EEL 6586: HW#5

Homework is due Wednesday, April 11, 2007 in class. Late homework will not be accepted.

1) Vertical localization is made possible for humans
    a. Because of the reflections off the pinna
    b. Because of interaural time differences (ITD)
    c. Because of interaural intensity differences (IID)
    d. None of the above

2) Stapedius reflex refers to:
    a. The movement of the ossicles to high frequency sounds
    b. The acoustic reflex which protects the ear against loud sounds
    c. The mechanism which encodes loud sounds in the basilar membrane
    d. All of the above

3) The tuning curves of the auditory nerves:
    a. Show BPF response curves which are almost constant Q
    b. Show BPF response curves with greater bandwidth for low frequencies
    c. Show BPF response curves with maximum bandwidths at 3-5Khz
    d. None of the above

4) The cochlear inner hair cells :
    a. Have spontaneous rate firing in the absence of stimuli
    b. Have maximum firing for the onset of stimuli
    c. Have decrease in firing for constant stimuli
    d. All of the above

5) In order to increase the loudness of a sound by a factor of two
    a. The sound intensity has to be increased by a factor of 2
    b. The sound intensity has to be increased by a factor of 10
    c. The sound intensity has to be increased by a factor of 20
    d. None of the above

6) Let A,B,C,D be sounds of the same loudness where A,B lie within the same critical band and C,D lie in different critical bands, then
    a. The combined loudness of A & B is greater than the combined loudness of C & D
    b. The combined loudness of C & D is greater than the combined loudness of A & B

c. The combined loudness of A & B is the same as the combined loudness of C & D
d. None of the above

7) The 'Bass loss' problem refers to
   a. The fact that low frequencies mask more than high frequencies
   b. The fact that the ear discriminates against low frequencies for very soft sounds
   c. The fact that we lose the ability to hear low frequencies as we grow older
   d. All of the above

8) The Occupational Safety and Health Administration (OSHA) standard limits the time-weighted-average noise exposure to:
   a. 90 dBA for 8hrs
   b. 95 dBA for 4hrs
   c. 110 dBA for 30 minutes
   d. All of the above

9) Approximating the auditory canal to be a closed wave resonator of length 2.7cm and using c=340.29 m/s to be the velocity of sound, the resonance frequency is :
   a. 3.15 kHz
   b. 4.20 kHz
   c. 12.6 kHz
   d. None of the above

10) A beating pattern can be heard when
   a. Two tones of frequency 1000 Hz and 1002 Hz are presented together
   b. Two tones of frequency 1000 Hz and 1020 Hz are presented together
   c. Two tones of frequency 1000 Hz and 1040 Hz are presented together
   d. All of the above