0304N40

Candidate's Seat No :_____

M.Sc Semester-4 Examination

508

Forensic Science (EA)

Time : 2-30 Hours] **April-2024** **[Max. Marks : 70**

1. Which of the following is NOT a type of light source used in UV-Vis spectrophotometry?
   (A) Tungsten Halogen Lamp (B) Deuterium Lamp
   (C) Hydrogen Discharge Lamp (D) Sodium Vapor Lamp

2. Stability is a crucial factor for the light source in a UV-Vis spectrophotometer. What does stability ensure?
   (A) Consistent intensity of emitted light (B) Emission across a broad range of wavelengths
   (C) Ability to focus the light beam (D) Production of polarized light

3. Raman spectroscopy analyzes a sample based on:
   (A) Absorption of specific wavelengths of light (B) Inelastic scattering of light molecules
   (C) Emission of light after excitation (D) Fluorescence properties of the sample

4. Raman spectroscopy provides information about:
   (A) The elemental composition of a sample (B) The functional groups present in a molecule
   (C) The concentration of specific molecules (D) The size and shape of molecules

5. Fluorescence and UV-visible absorption spectroscopy differ in
   (A) The type of light source used (B) The information obtained about the molecule
   (C) Both (a) and (b) (D) Neither (a) nor (b)

6. Following column packing materials are available in HPLC:
   (A) Microporous (B) Pellicular
   (C) Bonded Phase (D) All of above

7. Spin-spin coupling is observed in
   (A) Raman Spectroscopy (B) Neutron Activation Analysis
   (C) Mass spectrometry (D) NMR

8. A carrier gas in GLC should have the following characteristics except
   (A) It should be inert (B) It should be mixtures of gases
   (C) It should be easily available (D) It should not cause explosion or fire

9. The Rf value of a substance depends upon...
   (A) Solvent emplyoed (B) Medium used for seperation
   (C) Nature of mixture (D) all of the above

10. Detection of heavy metal poison in hair and nail may be possible by which instrument?
    (A) LC-MS (B) FTIR
    (C) AAS (D) NAA

11. Considering mode of administration, poison acts more rapidly when:
    (A) Inhaled in gaseous state (B) Injected intramuscularly
    (C) Injected subcutaneously (D) Applied to skin

12. Dry ashing method is used for the extraction of following poisons from viscera:

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(A) Organic volatile (B) Organic non-volatile
(C) Metallic (D) None of the above

13. Screening tests are performed for
(A) Tentative identification (B) Definite identification
(C) Quantitative analysis (D) Semiquantitative analysis

14. 'Stass-Otto' process is used for:
(A) Extraction of poisons (B) Extraction of DNA
(C) Extraction of antigens (D) Isolation of compliments

15. Which one of the following is not an insecticide of vegetable origin?
(A) Nicotine (B) Pyrethrins
(C) Rotenone (D) Chlorodane

16. The time interval that a drug takes for its concentration to drop to half of its concentration is known as
(A) Full life period (B) Sleep life period
(C) Half-life period (D) Quarter life period

17. 90% of the total ethanol consumed in body is converted into acetaldehyde and acetic acid within the
(A) Liver (B) Lung
(C) Stomach (D) Kidney

18. Which of the following instrument is used to identify the organic drugs?
(A) Infra-red spectrophotometer (B) Polymerase chain reaction
(C) AAS (D) Automatic blood analyzer

19. The magnified effects from the combination of drugs is called
(A) Tolerance (B) Dependence
(C) Synergism (D) Reverse tolerance

20. Which of the following is not classified as Hallucinogen?
(A) Methaqualone (B) Psilocybin
(C) Marijuana (D) Mescaline

21. Optical components in UV spectrometer are made up of:
(A) Glass (B) Quartz
(C) Sodium-Halide Bromide (D) Plastic

22. The rate of ...'..... will depend in part on what else is already present in the stomach at the time of ingestion.
(A) absorption (B) distribution
(C) metabolism (D) elimination

23. Process whereby a drug or other substance is chemically changed to different but related substances is known as.
(A) absorption (B) distribution
(C) metabolism (D) elimination

24. Chromatography and immunoassay are the categories of.
(A) sampling (B) extraction
(C) separation (D) screening

25. The only accepted method for drug confirmation in forensic toxicology is…
(A) HPLC (B) FTIR
(C) MS (D) AAS

26. Which term is used for a level below which a reliable result cannot be determined by mass spectrometry?
(A) cut-off levels (B) limit of detection
(C) recovery rate (D) linearity

27. Which compound is used for remedial purging of poisons and drugs?
(A) sodium chloride (B) sodium sulphate
(C) sodium hydroxide (D) sodium carbonate

28. Which technique is generally used for qualitative assay?
(A) GC-MS (B) HPLC
(C) TLC (D) MS

29. A person's behaviour reflects the disorganizing functional changes produced by the alcohol on his central nervous system is termed?
(A) under the influence (B) under intoxication
(C) A and B both (D) none of the above

30. The metabolites of cocaine is generally detectable in urine for period of…
(A) 24-36 hours (B) 24–72 hours
(C) 12-24 hours (D) 72-84 hours

31. Metabolites of cocaine can be detected in
(A) blood (B) urine
(C) serum (D) all of the above

32. Delirium is seen in all of the following poisonings, except:
(A) dhatura (B) nux vomica
(C) cocaine (D) lead

33. Reinsch test is used in diagnosis of poisoning due to:
(A) Arsenic (B) lead
(C) iron (D) copper sulfate

34. The poison that can be detected in hair/bones long after death is:
(A) Lead (B) Mercury
(C) Arsenic (D) Cannabis

35. Active component of ganja:
(A) Tetrahydrocannabinol (B) LSD
(C) N-methyl tryptophan (D) Ricin

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0304N40 – 4 Candidate's Seat No : _____

M.Sc Semester-4 Examination

508

Forensic Science (EB)

April-2024

Time : 2-30 Hours] **[Max. Marks : 70**

1. Which of the following is NOT a common method for collecting glass evidence at a crime scene?
   (A) Taping (B) Vacuuming
   (C) Picking up by hand (D) Burning

2. Which of the following is NOT a characteristic that can be used to compare and match glass evidence?
   (A) Density (B) Refractive index
   (C) Color (D) Volume

3. What is the process called when glass is heated and cooled to reduce internal stresses and increase its strength?
   (A) Tempering (B) Laminating
   (C) Annealing (D) Polishing

4. What type of fracture pattern is indicative of the direction of force that caused the fracture?
   (A) Radial fracture (B) Concentric fracture
   (C) Linear fracture (D) None of the above

5. What is the name of the type of glass that contains small fragments of plastic between two layers of glass, making it more resistant to breaking?
   (A) Tempered glass (B) Laminated glass
   (C) Plate glass (D) Safety glass

6. Which of the following is a common test used to determine the refractive index of glass?
   (A) Density test (B) Float test
   (C) Becke line test (D) Burn test

7. Which of the following is an example of a class characteristic in tool marks?
   (A) The size and shape of the mark (B) The angle and direction of the mark
   (C) The type of tool used to make the mark (D) None of the above

8. Which of the following is an example of an individual characteristic in tool marks?
   (A) The size and shape of the mark (B) The angle and direction of the mark
   (C) The type of tool used to make the mark (D) None of the above

9.. Which of the following is not a factor that can affect tool mark evidence?
   (A) The type of surface the mark was made on (B) The force applied to the tool
   (C) The weather conditions at the time of the crime (D) The material the tool is made from

10. Which of the following is not a factor that can affect the composition of soil?
(A) Climate (B) Vegetation
(C) Geology (D) Air pollution

11. What is the primary purpose of collecting soil samples in a forensic investigation?
(A) To identify the type of soil (B) To determine the age of the soil
(C) To locate the source of the soil (D) To assess the nutrient content of the soil

12. Which of the following is the most common method of collecting soil samples in forensic investigations?
(A) Soil coring (B) Soil excavation
(C) Soil scraping (D) Soil augering

13. Which instrument is commonly used to collect paint samples?
(A) Microscope (B) Polarimeter
(C) Scanning Electron Microscope (D) Razor blade or scalpel

14. What technique is used to examine the cross-section of a paint sample?
(A) Polarized light microscopy (B) Scanning electron microscopy
(C) Fourier transform infrared spectroscopy (D) X-ray fluorescence spectroscopy

15. Which technique is used to identify the chemical composition of a paint sample?
(A) Scanning electron microscopy (B) X-ray fluorescence spectroscopy
(C) Fourier transform infrared spectroscopy (D) Atomic absorption spectroscopy

16. What information can be obtained from the binder in a paint sample?
(A) The type of pigment used (B) The age of the paint
(C) The manufacturer of the paint (D) The type of resin used in the paint

17. Fouling is useful in determination of approximate
(A) Distance of fire (B) Time of fire
(C) Penetration of projectile (D) Velocity of projectile

18. 7.62 mm AK-47 assault rifle has the magazine capacity of
(A) 20 (B) 25
(C) 30 (D) 40

19. The ejector is not present in the following:
(A) Carbine (B) Revolver
(C) Service rifle (D) Shot gun

20. Assertion (A): The penetration power of shot gun is more than service rifle.

Reason (R): Rifle produces more energy inside the barrel as compared to shot gun.
Codes :
(A) (A) is correct but (R) is wrong. (B) (A) is wrong (R) is correct
(C) Both (A) and (R) are correct. (D) Both (A) and (R) are wrong.

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21. The diameter of LG Pellet is
(A) 0.25" (B) 0.35"
(C) 0.40" (D) 0.45"

22. Walker Test of GSR is done for the identification of presence of
(A) Metallic residue (B) Nitrate
(C) Sulphur (D) Nitrite

23. It is not the component of rifle Cartridge
(A) Cartridge case (B) Primer
(C) Projectile (D) Wad

24. Berdon primer is a primer
(A) within an anvil (B) without an anvil
(C) in the form of pill (D) primer in the centre of the cartridge

25. The diameter of 8 bore shot gun is
(A) 0.615" (B) 0.729"
(C) 0.835" (D) 0.913"

26. The trigger pull of service rifle is
(A) 6 – 7 lbs (B) 9 – 12 lbs
(C) 12 – 15 lbs (D) 15 – 18 lbs

27. Zip guns are
(A) Country made guns (B) Rifles
(C) Machine guns (D) Carbines

28. In the gunshot wound, the term back spatter refers to
(A) Ejection of blood and tissues from exit wound (B) Ejection of projectile from the exit wound
(C) Ejection of projectile from entrance wound (D) Ejection of blood and tissues from entrance gunshot wound

29. Chronograph is an instrument which measures the following in forensic ballistics:
(A) Temperature inside the barrel of gun (B) Velocity of the projectile
(C) Trajectory of the projectile (D) Angle of fire of a gun

30. Bullet that leaves a visible smoke mark on the flight is called
(A) Fragile bullet (B) Jacketed bullet
(C) Tracer bullet (D) Hollow point bullet

31. The following mark is not found in fired cartridge case
(A) Firing pin mark (B) Rifling mark
(C) Chamber mark (D) Breach face mark

32. What is the primary purpose of speaker identification techniques?
(A) To identify the language being spoken (B) To determine the emotional state of the speaker
(C) To recognize and verify the identity of a speaker (D) To analyze speech patterns for forensic purposes

33. Which of the following is a component of voice production theory?

(A) Digital signal processing (B) Vocal folds vibration

(C) Optical character recognition (D) Image compression techniques

34. What technique is commonly used for analyzing speech signals in the frequency domain?

(A) Fast Fourier Transform (FFT) (B) Singular Value Decomposition (SVD)

(C) Principal Component Analysis (PCA) (D) Wavelet Transform

35. Which part of the human anatomy is primarily responsible for speech production?

(A) Lungs (B) Vocal cords

(C) Stomach (D) Liver

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0304N40—8 Candidate's Seat No :_____

M.Sc Semester-4 Examination

508

Forensic Science (EC)

Time : 2-30 Hours] **April-2024** **[Max. Marks : 70**

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2. Stability is a crucial factor for the light source in a UV-Vis spectrophotometer. What does stability ensure?
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10. Detection of heavy metal poison in hair and nail may be possible by which instrument?
   (A) LC-MS (B) FTIR
   (C) AAS (D) NAA

11. Current techniques for bloodstain analysis include:
(A) Precipitin tests
(B) ABO blood typing and Rh factor determination
(C) Chemiluminescent detection of blood markers
(D) All of the above

12. The ABO blood group system relies on the presence or absence of specific carbohydrates on the surface of:
(A) Red blood cells (erythrocytes)
(B) White blood cells (leukocytes)
(C) Platelets (thrombocytes)
(D) Plasma proteins

13. A key component used for presumptive identification of semen stains is:
(A) Hemoglobin
(B) Albumin
(C) Acid phosphatase
(D) Uric acid

14. Emerging techniques in semen analysis may involve:
(A) Differentiation between different individuals based on semen proteins
(B) Age estimation of the semen donor
(C) Identification of specific medications in the semen
(D) All of the above

15. Saliva contains a variety of enzymes, including
(A) Amylase, which aids in carbohydrate digestion
(B) Lipase, which breaks down fats
(C) Trypsin, which is active in protein digestion
(D) All of the above

16. Serological testing in forensics aims to identify the presence of:
(A) Body fluids like blood, semen, and saliva
(B) Fingerprints left at a crime scene
(C) Trace evidence like hair and fibers
(D) Narcotic drugs

17. Negative results in serological testing indicate the:
(A) Confirmed presence of a specific body fluid
(B) Absence of the body fluid being tested for
(C) Inconclusive nature of the test results
(D) Need for further analysis using different techniques

18. DNA analysis in forensic investigations helps identify individuals based on their unique:
(A) ABO blood group
(B) Fingerprint patterns
(C) DNA profile
(D) Facial features

19. Which of the following biological samples can be used for DNA profiling?
(A) Blood
(B) Saliva
(C) Hair (follicle with root)
(D) All of the above

20. Restriction Fragment Length Polymorphism (RFLP) was an earlier DNA typing system that has been largely replaced due to:
(A) Higher sensitivity and faster analysis of newer methods
(B) Difficulty in interpreting complex RFLP banding patterns
(C) Requirement of larger DNA sample quantities
(D) All of the above

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21. Short Tahdem Repeat (STR) analysis is the current gold standard in forensic DNA profiling because it offers:

(A) Highly polymorphic markers with high discrimination power
(B) Shorter fragment sizes suitable for degraded DNA samples
(C) Automated analysis with readily interpretable results
(D) All of the above

22. MiniSTR and X-STR systems are variations of STR analysis designed for

(A) Profiling highly degraded or limited DNA samples
(B) Analyzing specific chromosomal regions like the X chromosome
(C) Identifying specific mutations associated with diseases
(D) Differentiating between human and non-human DNA

23. Mitochondrial DNA (mtDNA) analysis is used in forensics primarily for:

(A) Individual identification due to its high variability
(B) Paternal lineage tracing due to its maternal inheritance
(C) Differentiating between identical twins
(D) Identifying the presence of bacterial infections

24. Non-human DNA testing can be crucial in forensic cases involving:

(A) Animal bite marks and hair samples
(B) Identifying the source of plant materials like fibers
(C) Distinguishing between human and animal bloodstains
(D) All of the above

25. Genetic polymorphisms in red blood cell enzymes like ESD and EAP can be used to:

(A) Exclude a suspect from an investigation
(B) Determine the sex of an unknown individual
(C) Provide additional supporting evidence with DNA profiling
(D) Identify specific diseases associated with the enzyme variation

26. When interpreting DNA profiles, it is important to consider:

(A) The number of matching alleles at each analyzed locus
(B) The statistical probability of a random match in the population
(C) The presence or absence of control samples
(D) All of the above

27. Quality control measures are essential in forensic DNA analysis to ensure:

(A) The accuracy and reliability of the results
(B) The proper functioning of the equipment used
(C) The prevention of contamination with extraneous DNA
(D) All of the above

28. Forensic anthropologists rely on various characteristics to identify bones. These characteristics include:

(A) Size and shape
(B) Surface texture and presence of landmarks
(C) Internal structure visible on cross-sections
(D) All of the above

29. Anatomical characteristics used in bone identification consider the bone's:

(A) Position within the skeleton
(B) Connection points with other bones
(C) Presence of muscle attachment sites
(D) All of the above

30. Distinguishing between human and non-human bones is crucial in forensic investigations because:

(A) Human bones are generally larger and more robust
(B) The presence of a foramen magnum is unique to human skulls
(C) Techniques used for human and animal bone analysis differ significantly
(D) Animal bones can mislead the investigation by suggesting human remains

31. Forensic anthropologists can estimate the age of an individual from skeletal remains by analyzing:
(A) The degree of fusion of epiphyseal growth plates
(B) The development and wear patterns on teeth
(C) Degenerative changes in bones and joints
(D) All of the above

32. Magnetic resonance imaging (MRI) is not typically used in forensic anthropology due to:
(A) High cost and limited availability of MRI scanners
(B) Difficulty in obtaining high-resolution images of bones
(C) Potential damage to fragile skeletal remains
(D) All of the above

33. Computed tomography (CT) scan technology provides:
(A) Three-dimensional reconstructions of skeletal remains
(B) Detailed information about bone density and porosity
(C) Virtual manipulation of bones for analysis
(D) All of the above

34. The role of a forensic anthropologist extends beyond bone identification to:
(A) Assisting in crime scene investigations
(B) Estimating the postmortem interval (PMI)
(C) Contributing to victim identification efforts
(D) All of the above

35. Forensic anthropology plays a vital role in:
(A) Mass fatality incidents and disaster victim identification
(B) Investigations involving suspected child abuse or neglect
(C) Archaeological studies of ancient human populations
(D) All of the above

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M.Sc Semester-4 Examination

508

Forensic Science (ED)

Time : 2-30 Hours] **April-2024** **[Max. Marks : 70**

1. Which of the following best describes the primary purpose of Mobile and Wireless Device Forensics?
   A) Retrieving deleted text messages and call logs from a smartphone.
   B) Identifying security vulnerabilities in mobile operating systems.
   C) Analyzing wireless network traffic to detect unauthorized access.
   D) Examining hardware components of mobile devices for physical tampering.

2. A forensic analyst needs to recover deleted photos from a suspect's smartphone. Which of the following methods would be most appropriate for this task?
   A) Using a forensic tool to extract data from the device's memory.
   B) Analyzing the smartphone's IMEI to track its location history.
   C) Monitoring the device's network traffic for incoming data packets.
   D) Physically disassembling the device to access the memory chip.

3. Which of the following scenarios presents the greatest challenge in mobile device forensics?
   A) Recovering data from a smartphone with a cracked screen.
   B) Analyzing a mobile app's source code for vulnerabilities.
   C) Extracting encrypted data from a password-protected tablet.
   D) Tracking the location history of a stolen smartwatch.

4. Develop a protocol for preserving chain of custody in mobile device forensics investigations.
   A) Document the device's physical condition upon seizure.
   B) Create a backup of the device's data before analysis.
   C) Assign unique identification numbers to evidence items.
   D) Store the device in a secure, temperature-controlled environment.

5. Which of the following best defines cyberbullying?
   A) Hacking into someone's social media account.
   B) Sending threatening messages via email.
   C) Posting harmful or abusive content online to harass others.
   D) Creating fake profiles to impersonate someone.

6. How does doxxing differ from cyberstalking?
   A) Doxxing involves sending unsolicited messages to someone.
   B) Cyberstalking involves publicly revealing private information about an individual.
   C) Doxxing is a form of cyberbullying.
   D) Cyberstalking typically occurs through social media platforms.

7. Suppose a company's confidential information is leaked on social media by an employee. What type of crime does this represent?
   A) Identity theft
   B) Cyberbullying

C) Corporate espionage
D) Phishing

8. Which of the following is an example of volatile digital evidence?
A) Files stored on a hard disk drive (HDD).
B) Internet browsing history.
C) Photos stored on a USB flash drive.
D) Documents printed from a computer.

9. If a forensic investigator needs to collect volatile digital evidence from a suspect's computer, what should be the first step?
A) Use specialized software to capture volatile data in real-time.
B) Shut down the computer to prevent further changes to the evidence.
C) Take a photograph of the computer screen.
D) Remove the hard drive for analysis.

10. Differentiate between volatile and non-volatile digital evidence, providing examples for each type.
A) Volatile evidence includes files stored on cloud servers, while non-volatile evidence includes email logs.
B) Volatile evidence can be easily altered, while non-volatile evidence remains unchanged over time.
C) Volatile evidence is temporary and resides in the device's memory, while non-volatile evidence is stored on permanent storage media.
D) Volatile evidence is difficult to recover, while non-volatile evidence can be easily copied to external devices.

11. What is the primary purpose of creating a forensic image of digital evidence?
A) To make a backup copy of the evidence for analysis.
B) To extract specific files from the evidence.
C) To permanently delete incriminating data.
D) To analyze the metadata associated with the evidence.

12. Why is hashing used in digital forensics?
A) To recover deleted files from digital devices.
B) To encrypt sensitive data during transmission.
C) To verify the integrity of forensic images and other digital evidence.
D) To identify the physical location of digital evidence.

13. Which of the following scenarios illustrates the importance of hashing in digital forensics?
A) A forensic investigator identifies a suspect based on recovered deleted files.
B) Two forensic examiners obtain different hash values for the same evidence.
C) A computer is seized without following proper chain of custody procedures.
D) A suspect confesses to the crime during interrogation.

P.T.O

NHC-14

14. What does TCP/IP stand for?
A) Transmission Control Protocol/Internet Protocol
B) Time Control Protocol/Internet Provider
C) Transfer Control Protocol/Internet Protocol
D) Transistor Computer Protocol/Internet Protocol

15. What is the purpose of DNS in a computer network?
A) Encrypt data transmission
B) Map domain names to IP addresses
C) Manage network traffic flow
D) Provide physical connectivity between devices

16. How does a hub differ from a switch in a network?
A) A hub operates at the Data Link layer, while a switch operates at the Network layer.
B) A hub sends data packets only to the intended recipient, while a switch broadcasts data to all connected devices.
C) A hub forwards data packets based on IP addresses, while a switch forwards packets based on MAC addresses.
D) A hub does not filter network traffic, while a switch intelligently routes traffic to specific devices.

17. Which subnet mask would you use for a network that supports up to 254 hosts?
A) 255.255.255.0
B) 255.255.255.128
C) 255.255.255.192
D) 255.255.255.224

18. Explain the process of TCP three-way handshake.
A) A device sends a SYN packet to initiate a connection, receives an ACK-SYN packet from the server, and sends an ACK packet to confirm the connection.
B) A device sends an ACK packet to initiate a connection, receives a SYN-ACK packet from the server, and sends a SYN packet to confirm the connection.
C) A device sends a SYN packet to initiate a connection, receives a SYN-ACK packet from the server, and sends another SYN packet to confirm the connection.
D) A device sends a SYN packet to initiate a connection, receives a SYN-ACK packet from the server, and sends a FIN packet to terminate the connection.

19. What is a common method used by attackers to gain unauthorized access to a network?
A) Phishing
B) Firewall configuration
C) Encryption
D) Intrusion Detection System (IDS)

20. How does a Denial of Service (DoS) attack disrupt a network?
A) By stealing sensitive information from network devices

B) By flooding the network with excessive traffic, causing it to become unavailable
C) By installing malicious software on network servers
D) By intercepting and modifying data packets in transit

21. What is the purpose of a SQL injection attack?
A) To overload a network with excessive traffic
B) To gain unauthorized access to a database by exploiting vulnerabilities in SQL queries
C) To intercept and decrypt encrypted data transmitted over the network
D) To trick users into revealing sensitive information through deceptive emails

22. Which security measure can help mitigate the risk of network eavesdropping?
A) Implementing strong encryption protocols
B) Installing antivirus software on network servers
C) Configuring access control lists (ACLs) on routers
D) Deploying intrusion detection systems (IDS)

23. Evaluate the effectiveness of a firewall in protecting a network against external threats.
A) Firewalls are highly effective in blocking all types of network attacks.
B) Firewalls provide basic protection but may be bypassed by sophisticated attackers using advanced techniques.
C) Firewalls are unnecessary as modern operating systems have built-in security features.
D) Firewalls are only effective against internal threats and cannot protect against external attacks.

24. Assess the role of employee training in mitigating network security risks.
A) Employee training is essential for raising awareness about network security threats and best practices, reducing the likelihood of successful attacks.
B) Employee training has minimal impact on network security as most attacks are automated and cannot be prevented by human intervention.
C) Employee training is only necessary for IT staff responsible for network administration, not for other employees.
D) Employee training is ineffective as most security breaches occur due to technical vulnerabilities, not human error.
Certainly! Here are five multiple-choice questions with answers on IP security based on Bloom's Taxonomy:

25. What does IPsec stand for?
A) Internet Protocol Security
B) Internet Protocol Service
C) Internet Privacy Security
D) Internet Protection Service

26. What is the primary purpose of IPsec?
A) To encrypt data packets for secure transmission over the internet
B) To block unauthorized access to network resources
C) To assign IP addresses dynamically to devices on a network
D) To manage network traffic flow

P.T.O

26. Which protocol suite does IPsec operate within?
A) TCP/IP
B) UDP
C) HTTP
D) FTP

27. How does IPsec provide authentication in addition to encryption?
A) By encrypting data packets with a shared secret key
B) By verifying the identity of communicating parties through digital certificates or pre-shared keys
C) By routing data packets through secure tunnels
D) By filtering network traffic based on predefined rules

28. Assess the impact of implementing IPsec on network performance.
A) Implementing IPsec has minimal impact on network performance due to efficient encryption algorithms.
B) Implementing IPsec significantly reduces network performance as encryption overhead adds latency to data transmission.
C) Implementing IPsec improves network performance by optimizing data routing and reducing congestion.
D) Implementing IPsec has no impact on network performance as it operates transparently at the IP layer.

29. What is the primary goal of cryptography?
A) To protect data from unauthorized access
B) To speed up data transmission over the internet
C) To compress data for efficient storage
D) To anonymize user identities

30. How does symmetric encryption differ from asymmetric encryption?
A) Symmetric encryption uses two different keys for encryption and decryption, while asymmetric encryption uses the same key for both.
B) Symmetric encryption is faster than asymmetric encryption.
C) Symmetric encryption is more secure than asymmetric encryption.
D) Symmetric encryption requires the exchange of public and private keys between communicating parties.

31. Which cryptographic algorithm is commonly used for digital signatures and key exchange protocols?
A) RSA
B) AES
C) DES
D) SHA

32. Compare and contrast block ciphers and stream ciphers in cryptography.

A) Block ciphers encrypt data one bit at a time, while stream ciphers encrypt data in fixed-size blocks.

B) Block ciphers encrypt data in fixed-size blocks, while stream ciphers encrypt data one bit at a time.

C) Block ciphers use the same key for encryption and decryption, while stream ciphers use different keys.

D) Block ciphers are faster than stream ciphers but less secure.

33. Assess the vulnerability of a cryptographic system that uses a weak encryption algorithm.

A) A weak encryption algorithm is vulnerable to brute force attacks and may lead to unauthorized access to sensitive information.

B) A weak encryption algorithm provides stronger security guarantees compared to more complex algorithms.

C) A weak encryption algorithm is immune to cryptographic attacks and ensures data confidentiality.

D) A weak encryption algorithm increases network performance by reducing encryption overhead.

34. During a forensic investigation, which tool would be most appropriate for creating a forensic image of a hard drive?

A) Disk Cleanup utility

B) Adobe Photoshop

C) Microsoft Word

D) FTK Imager

35. Which protocol is used to assign IP addresses dynamically to devices on a network?

A) FTP

B) SMTP

C) DHCP

D) SNMP

.....X.....X.....

P.T.O

0304N40 Candidate's Seat No :_____

M.Sc Semester-4 Examination

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Forensic Science (EE)

Time : 2-30 Hours] **April-2024** **[Max. Marks : 70**

1. In disputed handwriting examination while collecting the standards of comparison, it should be....
   A. On exact date
   B. As nearly as possible on the same date
   C. On any date
   D. In capital letters only

2. Trimming is a type of....
   A. Addition
   B. Alteration
   C. Erasure
   D. Obliteration

3. Drop-on demand and continuous drop are the types of..... printer.
   A. Inkjet
   B. Dot matrix
   C. Laser
   D. Dye sublimation

4. Which of the following is a problem commonly encountered in document examination?
   A. Uniformity of handwriting
   B. Easily detectable alterations
   C. Indistinguishable ink colors
   D. Forgery and fraud

5. What is the term for hidden impressions left on the underlying pages of a document?
   A. Secret writing
   B. Indented writing
   C. Obfuscated text
   D. Erased text

6. Which of the following is NOT a general characteristic used to analyze handwriting?
   A. Letter spacing
   B. Alignment on the page
   C. Ink color
   D. Slant of writing

7. What technique is commonly used to authenticate printed matter?
   A. UV light examination
   B. Watermark detection
   C. Font style comparison
   D. Ink composition analysis

8. What is a characteristic feature of dot-matrix printers?
   A. Dot patterns
   B. Toner particles
   C. Ink droplets
   D. Ribbon impressions

9. How can secret writing be deciphered in forensic document examination?
   A. By applying heat
   B. By comparing handwriting samples
   C. By using a magnifying glass
   D. By using chemicals or special lighting

10. How are alterations different from additions in document examination?
    A. Alterations involve changes to existing content, while additions add new content.
    B. Alterations are reversible, while additions are permanent.
    C. Alterations are analyzed using chemical reagents, while additions are examined with magnifying glasses.
    D. Alterations occur in typewritten documents, while additions occur in handwritten documents.

11. Which of the following is a characteristic of charred documents?
    A. Easy readability
    B. High durability
    C. Ink color consistency
    D. Loss of legibility

12. Which of the following is a characteristic of a standard admitted writing sample?
    A. Matches the questioned document exactly
    B. Provides a basis for comparison
    C. Is never used in document examination
    D. Contains secret messages

13. What is the purpose of heat treatment in document examination?
    A. To enhance paper quality
    B. To reveal hidden messages
    C. To alter handwriting style
    D. To analyze ink composition

14. What aspect of alterations is examined in forensic document analysis?
    A. Changes in content or appearance
    B. Paper weight changes
    C. Paper size alterations
    D. Ink color variations

15. Individual characteristics of handwriting refer to:
    A. Ink composition
    B. Common handwriting traits
    C. The ink color of Handwriting
    D. Features unique to a specific writer

16. What is document examination primarily concerned with?
    A. Analyzing paper quality
    B. Identifying handwriting characteristics Determining ink composition
    C. Examining the content of documents
    D. Determining ink composition

17. What is the primary goal of document examination in forensic science?
    A. Identifying paper quality
    B. Analyzing ink composition
    C. Measuring document dimensions
    D. Establishing document authenticity and origin

18. Who is credited with reviving the use of fingerprints for identification in the 19th century?
    A. Alphonse Bertillon
    B. William Herschel
    C. Francis Galton
    D. Edward Henry

19. What is the primary purpose of fingerprint ridges?
    A. Improved grip
    B. Temperature regulation
    C. Sensory perception
    D. Waste removal

20. The _____ is the central area of a loop or whorl pattern.
    A. Bifurcation
    B. Triradius
    C. Delta
    D. Core

21. Ridge tracing involves following the flow of ridges in a fingerprint to identify:
    A. Overall pattern
    B. Minutiae details
    C. Pressure applied
    D. Age of the individual

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22. Fingerprints can be obtained from deceased individuals through:
    A. Ink and post mortem fingerprint cards
    B. Rigor mortis impressions
    C. Special fingerprint scanners
    D. Lividity (discoloration) patterns

23. Modern fingerprint analysis techniques can often detect forgeries due to inconsistencies in:
    A. Minutiae details
    B. Ridge flow patterns
    C. All of the above
    D. Pressure applied

24. Who is credited with reviving the use of fingerprints for identification in the late 19th century?
    A. Henry Faulds
    B. Alphonse Bertillon
    C. Francis Galton
    D. William Herschel

25. What is the scientific study of fingerprints called?
    A. Dactyloscopy
    B. Epidermology
    C. Dactyloscopy
    D. Palmistry

26. The earliest known use of fingerprints for identification dates back to:
    A. Ancient Egypt
    B. Medieval Europe
    C. 17th Century China
    D. 19th Century India

27. Whorl patterns have at least one complete ridge circled a central point. What is the name of the central point?
    A. Delta
    B. Trifurcation
    C. Core
    D. Bifurcation

28. Palm prints can also be used for identification purposes. Which part of the palm offers the most distinctive features?
    A. Thenar eminence
    B. Hypothenar eminence
    C. Palmar creases
    D. Wrist

29. The primary component of latent fingerprints is:
    A. Blood
    B. Skin Cells
    C. Sweat
    D. DNA

30. The most common method for developing latent fingerprints on non-porous surfaces is:
    A. Fuming
    B. Magnetic Powder
    C. Chemical
    D. None of the Above

31. Lasers can be used to develop latent fingerprints on surfaces that:
    A. Absorb all light
    B. Are highly textured
    C. Absorb all light
    D. Fluoresce under specific wavelengths

32. Superglue fuming may be used to develop latent fingerprints on recently deceased skin because:
    A. It reacts with blood
    B. It hardens the skin's surface
    C. It reacts with sweat components in the fingerprint ridges
    D. It removes surface contaminants

33. Plastic fingerprints are:
    A. Three-dimensional impressions left in soft materials
    B. Enhanced versions of latent prints.
    C. Formed by dust particles on the skin.
    D. Invisible to all light sources.

34. Digital imaging allows for:
    A. Directly developing latent prints.
    B. Capturing high-resolution fingerprint images
    C. Destroying latent prints.
    D. None of the above

35. Developing latent fingerprints on the skin is challenging because:
    A. Skin is a nonporous surface.
    B. Skin is too smooth for fingerprints to form.
    C. Skin constantly sheds cells
    D. Skin fingerprints are not unique.

.....X.....X.....