1. What is the primary focus of articulatory phonetics?

a) The study of speech sound perception

b) The study of speech sound production

c) The study of speech sound transmission

d) The study of speech sound recognition

Answer: b) The study of speech sound production

Explanation: Articulatory phonetics focuses on how speech sounds are produced by the articulatory organs such as the tongue, lips, and vocal cords.

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2. Which phonetics branch deals with the acoustic properties of speech sounds?

a) Articulatory phonetics

b) Auditory phonetics

c) Acoustic phonetics

d) Phonetic transcription

Answer: c) Acoustic phonetics

Explanation: Acoustic phonetics is concerned with the physical properties of speech sounds, such as their frequency, amplitude, and duration.

3. What is the function of Short-Time Fourier Transform (STFT) in speech processing?

a) It converts speech signals into frequency domain

b) It converts speech signals into time domain

c) It analyzes speech signals in both time and frequency domains

d) It compresses speech signals for storage

Answer: c) It analyzes speech signals in both time and frequency domains

Explanation: STFT breaks down a signal into its constituent frequencies over short, overlapping time intervals, allowing analysis in both time and frequency domains.

4. Which method is commonly used for speech signal compression and decompression?

a) Short-Time Fourier Transform (STFT)

b) Filter-Bank

c) Linear Predictive Coding (LPC)

d) Fast Fourier Transform (FFT)

Answer: c) Linear Predictive Coding (LPC)

Explanation: LPC is often utilized for speech signal compression and decompression by

modeling the spectral envelope of the speech signal.

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5. What is the purpose of a filter bank in speech processing?

a) To enhance speech clarity
b) To filter out background noise
c) To separate speech into different frequency bands
d) To convert speech signals into digital format

Answer: c) To separate speech into different frequency bands

Explanation: A filter bank divides the speech signal into multiple frequency bands, allowing selective analysis and processing of different frequency components.

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6. Which aspect of speech production does LPC primarily model?

a) Articulatory movements
b) Acoustic properties
c) Auditory perception
d) Linguistic features

Answer: b) Acoustic properties

Explanation: LPC models the spectral envelope of the speech signal, capturing its acoustic properties for compression and analysis.

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7. What is the main advantage of using LPC in speech processing applications?

a) Efficient compression of speech signals
b) Accurate modeling of articulatory movements
c) Real-time speech synthesis
d) Enhanced speech recognition accuracy

Answer: a) Efficient compression of speech signals

Explanation: LPC allows for efficient compression of speech signals by representing them using a small number of parameters based on their spectral characteristics.

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8. Which processing technique is used for extracting spectral features from speech signals?

a) Short-Time Fourier Transform (STFT)
b) Linear Predictive Coding (LPC)
c) Fast Fourier Transform (FFT)
d) Wavelet Transform

Answer: a) Short-Time Fourier Transform (STFT)

Explanation: STFT is commonly used to extract spectral features from speech signals by analyzing their frequency content over short time intervals.

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9. What is the primary function of digital signal processing in speech processing systems?

a) To convert analog speech signals into digital format
b) To enhance speech intelligibility
c) To classify speech sounds
d) To store and retrieve speech data

Answer: c) To classify speech sounds

Explanation: Digital signal processing techniques are often employed to classify speech sounds based on their acoustic properties and spectral features.

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10. Which phonetics branch investigates how speech sounds are perceived by the human auditory system?

a) Articulatory phonetics
b) Auditory phonetics

c) Acoustic phonetics

d) Experimental phonetics

Answer: b) Auditory phonetics

Explanation: Auditory phonetics studies how speech sounds are perceived by the human auditory system, including aspects such as hearing, perception, and auditory processing.