. Administrative tribunals
c. Rules of evidence
d. **Substantive criminal law**
30. **"Who propounded the term 'White-Collar Crime'?"**
a. Cesare Lombroso
b. **Edwin Sutherland**
c. Emile Durkheim
d. Karl Marx
31. **For photographing tyre impressions at night, the best lighting technique is:**
a. Flash directly from above
b. **Oblique lighting at low angle from multiple sides**
c. No light needed
d. UV light only
32. **Within the scope of forensic anthropology and pathology, establishing the 'cause' of death is distinct from determining the 'manner' of death. Which of the following represents an accurate limitation regarding the scope of forensic anthropology in this context?**
a. **Forensic anthropology generally cannot definitively establish the physiological cause of death; it only characterizes the skeletal trauma associated with the fatal event.**
b. Forensic anthropology can definitively determine a homicide manner of death based solely on the presence of a peri-mortem sharp force trauma lesion.
c. Forensic anthropology is uniquely qualified to establish the physiological cause of death when advanced decomposition prevents soft tissue toxicology.
d. Forensic anthropology's primary scope is to utilize the Law of Progressive Change to determine the cause of death via isotopic bone analysis.
33. **Arrange the following cannabis preparations in ascending order of tetrahydrocannabinol (THC) concentration: Bhang, Ganja, Charas, Hashish oil.**
a. **Bhang → Ganja → Charas → Hashish oil**
b. Ganja → Bhang → Charas → Hashish oil
c. Hashish oil → Charas → Bhang → Ganja
d. Ganja → Hashish oil → Charas → Bhang
34. **Which factor is MOST important in determining the credibility of an expert witness in court?**
a. duration of experience in relevant field
b. Number of appearances in court
c. **Scientific qualifications, expertise, and methodology adopted**
d. type of evidences collected by the experts
35. **Choose the option nearest in meaning to the word 'Obfuscate':**

- a. Clarify
 - b. Illuminate
 - c. **Confuse intentionally**
 - d. Simplify
36. **Free legal aid to ensure equal justice is provided under which Article of the Indian Constitution?**
- a. Article 21
 - b. **Article 39A**
 - c. Article 32
 - d. Article 36
37. **Which of the following is considered transient evidence?**
- a. Fingerprints
 - b. Bloodstains
 - c. **Oduor**
 - d. Footwear impressions
38. **In information technology and ergonomics, "HCI" refers to:**
- a. High Computer Internet
 - b. High Computer Interference
 - c. Hold Human Complex
 - d. **Human Computer Interaction**
39. **Which of the following is NOT recognized as a fundamental principle of forensic science?**
- a. Principle of Exchange
 - b. **Principle of Relativity**
 - c. Principle of Individuality
 - d. Principle of Probability
40. **Which element among the following possesses the highest electron affinity?**
- a. Nitrogen
 - b. Oxygen
 - c. Fluorine
 - d. **Chlorine**
41. **The Implicit Association Test (IAT), developed by Greenwald et al. (1998), is primarily designed to assess:**
- a. Perception
 - b. Attention
 - c. **Implicit prejudice and attitudes**
 - d. Intelligence quotient
42. **Which chromatographic technique is most suitable for separation of non-volatile compounds?**
- a. GCMS
 - b. Gas chromatography
 - c. GCHS
 - d. **HPLC**
43. **If sales increase from 200 units to 260 units, calculate the percentage increase.**
- a. 20%
 - b. 25%
 - c. **30%**
 - d. 35%
44. **In forensic odontology, the term "Chiloscopy" refers to:**
- a. Study of palatal rugae patterns for identification
 - b. Analysis of bite marks on human skin
 - c. **Examination of lip print patterns for personal identification**
 - d. Microscopic study of dental pulp tissues

45. **Which constitutional body among the following is incorrectly categorized as constitutional?**
- Election Commission of India
 - Union Public Service Commission
 - Finance Commission
 - NITI Aayog**
46. **The cerebellum is primarily associated with:**
- Hormonal regulation
 - Body temperature control
 - Coordination of voluntary movements**
 - Long-term memory storage
47. **Choose the correct preposition:**
“He is addicted _____ gambling.”
- with
 - for
 - to**
 - on
48. **The null hypothesis (H_0) generally represents:**
- Maximum certainty
 - Presumption of guilt
 - Alternative explanation
 - No effect or no difference**
49. **A footwear impression discovered in soft soil should be photographed:**
- Close-up scaled photography
 - Long-range photography
 - Mid-range photography
 - All of the above**
50. **In a positively skewed forensic dataset, the most appropriate measure of central tendency is generally the:**
- Mean
 - Range
 - Median**
 - Variance

SECTION-B

51. **Velocity of sound in maximum in which medium:**
- Liquid
 - Solid**
 - Gas
 - Plasma
52. **What is full form of DBML:**
- Dual Barrel Magazine Loading shotgun
 - Double Barrel Muzzle Loading shotgun**
 - Dumb Barrel Mouser Loading shotgun
 - Deep Barrel Machine Loading shotgun
53. **In close range firearm injuries, what will not be visible on target :**
- Blackening
 - Burning
 - Tattooing
 - Rat holes**
54. **Highlighter Inks are example of :**
- Phosphorescence
 - Luminescence
 - Met phosphorescence
 - Fluorescence**
55. **Normally the speaking frequencies of Men, Women & Children in ascending order are:**
- Children, Women & Men
 - Men, Women & Children**
 - Women, Men & Children
 - Women, Children & Men
56. **Energy Dispersive X-Ray technique is used for elements having atomic number between:**
- 0 to 94
 - 4 to 98**
 - 8 to 102
 - 12 to 106
57. **Paradox Guns are:**
- Muzzle Loaders having rifled barrel
 - Handguns having smooth barrel
 - Shotguns having rifled barrel**
 - Rifles having smooth barrel
58. **Which of the following is not a lip pattern:**
- Vertical
 - Reticular
 - Branching
 - Loop**
59. **Monophthong, Diphthong & Triphthong are:**
- Pure consonant sound
 - Type of consonant sound
 - Type of vowel sound**
 - Mixture of vowel & consonant sound
60. **What is synthetic voice:**
- Computer generated audio output resembling to noise

- b. **Computer generated audio output resembling to human speech**
 - c. Human generated audio output resembling to computerized speech
 - d. Human generated audio output resembling to noise
61. **20-60-20 Rule is related to:**
- a. Physics
 - b. Ballistics
 - c. Documents
 - d. **Photography**
62. **Petrography test is related to:**
- a. Examination of electronic devices
 - b. **Examination of construction material**
 - c. Examination of firearms
 - d. Examination of explosives
63. **In manufacturing of modern Bulletproof jacket, which material is not used:**
- a. Aramid Fiber
 - b. Ceramic Plates
 - c. **Steel**
 - d. Ballistic Nylon
64. **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
65. **According to skid marks equation:**
- a. Skid distance (d) is directly proportional to drag factor (f)
 - b. **Skid distance (d) is inversely proportional to drag factor (f)**
 - c. Square root of Skid distance (d) is directly proportional to drag factor (f)
 - d. Square root of Skid distance (d) is inversely proportional to drag factor (f)
66. **In reference to motion pictures & video streaming FPS is:**
- a. Foot Per second
 - b. Feet Per Second
 - c. Flight Per Second
 - d. **Frames Per Second**
67. **The Coefficient of Variation is:**
- a. **Ratio of Standard Deviation to Mean**
 - b. Ratio of Standard Deviation to Median
 - c. Ratio of Standard Deviation to Mode
 - d. None of the above
68. **The voice sample required for forensic examination are preferably recorded & stored in:**
- a. New Compact Disc
 - b. Sterile Hard Disc
 - c. Sterile RAM
 - d. **Sterile Memory Card**
69. **The authentication of a video file is done by use of:**
- a. Metadata
 - b. Low Pass Filter
 - c. High Pass Filter
 - d. **Hash Value**
70. **Which technique is used for restoration of obliterated engraved marks:**
- a. Physical examination
 - b. **Chemical Examination**

- c. Fourier analysis
 - d. Watermarking
71. **In the crime scene, the digital evidence needs to be collected in which type of collection bags**
- a. Poly Bags
 - b. Paper Bags
 - c. Faraday Bags**
 - d. Jute Bags
72. **During the collection of soil evidence from a crime scene, which of the following is the most appropriate method to avoid contamination?**
- a. Collect soil samples using bare hands
 - b. Store wet soil samples in airtight plastic bags immediately
 - c. Use clean tools and collect control samples from nearby areas**
 - d. Mix soil from different locations to get a representative sample
73. **Choose the correct answer of Crime Scene Reconstruction**
- a. Data Collection → Conjuncture → Hypothesis Formulation → Testing → Theory Formulation**
 - b. Data Collection → Hypothesis Formulation → Conjuncture → Testing → Theory Formulation
 - c. Hypothesis Formulation → Theory Formulation → Data Collection → Testing → Conjuncture
 - d. Conjuncture → Data Collection → Hypothesis Formulation → Testing → Theory Formulation
74. **Which classification system of lip prints is most commonly used in forensic cheiloscopy?**
- a. Martin Santos Classification
 - b. Renaud Classification
 - c. Suzuki and Tsuchihashi Classification**
 - d. Afchar-Bayat Classification
75. **In the preservation of wet residue footwear impressions, which method is MOST appropriate for lifting the impression after enhancement?**
- a. Electrostatic lifter method
 - b. Adhesive tape lifting method
 - c. Gel lifter method**
 - d. Vacuum metal deposition method
76. **Kapok is an example of**
- a. Animal Fibre
 - b. Plant Fibre**
 - c. Synthetic Fibre
 - d. Semi-Synthetic Fibre
77. **In forensic fibre examination, the presence of titanium dioxide particles embedded within a fibre primarily indicates:**
- a. Biological contamination of the fibre
 - b. Thermal degradation during manufacturing
 - c. The addition of delustering agents during fibre manufacture**
 - d. Exposure of the fibre to ultraviolet radiation
78. **The birefringence property of the fibre can better be analyzed using**
- a. Comparison Microscope
 - b. PLM Microscope**
 - c. IR Microscope
 - d. Stereomicroscope
79. **Why does atomic absorption spectroscopy (AAS) generally require a hollow cathode lamp, while atomic emission spectroscopy (AES) does not?**
- a. AAS needs a monochromator for resolution

- b. **AAS requires an external radiation source to excite ground-state atoms**
 - c. AES uses fluorescence instead of absorption
 - d. AES cannot detect metals.
80. **Active archiving differs from passive archiving primarily because it:**
- a. Uses only 3D imaging systems
 - b. **Applies the scientific method to evidence recognition**
 - c. Relies on videography as the sole medium
 - d. Avoids photography altogether
81. **Why must close-up zooms be followed by slow zoom-outs to the original position?**
- a. To reduce the file size of the video
 - b. To prevent overexposure of video frames
 - c. To comply with courtroom admissibility rules
 - d. **To reinforce the relationship among items of evidence**
82. **The set of all possible outcomes of an experiment is called:**
- a. Event
 - b. Complement
 - c. Union
 - d. **Sample space**
83. **Why is statistical analysis crucial in forensic science when interpreting evidence?**
- A. **It quantifies uncertainty and provides probabilistic weight to match likelihoods**
 - B. **It supports DNA match probability and random-occurrence likelihood in the population**
 - C. **It enables likelihood ratio calculations to compare prosecution vs. defence hypotheses**
 - D. **It strengthens the admissibility of evidence by applying validated statistical models**
 - a. A is correct, B & C are incorrect
 - b. B & C are correct, D is incorrect
 - c. **All are correct**
 - d. All are incorrect
84. **Which synthesis route is most suitable for producing uniform nanoparticles for forensic sensor applications?**
- a. Mechanical milling (top-down)
 - b. **Sol-gel method (bottom-up)**
 - c. Laser ablation (top-down)
 - d. Ball milling with surfactants
85. **According to Greenhill's formula, the rifling twist rate depends primarily on:**
- a. Bullet weight
 - b. **Bullet diameter and length**
 - c. Barrel length
 - d. Propellant type
86. **What is the main advantage of CAD in accident reconstruction?**
- a. Creates 3D visualisations of collision scenes
 - b. **Models vehicle dynamics and collision geometry**
 - c. Simulates trajectories and occupant kinematics
 - d. Assists in validating multiple accident scenarios
87. **Which cartridge case type is typically used in high-powered rifle cartridges or military cannon ammunition?**
- a. Rimmed
 - b. Semi-rimmed
 - c. **Belted**
 - d. Rebated

88. **In forensic examination of steel reinforcement bars, which property is most critical for accident reconstruction?**
- Microstructural integrity under stress
 - Fatigue resistance under cyclic loading
 - Fracture toughness during impact
 - Yield strength and ductility in tension**
89. **Why did rimfire ammunition fail to gain widespread use in larger calibres?**
- It was too expensive to manufacture
 - The rim was too soft to withstand high pressures**
 - It required external priming powder
 - It lacked obturation capability
90. **Which of the following best indicates a *contact wound* in forensic ballistics?**
- Presence of tattooing around the wound
 - Blackening due to smoke deposits
 - Imprint of the muzzle on the target surface**
 - Metallic residues detected by SEM
91. **The recoil energy of a firearm is expressed as:**
- Foot-pounds, equivalent to kinetic energy of recoil**
 - Pounds per square inch, equivalent to chamber pressure
 - Grains per inch², equivalent to sectional density
 - Newtons, equivalent to muzzle velocity
92. **In sodium rhodizonate testing, deep purple spots confirm the presence of:**
- Lead**
 - Antimony
 - Barium
 - Copper
93. **Under Section 9 of the Arms Act, 1959, the minimum age required to legally acquire or possess a firearm is:**
- 16 years
 - 18 years
 - 21 years**
 - 25 years
94. **As per the Arms (Amendment) Act, 2019, the maximum number of firearms an individual can legally possess is:**
- One
 - Two**
 - Three
 - Four
95. **Choose the correct statement**
Which best differentiates their forensic utility in residue analysis?
- EDXRF: rapid, destructive bulk profiling**
 - SEM/EDX: high-resolution particle-specific analysis**
 - EDXRF: suited for batch comparison; SEM/EDX: evidentiary linkage**
 - Complementary: EDXRF for screening, SEM/EDX for particle validation**
- All are correct
 - Only A, B, and C are correct
 - Only B, C and D are correct**
 - None of correct
96. **Scorching of the target is primarily caused by:**
- Deposition of smoke particles from propellant
 - Embedding of unburned powder particles

- c. Vaporisation of metallic residues from the primer
 - d. Flame or hot gases escaping from the muzzle**
97. **Frame-by-Frame Playback. Why is it essential in forensic video analysis?**
- a. Audio clarity
 - b. Detect editing via colour/luminance changes**
 - c. Tape length check
 - d. All of these
98. **Which of the following is the first step in archiving a crime scene using video?**
- a. Close-up zoom of evidence
 - b. Establishing photography
 - c. Scene walk-through video**
 - d. CAD-based 3D imaging
99. **Which type of noise is most reduced by signal averaging in instrumental analysis?**
- a. Flicker noise
 - b. Shot noise
 - c. Thermal noise
 - d. White noise**
100. **According to the skid formula used in accident reconstruction, why does doubling the speed of a vehicle approximately quadruple its braking distance?**
- a. Tire friction decreases exponentially at higher velocities
 - b. Vehicle mass increases proportionally with velocity
 - c. Brake efficiency becomes zero above 60 mph
 - d. Kinetic energy is directly proportional to the square of velocity**
101. **Advantage of Raman Spectroscopy over IR spectroscopy is:**
- a. Raman spectroscopy can be used in aqueous solutions**
 - b. Raman spectroscopy can be used in gaseous mediums
 - c. Raman spectroscopy can be used in plasma
 - d. Raman spectroscopy can be used in electrolytes
102. **To dye a woolen cloth, we require:**
- a. Direct dye
 - b. Acid dye**
 - c. Basic dye
 - d. reactive dye
103. **In solving of vehicular accident cases which of the following analysis will be required:**
- a. Soil
 - b. Paint**
 - c. Cement
 - d. Mortar
104. **Fg, FFg, FFFg is standard method used to describe?**
- a. Wad
 - b. Primer**
 - c. Cartridge
 - d. Black gunpowder
105. **What principle does an Abbe's refractometer rely on to determine the refractive index of a substance?**
- a. Interference of light waves
 - b. Dispersion of light
 - c. Measurement of polarized light
 - d. Snells law of refraction**
106. **It is necessary to mention the temperature at which specific gravity is calculated, because**
- a. Mass of the substance changes with temperature

- b. Rigidity of the substance changes with temperature
 - c. **Density of the substance changes with temperature**
 - d. None of the mentioned
107. **Which of the following sample types is least suitable for FTIR analysis?**
- a. **Inorganic metals**
 - b. Drugs and narcotics
 - c. Paint and polymer residues
 - d. Textile fibers
108. **Which of the following instrumental techniques provides a chemical fingerprint of a fibre's dye composition?**
- a. **Thin-Layer Chromatography (TLC)**
 - b. Gas Chromatography (GC)
 - c. Raman Spectroscopy
 - d. Differential Scanning Calorimetry (DSC)
109. **Which of the following is NOT a major component of paint?**
- a. Binder
 - b. Pigment
 - c. Solvent
 - d. **Epoxy resin**
110. **What does the presence of titanium dioxide in paint indicate?**
- a. It is a solvent
 - b. **It is a common pigment in white paints**
 - c. It is an indicator of automotive primer
 - d. It increases the paint's adhesion
111. **Which of the following types of glass is designed to withstand high temperatures and is used in laboratory equipment?**
- a. Soda-lime glass
 - b. Tempered glass
 - c. **Borosilicate glass**
 - d. Laminated glass
112. **What happens to the refractive index of glass as temperature increases?**
- a. **It decreases**
 - b. It increases
 - c. It remains constant
 - d. It fluctuates unpredictably
113. **Which type of detector is commonly used in ICP-MS for ion detection?**
- a. Photomultiplier Tube (PMT)
 - b. **Electron Multiplier Detector (EMD)**
 - c. Flame Ionization Detector (FID)
 - d. Charged Coupled Device (CCD)
114. **The resolution of an ICP-MS system is typically expressed in terms of:**
- a. Ionization potential
 - b. **Mass-to-charge ratio (m/z)**
 - c. Wavelength (nm)
 - d. Detector voltage
115. **Why is gold commonly used for sample coating in SEM?**
- a. It enhances image contrast
 - b. It increases beam penetration
 - c. **It provides better electrical conductivity**
 - d. It absorbs secondary electrons
116. **Which of the following can cause charging effects in SEM imaging?**

- a. Low accelerating voltage
 - b. High beam current
 - c. Non-conductive samples**
 - d. Short working distance
117. **In forensic SEM analysis of gunshot residue (GSR), which element is typically detected?**
- a. Lead (Pb)
 - b. Barium (Ba)
 - c. Antimony (Sb)
 - d. All of the above**
118. **Which nanomaterial is commonly used in developing advanced propellants for firearms?**
- a. Gold nanoparticles
 - b. Carbon nanotubes
 - c. Nano-aluminum**
 - d. Silver nanoparticles
119. **In a crime scene sketch, an arrow should always be marked showing which direction?**
- a. East
 - b. West
 - c. South
 - d. North**
120. **Which of the following is/are considered the individual characteristics of Fired Bullet?**
- a. Jacketting of the bullet
 - b. Weight of the Bullet
 - c. Striation marks on LEA and GEA**
 - d. All of the above