Department of Electronics & Telecommunication Engineering

Audio Processing (ECCDLO6024)

TE SEM VI CBCGS

Mock Question Paper

1. DTFT is the representation of (1M)
   a. Periodic Discrete time signals
   b. Aperiodic Discrete time signals
   c. Aperiodic continuous signals
   d. Periodic continuous signals

2. DIT algorithm divides the sequence into (1M)
   a. Positive and negative values
   b. Even and odd samples
   c. Upper higher and lower spectrum
   d. Small and large samples

3. The ROC of a system is the (1M)
   a. range of z for which the z transform converges
   b. range of frequency for which the z transform exists
   c. range of frequency for which the signal gets transmitted
   d. range in which the signal is free of noise

4. Which of the following justifies the linearity property of z-transform?[x(n)↔X(z)]. (1M)
   a. x(n)+y(n) ↔ X(z)Y(z)
   b. x(n)+y(n) ↔ X(z)+Y(z)
   c. x(n)y(n) ↔ X(z)+Y(z)
   d. x(n)y(n) ↔ X(z)Y(z)

5. What is the z-transform of the signal x(n)=[3(2^n)-4(3^n)]u(n)? (Ans: a) (2M)
   a) $\frac{3}{1-2z^{-1}} - \frac{4}{1-3z^{-1}}$
   b) $\frac{3}{1-2z^{-1}} - \frac{4}{1+3z^{-1}}$
   c) $\frac{3}{1-2z} - \frac{4}{1-3z}$
   d) $\frac{3}{1-2z^{-1}} - \frac{4}{1+3z^{-1}}$

6. If X(z) is the z-transform of the signal x(n) then what is the z-transform of $a^n x(n)$? (2M)
    a. X(az)
    b. $X(az^{-1})$
    c. $X(a^{-1}z)$
    d. $X(a^n z)$

7. What is the transform that is suitable for evaluating the z-transform of a set of data on a variety of contours in the z-plane? (1M)
    a. Goertzel Algorithm
    b. Fast Fourier transform
    c. Chirp-z transform
    d. None of the mentioned

8. What is the study of how the language sounds? (1M)
    a. Speechology
    b. Biology
    c. Trilogy
    d. Phonology

9. Which of these terms refer to the study of hearing and perception of speech sounds? (1M)
    a. Articulatory phonetics
    b. Acoustic phonetics
    c. Auditory phonetics
    d. Laboratory phonetics

10. Which of the following is a voiceless sound component? (1M)
    a. b
    b. d
    c. c
    d. g

11. According to the placement of the tongue, which of these is not a type of vowel? (1M)
    a. Cross vowels
    b. Front vowels
    c. Back vowels
    d. Central vowels

12. The process of inhalation is initiated (begun) by (1M)
    a. lowering the lungs.
    b. lowering the diaphragm.
    c. decreasing chest volume.
    d. raising the diaphragm

13. I am the largest laryngeal cartilage and the vocal folds attach to me. (1M)
    a. cricoid cartilage
    b. arytenoid cartilage
    c. epiglottis
    d. thyroid cartilage

14. The ____ cavity begins at the vocal folds and ends behind the mouth and nose. (1M)
    a. Oral
    b. Nasal
    c. Pharyngeal
    d. Laryngeal

15. What transmits electrical information from the ear to the brain? (1M)
    a. outer hair cells
    b. auditory nerve fibres
    c. ganglion cells
    d. rods and cones

16. The signals which are obtained by encoding each quantized signal into a digital word is called as (1M)
    a. PAM signal
    b. PCM signal
    c. FM signal
    d. Sampling and quantization

17. Quantization noise can be reduced by _____ the number of levels. (1M)
    a. Decreasing
    b. Increasing
    c. Doubling
    d. Squaring

18. A sampling rate of _____ million samples per second is needed for a signal with components ranging from 10 MHz to 100 MHz. (2M)
    a. 10
    b. 90
    c. 100
    d. 200

19. A quantizer output with 64 quantization levels can be encoded with _____ bits per sample. (2M)
    a. 2
    b. 4
    c. 6
    d. 8

20. What is the standard value of μ in μ-law ? (1M)
    a. 128
    b. 255
    c. 256
    d. 0

21. Delta modulation uses _____ bits per sample. (1M)
    a. One
    b. Two
    c. Four
    d. Eight

22. The digital modulation technique in which the step size is varied according to the variation in the slope of the input is called (1M)
    a. Delta modulation
    b. PCM
    c. Adaptive delta modulation
    d. PAM

23. A speech signal sampled at 8000 samples per second will produce _____bits/second when PCM with 8-bit quantizer is used to represent the speech signal digitally. (2M)
    a. 8000
    b. 16000
    c. 64000
    d. 84000

24. Zero crossing Rate of a voiced speech segment is _____ unvoiced speech segment. (1M)
    a. Greater than
    b. Less than
    c. Equal to
    d. Twice that of

25. Pitch of a speech signal is related to (1M)
    a. Vocal tract shape
    b. Volume of air in the lungs
    c. Vibration of vocal folds
    d. Length of vocal folds

26. Spectrogram is a _____dimensional representation of speech (1M)
    a. 2
    b. 4
    c. 3
    d. 1

27. In STFT, a wide window ensures (1M)
    a. Good time resolution
    b. Good Frequency resolution
    c. Poor Time resolution
    d. good frequency resolution, poor time resolution

28. In the Linear Filtering interpretation of the STFT, what is treated as fixed? (1M)
    a. n
    b. w (omega)
    c. w (window)
    d. n and w (omega)

29. If we take 2048-point DFT and the sampling frequency is 22100 Hz, then the resolution is given by (2M)
    a. 107.9 Hz
    b. 10.79 Hz
    c. 0.0927 Hz
    d. 9.27 Hz

30. Vocoders analyse the speech signals at _____ (1M)
    a. Transmitter
    b. Receiver
    c. Channel
    d. IF Filter

31. Which of the following is not a vocoding system? (1M)
    a. Linear predictive coder
    b. Channel vocoder
    c. Waveform coder
    d. Formant vocoder
32. Which of the following LPC uses code book? (1M)
    a. Multiple excited LPC
    b. Residual excited LPC
    c. LPC Vocoders
    d. Code excited LPC

33. Where is the Hidden Markov Model is used? (1M)
    a. Speech recognition
    b. Understanding of real world
    c. Speech Analysis
    d. Speech Synthesis

34. A concept that contains rhythm of speech, stress patterns and intonation is _____ (1M)
    a. Text synthesis
    b. Prosody
    c. Speech Synthesis
    d. Formant Synthesis

35. How many past samples are used by linear predictive coders to estimate present sample? (1M)
    a. 0-150
    b. 10-15
    c. 1
    d. 1000-1100

36. For what purpose Feedback neural networks are primarily used? (1M)
    a. classification
    b. feature mapping
    c. pattern mapping

d. pattern storage

37. The pitch of a speech signal is 110 Hz. The speech signal belongs to a (2M)
    a. Male
    b. Female
    c. Child
    d. Animal

38. For a signal sample (4 Volts peak to peak) of amplitude +3.1 Volts passed through a 8 level mid-rise quantizer, the output sample will have a value of (2M)
    a. 3 V
    b. 4 V
    c. 3.25 V
    d. 3.5 V

39. The magnitude spectrum of the Fourier transform of a single tone sine wave of 10 Hz sampled using a sampling frequency of 1000 Hz will have (2M)
    a. A single peak of energy at 1000 Hz
    b. Two peaks of energy at 10 Hz and 1000 Hz
    c. A single peak of energy at 10 Hz
    d. A single peak of energy at 1010 Hz

40. The magnitude spectrum of the Fourier transform of a Multitone sine wave of 10, 50 and 100 Hz sampled using a sampling frequency of 1000 Hz will have (2M)
    a. A single peak of energy at 1000 Hz
    b. Three peaks of energy at 10, 50 and 100 Hz
    c. A single peak of energy at 50 Hz
    d. A single peak of energy at 100 Hz