

# NFSU JSO Multimedia Forensics Examination

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1. Find the next number: 3, 6, 12, 24, ?

A 36

B 48

C 42

D 50

2. What is the LCM of 8 and 12?

A 24

B 48

C 36

D 16

3. A train runs at 60 km/hr. How long will it take to travel 180 km?

A 2 hours

B 3 hours

C 4 hours

D 5 hours

4. If  $3x + 2 = 11$ , what is  $x$ ?

A 2

B 3

C 4

D 5

5. The average of 6, 7, 8, 9, and 10 is:

- A 8
- B 7.5
- C 8.5
- D 3

6. What is 25% of 480?

- A 100
- B 110
- C 120
- D 130

7. Choose the correctly spelled word:

- A Recieve
- B Receive
- C Receeve
- D Recive

8. Synonym of "Brave":

- A Coward
- B Bold
- C Weak
- D Calm

9. Antonym of "Increase":

- A Grow
- B Rise
- C Reduce
- D Expand

10. Fill in the blank: He is \_\_\_\_\_ honest man

- A a
- B an
- C the
- D none

**11.** Choose the correct sentence:

- A She go to school everyday.
- B She goes to school everyday.
- C She gone to school.
- D She going school.

**12.** Identify the verb: "The cat sleeps under the table."

- A cat
- B sleeps
- C under
- D table

**13.** Change to passive voice: "The teacher teaches the students."

- A The students teaches by the teacher
- B The students is taught by the teacher.
- C The students are taught by the teacher.
- D The students was taught by the teacher.

**14.** Which organ purifies blood in the human body?

- A Heart
- B Kidney
- C Lungs
- D Liver

**15.** Water boils at:

- A 50°C
- B 90°C
- C 100°C
- D 110°C

**16.** Which planet is known as the Red Planet?

- A Earth
- B Venus
- C Mars
- D Jupiter

**17.** Which gas is essential for breathing?

- A Carbon dioxide
- B Oxygen
- C Nitrogen
- D Hydrogen

**18.** What is the chemical formula for water?

- A H<sub>2</sub>
- B H<sub>2</sub>O
- C O<sub>2</sub>H
- D HO<sub>2</sub>

**19.** Which vitamin is produced when sunlight hits the skin?

- A Vitamin A
- B Vitamin B
- C Vitamin C
- D Vitamin D

**20.** In a certain code, GLARE is written as EJYPC. How is BRING written in that code?

- A ZPGL E
- B ZPGL F
- C YOFK D
- D YPFK E

**21.** Find the missing number in the series: 3, 8, 15, 24, ?, 48

- A 33
- B 34
- C 35
- D 36

**22.** Pointing to a lady, Ramesh said, "She is the daughter of my mother's only son." How is the lady related to Ramesh?

- A Sister
- B Cousin
- C Niece
- D Daughter

**23.** Statements: All dogs are animals. Some animals are cats. Conclusions: 1. Some dogs are cats. 2. All dogs are animals. Choose the correct option:

- A Only 1 follows
- B Only 2 follows
- C Both follow
- D Neither follows

**24.** Which number does not belong in the series? 2, 6, 12, 20, 30, 42, 56

- A 30
- B 42
- C 56
- D 20

**25.** Choose the odd one out:

- A 121
- B 144
- C 169
- D 196

**26.** Which Software is used for Analysis of Spectrogram?

- A Adobe Premiere Pro
- B Mandet
- C kinesense
- D Multispeech

**27.** Which aspect of a voice is analyzed in speaker recognition?

- A Pitch
- B Formants
- C Timbre
- D All of the above

**28.** What does voice biometrics analyze?

- A Facial features
- B Unique vocal characteristics
- C Audio file format
- D Text content

**29.** Which technique is used to detect tampering in an audio file?

- A Waveform analysis
- B Frequency analysis
- C Phase analysis
- D All of the above

**30.** What is the main challenge in speaker recognition?

- A Background noise
- B Lack of clear speech samples
- C Variability in voice due to health or emotion
- D All of the above

**31.** Which of the following is a method to authenticate an audio recording?

- A Noise suppression
- B Echo cancellation
- C Digital watermarking
- D Spectral enhancement

**32.** Which part of the audio waveform is often analyzed for speaker recognition?

- A Amplitude
- B Frequency
- C Phase
- D All of the above

**33.** What is the purpose of audio enhancement in forensic analysis?

- A Add new sound effects
- B Improve intelligibility of speech
- C Remove important features
- D Change the voice of the speaker

**34.** What is the term for an audio recording's unique signature?

- A Acoustic fingerprint
- B Spectral map
- C Pitch profile
- D Amplitude graph

**35.** Which law often governs the admissibility of forensic audio evidence?

- A Hearsay Law
- B Digital Evidence Law
- C Federal Rules of Evidence
- D Copyright Law

**36.** Which feature is crucial for distinguishing speakers in forensic audio?

- A Voice pitch
- B Articulation rate
- C Formant patterns
- D All of the above

**37.** What is a "codec" in audio processing?

- A A device for recording audio
- B A method for encoding and decoding audio
- C A tool for reducing noise
- D A waveform visualization technique

**38.** What is a common method for speaker identification?

- A Waveform matching
- B Spectral analysis
- C Formant comparison
- D All of the above

**39.** What is "phonetics" in forensic audio?

- A Study of audio waveforms
- B Analysis of speech sounds
- C Technique for encoding sound files
- D None of the above

**40.** Which of the following is an advanced audio analysis technique?

- A Wavelet transform
- B Fourier analysis
- C Cepstral analysis
- D All of the above

**41.** Which device is often used for precise audio recording in forensic cases?

- A Omni-directional microphone
- B Lavalier microphone
- C Digital audio recorder
- D All of the above

**42.** What is the function of "audio watermarking"?

- A Protects audio copyrights
- B Enhances signal quality
- C Analyzes waveform patterns
- D Compresses file size

**43.** What is the importance of "reference samples" in speaker verification?

- A Provides a baseline for comparison
- B Improves accuracy in analysis
- C Validates authenticity of recordings
- D All of the above

**44.** What is the "fundamental frequency" in speech analysis?

- A Lowest frequency of a voice signal
- B Average pitch of a speaker
- C Highest amplitude frequency
- D Both a and b



**45.** What is the importance of dynamic range compression in forensic audio?

- A Amplifies background noise
- B Balances the loud and soft parts of an audio signal
- C Speeds up the playback
- D None of the above

**46.** What does "audio transcription" refer to in forensic analysis?

- A Enhancing the audio quality
- B Converting speech to text
- C Analyzing frequency patterns
- D Adding subtitles to a video

**47.** What does "phase distortion" indicate in audio forensic analysis?

- A Compression artifacts
- B Possible tampering or editing
- C Enhanced clarity
- D Faster playback

**48.** Which algorithm is commonly used for facial recognition?

- A FFT
- B PCA (Principal Component Analysis)
- C MD5
- D Huffman encoding

**49.** What is a common indicator of image tampering?

- A Inconsistent shadows and lighting
- B High resolution
- C Presence of EXIF data
- D Clear focus

**50.** What does "video compression analysis" focus on?

- A Identifying artifacts introduced by lossy compression algorithms
- B Enhancing frame rates
- C Adding metadata to video files
- D Improving video color balance

**51.** Which software is used for audio-visual forensic analysis?

- A Adobe Audition
- B Amped Authenticate
- C MATLAB
- D DaVinci Resolve

**52.** What does "hash collision" indicate in forensic analysis?

- A Two files generating the same hash value
- B Enhanced image quality
- C Improved video resolution
- D Noise reduction

**53.** What does "contrast analysis" help detect in digital images?

- A Manipulated regions with differing contrast levels
- B Enhanced brightness
- C Original resolution
- D File format changes

**54.** Which system is used to verify video integrity through file hashing?

- A MD5 or SHA-256 algorithms
- B Lossy compression tools
- C Video editing software
- D Optical flow analysis

**55.** What is "video frame interpolation" used for?

- A Generating intermediate frames to smooth motion
- B Compressing video files
- C Adding noise to video
- D Reducing resolution

**56.** What can inconsistent pixelation in a digital image indicate?

- A Compression artifacts
- B Tampering or editing
- C High resolution
- D Overexposure

**57.** What does "temporal analysis" involve in forensic video investigations?

- A Comparing time stamps of frames for irregularities
- B Enhancing brightness in a video
- C Enhancing brightness in a video
- D Adding effects to video frames

**58.** What is a key feature of facial recognition systems?

- A Detecting unique facial landmarks and patterns
- B Converting video to images
- C Enhancing video quality
- D Adding special effects to faces

**59.** What is the primary function of a hash value in forensic analysis?

- A To edit images
- B To detect tampering by comparing the digital fingerprint of files
- C To compress video files
- D To convert images to different formats

**60.** Who is credited for developing the first practical method for forensic speaker identification using spectrograms?

- A Harry Hollien
- B Oscar Tosi
- C Lawrence Kersta
- D Peter Ladefoged

**61.** Which forensic scenario requires Open-Test speaker identification?

- A Matching a suspect's voice to a set of 10 known suspects in a criminal case
- B Determining whether an unknown voice in an anonymous ransom call belongs to any of the speakers in a police database
- C Verifying if a suspect's voice matches a known recording from a crime scene
- D Confirming whether a witness correctly identified the voice of a suspect in a lineup

**62.** What is the main advantage of using the International Phonetic Alphabet (IPA) in forensic phonetic transcription?

- A** It provides a standardized way to transcribe sounds across all languages
- B** It allows for direct speech-to-text conversion without human intervention
- C** It is only used for vowels and not for consonants
- D** It can detect speaker emotion based on phoneme structure

**63.** What is the primary function of the vocal tract in speech production?

- A** It generates sound waves through vocal fold vibration
- B** It converts speech into phonetic transcription
- C** It filters out background noise from speech signals
- D** It acts as a resonator that shapes the acoustic properties of speech sounds

**64.** What is the primary difference between interspeaker and intraspeaker variability?

- A** Interspeaker variability refers to differences between speakers while intraspeaker variability refers to changes within the same speaker over time
- B** Intraspeaker variability occurs when a speaker changes language while interspeaker variability occurs within the same language
- C** Interspeaker variability is based only on fundamental frequency (F0) while intraspeaker variability is based only on speech rate
- D** Intraspeaker variability is only observed in forensic voice disguise cases while interspeaker variability is only observed in normal speech

**65.** How is Fourier Transform used in forensic voice analysis?

- A** It converts an analog voice signal into a digital waveform for storage
- B** It increases the clarity of a voice recording by amplifying speech frequencies
- C** It decomposes a complex voice signal into its frequency components for analysis
- D** It automatically detects speaker identity by matching voice patterns to a database

**66.** Why do children typically have high-pitched voices than adults?

- A** Their lung capacity is smaller, forcing them to speak at a higher pitch
- B** Their shorter vocal cords produce higher fundamental frequencies
- C** Their speech intensity is lower, making them sound high-pitched
- D** They have more resonant nasal cavities than adults

**67.** Why is the 300 Hz to 3400 Hz range used as the standard bandwidth for telephone speech transmission?

- A It enhances voice uniqueness by amplifying the speaker's fundamental frequency.
- B It captures the entire human vocal range, ensuring full speech fidelity.
- C It completely removes background noise, making communication noise-free.
- D It preserves key frequencies necessary for speech clarity while minimizing data usage

**68.** Why is text-independent voice recognition more challenging than text-dependent recognition?

- A It depends on linguistic structure
- B It requires manual transcription before analysis
- C It does not rely on pre-defined phrases, making speaker variability higher
- D It cannot be used for forensic analysis

**69.** What is a key limitation of using FFT in forensic audio analysis?

- A It cannot analyze speech in real-time
- B It assumes the signal is stationary over the analysis window
- C It does not provide frequency domain information
- D It requires a very high sampling rate to function

**70.** Which of the following best describes the importance of maintaining a chain of custody in forensic voice analysis?

- A It ensures that the voice recording remains unaltered and admissible in court
- B It improves the quality of the audio recording
- C It provides a backup copy of the recording
- D It verifies the authenticity of the speaker's voice

**71.** Which law mandates the 63 (4)(C) CERTIFICATE to be provided by the expert who examines the electronic devices?

- A BNS
- B BNSS
- C BSA
- D All of the above

**72.** Which section of the BNSS makes the forensic laboratory reports admissible in the courts of law?

- A** SEC 329
- B** SEC 330
- C** SEC 180
- D** SEC 45

**73.** The Security Operation Centre (SOC) team is observing the packets which are larger than the size of 65535 bytes. This refers to what type of attack?

- A** Smurf
- B** Ping of Death
- C** Nmap Scanning
- D** Hacking

**74.** What is the statement of Edmond Locard's principle?

- A** Every trace has some contact
- B** Every hacker leaves digital tips
- C** No traces found on hacking
- D** Every contact leaves a trace

**75.** The acronym SWGDE stands for

- A** Scientific Working Group on Direct Evidence
- B** Scientific Workable Group on Digital Evidence
- C** Scientific Working Group on Digital Evidence
- D** Scientists Working Group on Digital Extraction

**76.** The chain of custody in any investigation of crime is essential to maintain

- A** Safe custody of evidence
- B** Integrity of evidence
- C** Safe transport of evidence
- D** None of the above

**77.** A report as per ISO/IEC 17025:2017 standard should demonstrate the elements of

- A Accuracy, complete
- B Objective, unambiguous and simple
- C Both (A) & (B)
- D None of the above

**78.** As per ISO/IEC 17025:2017, the control of data and information management is addressed in clause

- A 7.1
- B 7.11
- C 8.2
- D 7.9

**79.** You are a computer forensic examiner at a scene of crime and have determined to seize a linux server, which assumed to contain database records of the company under investigation. What is the best practice for taking down the server for collection?

- A Photograph the screen, note down running programs or messages and use normal shutdown procedure
- B Photograph the screen, note any running programs or messages and pull the plug from the wall.
- C Photograph the screen, note any running programs or messages and pull the plug from the rear of server.
- D Photograph the screen, note any running programs or messages and ask the user to shut down the server

**80.** As a digital forensic expert, you are taking the entire disk or media hash value for authenticating the data. But when recalculating the hash value of the media at a later date, there is a possibility of hash value mismatch. In order to avoid such a situation, what could be the best practice to prove the data integrity?

- A Avoid taking the hash
- B Note down hash physically
- C Hash individual files
- D Hash media with two hash algorithms

**81.** A FAT file system and NTFS file system store data and time stamps in

- A DOS directory and local time
- B Zulu time and GMT
- C Local time and GMT
- D None of the above

**82.** The LEA has seized X person's laptop and has sent to the forensic laboratory. The investigator wants to know the user activity of the system. The forensic examiner found that the file system in the device is NTFS. In order to answer the investigator's question, which artifact will you concentrate for analysis?

- A USER.DAT
- B NTUSER.DAT
- C SYSTEM.DAT
- D None of the above

**83.** As a forensic examiner, you are a part of the team of search and seizure. The investigator wants to acquire one of the system hard disks and insists that all the information including the deleted/ unallocated space should be acquired. Out of the following, which type of acquisition technique would you adopt?

- A Logical imaging
- B Disk to disk
- C Disk to image
- D All of the above

**84.** Cryptojacking means

- A Type of attack where unauthorised use of digital devices to mine cryptocurrency.
- B Type of attack where your wallet is used to raise the cryptocurrency
- C Type of attack on the systems to steal the cryptocurrency
- D None of the above



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  - D** ) Photograph the screen, note any running programs or messages and ask the user to shut down the server
- 86.** Which of the following is the NTFS file system file that tracks the allocation status of all clusters in the partition?
- A** \$Volume
  - B** \$Bitmap
  - C** \$MFT
  - D** \$BadClus
- 87.** The user data in the SIM card such as phone book etc., resides in which of the following memory?
- A** RAM
  - B** ROM
  - C** EEPROM
  - D** PROM
- 88.** If hardware key logger is fixed to the system, then it can be identified by which of the following programs?
- A** Not possible to identify
  - B** Antivirus
  - C** Anti spyware
  - D** Intrusion detection systems
- 89.** The last shutdown information is available in which of the following registry hive?
- A** Software
  - B** System
  - C** SAM
  - D** Ntuser.dat

**90.** Which is the RAW image file signature?

- A .E01
- B 0.001
- C .P01
- D .AFF

**91.** You are a computer forensic examiner and associated with the first responders' team. You are asked to image the work station at the scene of crime. Which of the following tool you use for creating a forensically sound image of the work station hard disk?

- A Dos boot floppy or CD
- B FTK imager
- C Bulk extractor
- D Axiom memory capture

**92.** The Voice Phishing is referred as

- A War dialling
- B Vishing
- C Call from customer care
- D Calling customer care

**93.** What do you mean by jail broken in iPhone?

- A Opening the phone for others to view
- B Removing physical restrictions of the device
- C Removing limitations imposed by OS to protect the device
- D Breaking the phone to avoid data extraction

**94.** The Embedded Multimedia Card (eMMC) storage is a

- A NAND flash Memory
- B NOR flash Memory
- C Magnetic storage
- D None of the above

**95.** What is the hex value of jpeg file?

- A** FF d 8 FF
- B** 50 4E 47
- C** 47 49 46
- D** F6 04 00

**96.** In mobile forensics the term JTAG stands for

- A** Joint Trust Acting Group
- B** Joint Test Action Group
- C** Jointly Testing and Acting Group
- D** Joint Table Agreement Group

**97.** What do you mean by 'rooting' on android devices?

- A** It unlocks the phone
- B** Rooting enhances the device performance
- C** It provides control over the limitations provided by the manufacturers
- D** It improves the battery performance

**98.** What technique is often used to rank frames in video summarization?

- A** Histogram Equalization
- B** Visual Saliency Analysis
- C** RSA Encryption
- D** Interpolation
- E** None of These

**99.** How does the MultiSpeech software aid in forensic speaker analysis?

- A** It compresses voice recordings for storage
- B** It provides tools for detailed spectrographic and pitch analysis
- C** It synthesizes artificial speech for comparison
- D** It eliminates all background noise

- 100.** What is the most reliable feature for identifying a speaker who has attempted to disguise their voice?
- A** Fundamental frequency (F0) since it cannot be intentionally altered
  - B** Formant frequencies as they are mostly determined by vocal tract shape
  - C** Speech rate because it remains constant despite disguise attempts
  - D** Amplitude variations, as they provide a unique speaker signature