Open book/notes (14 questions, 7 points each, plus 2 points for entering your name above)

1. (   ) In the history of audio recording, when did mechanical recording begin?   (A) 1750s, (B) 1800s, (C) 1850s, (D) 1900s, (E) none of the above.

2. (   ) Which of the following components is not part of the signal flow for a typical 21st century pubic address (PA) system?   (A) microphone, (B) pre-amp, (C) analog-to-digital converter, (D) CD-ROM recorder, (E) digital audio workstation.

3. (   ) Who is the influential producer promoting artists such as Paul McCartney, Britney Spears, and Taylor Swift?   (A) Max Martin, (B) Eddie Holland, (C) Ryan Tedder, (D) Berry Gordy, (E) none of the above.

4. (   ) Which of the following instruments is common for both the Eastcoast-style synthesis (Moog) and the Westcoast-style synthesis (Buchla)?   (A) accordion,   (B) theremin, (C) Hammond organ,   (D) music easel,   (E) none of the above.

5. (   ) The strings and woodwind section creates a sound level of 80 dB. The brass and percussions section also creates a sound level of 80 dB. What is the sound level of the two sections combined?   (A) 83 dB, (B) 96 dB, (C) 120 dB, (D) 160 dB, (E) none of the above.

6. (   ) We try to tune the A string of a violin to A440. The A string is 8 cents flat and creates a beating frequency against the 440 Hz tuning reference. What is this beating frequency? (A) 1 Hz, (B) 2 Hz, (C) 3 Hz, (D) 4 Hz, (E) none of the above.

7. (   ) What is the dynamic range of a 12-bit analog-to-digital converter? (A) 60 dB, (B) 66 dB, (C) 72 dB, (D) 84 dB, (E) none of the above.

8. (   ) The industry standard for compact disc (CD) specifies a sampling rate of 44.1 KHz, a 16-bit quantization level, and 2 stereo channels. This results in a bit rate of 1,411.2 Kbps (kilobits per second). If the quantization level is reduced to 12 bits, what is the bit rate of the audio signal? (A) 705.6 Kbps, (B) 882 Kbps, (C) 970.2 Kbps, (D) 1,058.4 Kbps, (E) none of the above.

9. (   ) For the above problem, if the 12-bit quantization is used, how long can uncompressed music be stored on a 700 MB (mega bytes) CD? (A) 1 hr 12 min, (B) 1 hr 21 min, (C) 1 hr 28 min, (D) 1 hr 34 min, (E) none of the above.

10. (   ) The MP3 uses several data compression methods. One idea is to assign variable-length codes based on the frequencies of occurrence of the input characters. A frequently occurring character is assigned a short code, and an infrequently occurring character is assigned a long code. What is this method?   (A) discrete cosine transform, (B) Huffman coding, (C) difference encoding, (D) run-length encoding, (E) none of the above.

11. (   ) A chord consists of 3 notes: C, E, and G#. Which chord is it? (A) C major, (B) C minor, (C) C diminished,   (D) C augmented,   (E) none of the above.

12. (   ) A major scale contains the following notes (not in order): G, D, A, Eb, Bb, F, C. What is the tonic (first note of this scale? (A) G major, (B) Eb major,   (C) A major,   (D) Bb major, (E) C major.

> ## More questions on the reverse side

13. (   ) List the three minor triads that exist in the key of G Major: (A) Am, Cm, Dm, (B) Gm, Am, Bm,   (C) F#m, Am, Bm,   (D) Em, Am, Bm,   (E) Bm, Cm, Dm.

14. (   ) In a 3/4 meter, the top number means _____ and the bottom number means _____: (A) three beats per measure, the quarter note is the beat,   (B) four beats per measure, three is the beat value   (C) three beats per measure, half note is the beat,   (D) three quarters of a beat per pulse, 4 is the beat (E) none of the above