ANSWER KEYS

(Correct Answers are marked in Bold Letters)

SECTION-A

1. **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
2. **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
3. **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**
4. **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
5. **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
6. **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
7. **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
8. **Which of the following is NOT recognized as a metabolite of diazepam?**
   - **a. Lorazepam**
   - b. Temazepam
   - c. Oxazepam

d. Desmethyldiazepam

9. **The classical confirmatory test for arsenic poisoning is known as:**
   a. Marquis test
   b. Mandelin's test
   c. Marsh test
   d. Vitali's test
10. **Which of the following alkaloids belongs to the Isoquinoline group?**
   a. Morphine
   b. Cocaine
   c. Papaverine
   d. Reserpine
11. **Which of the following compounds belongs to the class of polychlorinated hydrocarbons?**
   a. Malathion
   b. Parathion
   c. Endrin
   d. Diazinon
12. **Which among the following poisons is volatile in nature?**
   a. Cyanide
   b. Methyl parathion
   c. Brucine
   d. All of the above
13. **The Bharatiya Nyaya Sanhita primarily governs:**
   a. Civil disputes
   b. Administrative tribunals
   c. Rules of evidence
   d. Substantive criminal law
14. **"Who propounded the term 'White-Collar Crime'?"**
   a. Cesare Lombroso
   b. Edwin Sutherland
   c. Emile Durkheim
   d. Karl Marx
15. **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
16. **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.
17. **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

18. **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

19. **Choose the option nearest in meaning to the word 'Obfuscate':**
a. Clarify
b. Illuminate
c. Confuse intentionally
d. Simplify

20. **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

21. **Which of the following is considered transient evidence?**
a. Fingerprints
b. Bloodstains
c. Oduor
d. Footwear impressions

22. **In information technology and ergonomics, "HCI" refers to:**
a. High Computer Internet
b. High Computer Interference
c. Hold Human Complex
d. Human Computer Interaction

23. **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

24. **Which element among the following possesses the highest electron affinity?**
a. Nitrogen
b. Oxygen
c. Fluorine
d. Chlorine

25. **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

26. **Which chromatographic technique is most suitable for separation of non-volatile compounds?**
a. GCMS
b. Gas chromatography
c. GCHS

d. HPLC

27. **If sales increase from 200 units to 260 units, calculate the percentage increase.**
    a. 20%
    b. 25%
    c. 30%
    d. 35%
28. **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
29. **Which constitutional body among the following is incorrectly categorized as constitutional?**
    a. Election Commission of India
    b. Union Public Service Commission
    c. Finance Commission
    d. NITI Aayog
30. **The cerebellum is primarily associated with:**
    a. Hormonal regulation
    b. Body temperature control
    c. Coordination of voluntary movements
    d. Long-term memory storage
31. **Choose the correct preposition: "He is addicted _____ gambling."**
    a. with
    b. for
    c. to
    d. on
32. **The null hypothesis (H_0) generally represents:**
    a. Maximum certainty
    b. Presumption of guilt
    c. Alternative explanation
    d. No effect or no difference
33. **A footwear impression discovered in soft soil should be photographed:**
    a. Close-up scaled photography
    b. Long-range photography
    c. Mid-range photography
    d. All of the above
34. **In a positively skewed forensic dataset, the most appropriate measure of central tendency is generally the:**
    a. Mean
    b. Range
    c. Median
    d. Variance
35. **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

36. **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

37. **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

38. **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

39. **Grammar:Language::Formula: ?**
    a. Equations
    b. Calculations
    c. Mathematics
    d. Numeral

40. **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

41. **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

42. **Bandura's Social Learning Theory emphasizes the importance of which mechanism in the acquisition of behavior?**
    a. Genetic predisposition
    b. Observational learning and modeling
    c. Unconscious childhood conflicts
    d. Direct reinforcement only

43. **Which constitutional amendment reduced the voting age in India from 21 years to 18 years?**
    a. 42nd Amendment
    b. 44th Amendment
    c. 61st Amendment

d. 73rd Amendment

44. **The headquarters of the World Trade Organization (WTO) is situated in:**
    a. Brussels
    b. Geneva
    c. Paris
    d. New York
45. **Which of the following gases is NOT categorized as a greenhouse gas?**
    a. Methane
    b. Nitrogen
    c. Carbon dioxide
    d. Nitrous oxide
46. **If observed frequencies and expected frequencies are nearly identical, the Chi-square value will generally be:**
    a. Very high
    b. Negative
    c. Equal to one
    d. Very low
47. **Choose the antonym of the word "Ephemeral":**
    a. Fleeting
    b. Temporary
    c. Transient
    d. Eternal
48. **Which of the following correctly matches the typical magnifying powers of microscopes commonly used in forensic science?**
    a. Stereo microscope – up to 1000× magnification
    b. Compound light microscope – up to 100× magnification
    c. Comparison microscope – up to 400× magnification
    d. Electron microscope – up to 1,000,000× magnification
49. **Which casting material is most suitable for recovering fine tool marks from a steel surface at a crime scene?**
    a. Plaster of Paris
    b. Dental stone
    c. Mikrosil / Silicone-based casting compound
    d. Alginate
50. **In forensic analysis, systematic error produces:**
    a. Random fluctuations
    b. Increased objectivity
    c. Greater precision only
    d. Consistent deviation from the true value

SECTION-B

51. **The choice of extraction pH in toxicological analysis is primarily guided by:**
    a. Molecular weight
    b. pKa of the analyte
    c. Boiling point
    d. UV absorbance
52. **Which matrix is the specimen of choice for confirming postmortem ethanol results due to resistance to postmortem fermentation?**
    a. Liver tissue
    b. Urine
    c. Bile
    d. Vitreous Humor
53. **In mass spectrometry, the base peak represents:**
    a. Molecular ion peak
    b. Smallest fragment
    c. Most intense ion peak
    d. None of the above
54. **For urine samples, enzymatic hydrolysis prior to extraction is used to:**
    a. Release conjugated drugs
    b. Increase volatility
    c. Destroy interferences
    d. Reduce pH
55. **Prior to extraction, hair samples are typically decontaminated using:**
    a. Strong acids only
    b. UV radiation only
    c. Heating at high temperature
    d. Organic solvents and aqueous washes
56. **Phase I metabolism of drugs primarily involves:**
    a. Oxidation, reduction, hydrolysis
    b. Conjugation reaction
    c. Protein binding
    d. Renal filtration
57. **The main advantage of FTIR over dispersive IR is:**
    a. Lower sensitivity
    b. Faster data acquisition and higher signal-to-noise ratio
    c. Broader spectral range
    d. Requires no excitation
58. **Fluorescence differs from phosphorescence in that fluorescence:**
    a. Occurs from triplet state
    b. Has longer emission time
    c. Occurs from singlet excited state
    d. Requires no excitation
59. **A strong absorption near ~1700 cm^{-1} in IR spectrum typically indicates:**
    a. O–H stretching
    b. C–H bending
    c. N–H stretching
    d. C=O stretching
60. **In reversed-phase HPLC, the stationary phase is:**

a. Polar
b. Non-polar
c. Ionic
d. Gas

61. **The principle of cold vapour generation for mercury determination by AAS is based on:**
a. Formation of mercury oxide
b. Formation of mercury hydride
c. Oxidation of mercury
d. Conversion of Hg^{2+} to elemental Hg^{0} vapour

62. **Which are the three main components of a mass spectrometer in sequence?**
a. Detector → Ion Source → Mass Analyser
b. Mass Analyser → Ion Source → Detector
c. Vacuum System → Ion Source → Detector
d. Ion Source → Mass Analyser → Detector

63. **In the selected ion monitoring (SIM) mode of GC-MS used for forensic drug analysis, the analytical approach involves:**
a. Scanning the full mass range to produce a complete spectrum for library search
b. Monitoring several pre-selected ions and comparing their ratios to a standard
c. Selecting the molecular ion only and measuring its abundance
d. Simultaneously monitoring all ions using multiple Faraday cup detectors

64. **The four essential components of an NMR spectrometer are:**
a. UV lamp, sample holder, prism, and Faraday cup
b. Hollow cathode lamp, nebulizer, monochromator, and detector
c. Laser source, beam splitter, interferometer, and CCD detector
d. Strong magnet, radiofrequency transmitter, radiofrequency receiver, and recorder

65. **Chemical ionization (CI) differs from EI primarily because it:**
a. Produces extensive fragmentation
b. Is a softer ionization technique yielding prominent molecular ions
c. Uses photons instead of electrons
d. Requires no reagent gas

66. **Approximately what percentage of the primary electrons rebound off the surface of a specimen in SEM, and what are these electrons called?**
a. 5–10%; reflected electrons
b. 50–60%; scattered electrons
c. 20–30%; backscattered electrons
d. 70–80%; secondary electrons

67. **ISO/IEC 17025:2017 applies to which type of laboratory?**
a. Pharmaceutical manufacturing laboratories only
b. Testing and calibration laboratories
c. Clinical diagnostic laboratories only
d. None of the above

68. **For which of the following measurements can metrological traceability be established?**
a. Weight, length, temperature and volume
b. Retention time, peak area and fragmentation pattern
c. Solubility, melting point and refractive index only
d. All of the above

69. **A CRM vial has the label: "Fentanyl in methanol, 1.00 mg/mL ± 0.02 mg/mL." What does the ±0.02 represent?**
a. Standard deviation
b. Relative Standard Deviation

c. Recovery
d. Measurement Uncertainty

70. **The blood alcohol concentration (BAC) limit prescribed under the Motor Vehicles Act 1988 for drivers in India is?**
a. 10 mg per 100 mL of blood
b. 20 mg per 100 mL of blood
c. 30 mg per 100 mL of blood
d. 50 mg per 100 mL of blood

71. **Brass is an alloy of which two metals, and what is its forensic significance?**
a. Iron and nickel — found in stainless steel surgical instruments
b. Lead and tin — used in solder recovered from improvised explosive devices
c. Aluminium and magnesium — found in aircraft components in crash investigations
d. Copper and zinc — identified in GSR particulates from bullet casings to confirm firearm discharge

72. **The exact concentration of sodium carbonate solution used to wash the hands of the accused in a trap case is?**
a. 0.5–1% w/v
b. 2–3% w/v
c. 5–10% w/v
d. 10–15% w/v

73. **Which of the following is TRUE regarding energy propagation in deflagration?**
a. It is independent of pressure
b. It occurs only in solids
c. It propagates through shock waves
d. It propagates via heat transfer and flame front

74. **Which combination is correctly matched?**
a. Primary explosives: low sensitivity, used as main charge
b. Secondary explosives: highly sensitive, used in detonators
c. Primary explosives: highly sensitive, used for initiation
d. Low explosives: detonate with supersonic velocity

75. **The unit of radioactivity in SI is:**
a. Curie
b. Becquerel
c. Gray
d. Sievert

76. **The term 'brisance' in explosives refers to:**
a. Speed of ignition
b. Ability to absorb moisture
c. Shattering effect of an explosive
d. Color of explosion

77. **Which material category is most suitable for direct use in nuclear weapons?**
a. Low enriched uranium (<20% U-235)
b. Natural uranium
c. High enriched uranium (>20% U-235)
d. Thorium

78. **A forensic chemist adds Griess reagent and diphenylamine reagent to an acetone extract. The Griess reagent produces no colour but the diphenylamine reagent produces a blue colour. Which explosive is indicated?**
a. TNT
b. RDX
c. PETN

d. Chlorate

79. **The commercial quantity of Ganja (cannabis) under the NDPS Act is?**
    a. 1 kg
    b. 10 kg
    c. 20 kg
    d. 100 kg
80. **The NDPS Act 1985 has how many Chapters and Sections in total?**
    a. 6 Chapters and 83 Sections
    b. 4 Chapters and 60 Sections
    c. 8 Chapters and 100 Sections
    d. 5 Chapters and 75 Sections
81. **Which of the following best defines nuclear forensic analysis?**
    a. Measurement of radiation intensity only
    b. Study of nuclear reactor design
    c. Analysis of nuclear or radioactive material to determine its origin and history
    d. Detection of radioactive contamination in food
82. **Which of the following characteristics is used to define kerosene according to BIS specifications in forensic analysis?**
    a. Flash point ≥ 25°C and smoke point ≥ 10 mm
    b. Flash point ≥ 35°C and smoke point ≥ 18 mm
    c. Flash point ≥ 45°C and smoke point ≥ 20 mm
    d. Flash point ≥ 30°C and smoke point ≥ 15 mm
83. **Which of the following is most relevant when analyzing chemical warfare agents in environmental samples?**
    a. Only scheduled chemicals
    b. Only reaction intermediates
    c. Scheduled chemicals along with degradation/reaction products
    d. Only inorganic ions
84. **Which enzyme converts alcohol to acetaldehyde in body?**
    a. Peptase
    b. Alcohol Dehydrogenase (ADH),
    c. Alcohol Hydrogenase
    d. Aldehyde Hydrogenase
85. **What is ISO 9001 within the ISO family?**
    a. ISO is a standard within the ISO 9001 family
    b. ISO 9001 is a standard within the ISO family
    c. There is no connection between ISO and ISO 9001
    d. ISO and ISO 9001 are basically synonyms
86. **In reversed phase HPLC, there is a**
    a. non polar solvent/polar column
    b. polar solvent/non-polar column
    c. non polar solvent/non-polar column
    d. any of the above.
87. **In a hollow cathode lamp, the cathode is constructed from**
    a. Quartz
    b. The element to be investigated
    c. Tungsten
    d. Aluminum
88. **Which molecular property must change during a vibration for it to be Raman active?**
    a. Dipole moment
    b. Polarizability

c. Atomic weight
d. Magnetic field

89. **After death level of which of the following decrease in the blood**
a. Sodium
b. Potassium
c. Magnesium
d. None

90. **Why is derivatization sometimes performed on a sample before GLC analysis?**
a. To increase the compound's volatility
b. To improve its thermal stability
c. To enhance detector response
d. All of the above

91. **Flame Ionization Detector (FID) in GLC primarily responds to**
a. Halogenated compounds
b. Inorganic gases
c. Organic compounds containing C-H bonds
d. Carbon dioxide

92. **A mass spectrum shows a peak at m/z 184, which is also the base peak and the peak with the highest m/z value. This peak most likely represents the:**
a. Solvent ion
b. A common contaminant
c. Molecular ion (M+)
d. Isotope peak

93. **Which type of mass analyzer separates ions by measuring the time it takes for them to travel a fixed distance to the detector?**
a. Quadrupole
b. Magnetic Sector
c. Time-of-Flight (TOF)
d. Ion Trap

94. **LSD is a semi-synthetic compound whose chemical structure is closely related to which endogenous neurotransmitter?**
a. Acetylcholine
b. Dopamine
c. GABA
d. Serotonin

95. **In a standard urine drug screen, the primary inactive metabolite of THC that is typically detected for an extended period is**
a. 11-hydroxy-THC
b. THC-COOH (11-nor-9-carboxy-THC)
c. Cannabidiol (CBD)
d. Delta-8-THC

96. **The Beer-Lambert Law, crucial for spectrophotometry, is mathematically expressed as**
a. $A = \varepsilon/bc$
b. $A = \varepsilon bc$
c. $\varepsilon = Abc$
d. $c = A\varepsilon/b$

97. **For analyzing trace levels of heavy metals like cadmium in blood, which atomization technique offers the highest sensitivity?**
a. Flame AAS (FAAS)
b. Cold Vapor AAS (CVAAS)
c. Hydride Generation AAS (HGAAS)

d. Graphite Furnace AAS (GFAAS)

98. **A suspected case of chronic lead poisoning, which biological sample is most commonly analyzed using AAS?**
    a. Urine
    b. Whole blood
    c. Saliva
    d. Cerebrospinal fluid
99. **The unit for molar absorptivity (ε) in the Beer-Lambert law is typically:**
    a. mol L^{-1} cm^{-1}
    b. L mol^{-1} cm^{-1}
    c. cm L^{-1} mol^{-1}
    d. Unit less
100. **The local corrosive action of oxalic acid is due to its:**
    a. Strong dehydrating property
    b. High acidity (low pH)
    c. Oxidizing potential
    d. Affinity for calcium, forming calcium oxalate
101. **Among the following, which is primarily a gaseous irritant poison affecting the respiratory tract?**
    a. Phosphorus
    b. Chlorine
    c. Iodine
    d. Boric Acid
102. **Which feature is characteristic of acute yellow phosphorus poisoning?**
    a. Cherry-red skin discoloration
    b. Bitter almond odour
    c. Luminous vomitus with a garlic odour
    d. Blue line on the gums
103. **The flash point of typical standard diesel is**
    a. 35°C-40°C
    b. 10°C-20°C
    c. 60°C-85°C
    d. 110°C-145°C
104. **Signal splitting in NMR arises from**
    a. Shielding effect
    b. Spin-spin decoupling
    c. Spin-spin coupling
    d. Deshielding effect
105. **Diphenyl Amine Reagent (DPA) used for identification of explosive is prepared for dissolving 1gm of diphenylamine in 100 ml of which of the following**
    a. Concentrated Acetic Acid
    b. Concentrated Hydrochloric Acid
    c. Concentrated Nitric Acid
    d. Concentrated Sulphuric Acid
106. **Kozelaka and Hine method is used for the quantitative estimation of**
    a. Cannabis
    b. Cocaine
    c. Ethyl Alcohol
    d. Methyl Alcohol
107. **Which of the following is the cause of 'Hooch Tragedy'?**
    a. Acetic Acid
    b. Argemone

c. Formalin
d. Methanol

108. **The IR region most widely used for qualitative analysis is**
a. Near IR
b. mid IR
c. Far IR
d. All of the above

109. **Filters used in XRD may eliminate**
a. Kα1
b. Kβ
c. K α2
d. All of the above

110. **The atomic number is not changed by which type of radioactive decay?**
a. Beta
b. Gamma
c. Alpha
d. The atomic number is affected by all forms of radioactive decay

111. **Column efficiency is measured in terms of number of plates which is**
a. inversely related to the square of the peak width
b. directly related to the square of the peak width
c. inversely related to the cube root of the peak width
d. directly related to the square of the peak width

112. **Accelerated Solvent Extraction (ASE) improves extraction efficiency by using:**
a. Low temperature and vacuum
b. Elevated temperature and pressure
c. Ultraviolet radiation only
d. Magnetic separation

113. **Chromium is added to Stainless steel to:**
a. Improve corrosion resistance
b. Increase density
c. Reduce the melting point
d. Increase electrical resistance

114. **Formation of the brown colored ring in the brown ring test is due to the formation of:**
a. $[Fe(NO)]^{2+}$
b. $[Fe(NO)]^{+}$
c. $[Fe(NO)_2]^{+}$
d. $[Fe(NO)_2]^{2+}$

115. **The passive headspace concentration in fire debris examination is:**
a. Measuring flash point
b. Estimation of moisture content
c. Determination of melting point
d. Extraction of ignitable liquid residues

116. **Potassium Chlorate reacts with concentrated Sulphuric Acid, the orange-yellow gas is produced due to** :
a. Cl_2
b. ClO
c. ClO_2
d. ClO_3

117. **The Henderson–Hasselbalch equation is:**
a. pH = pKa-log([acid]/[base])
b. pH = pKa+log([acid]/[base])

c. pKa=14+pH+log([acid]/[base])
d. pKa= 14-pH+log([acid]/[base])

118. **Scintillation counters detect radiation through:**
a. Heat generation
b. Production of light flashes in scintillating material
c. Magnetic induction
d. Chemical precipitation

119. **Phosgene is a:**
a. Blister agent
b. Blood agent
c. Choking agent
d. Riot control agent

120. **The toxic substance commonly responsible for epidemic dropsy due to adulterated mustard oil is:**
a. Aflatoxin
b. Methanol
c. Sanguinarine
d. Cyanide