

Questions on Perception.

1. What does the fundamental frequency of an instrument determine?
2. Explain the difference between subjective measures of pitch, loudness and timbre as compared to the objective measurements of fundamental frequency, sound intensity and waveform.
3. Describe the structure of the outer ear, middle ear and inner ear. What is the function of each of these sections of the ear?
4. What do the ossicles in the middle ear do?
5. What does the cochlea do besides turn sound into nerve impulses?
6. What are the two types of hair cells (in the cochlea) and what does each do?
7. What is the basilar membrane and what does it do?
8. What is impedance mismatch? Why is this significant in the context of the ear?
9. How does the structure of the ear overcome the impedance mismatch between the air at the eardrum and the fluid in the cochlea?
10. Explain the place theory of hearing.
11. Explain the temporal theory of hearing.
12. Why do we have two theories of hearing?
13. What is virtual pitch?
14. Explain the concept of critical bands for two notes that are close together in frequency played at the same time.
15. What are attack frequencies? What effect do they have on our perception of an instruments timbre?
16. There are two uses of the word 'beats' in sound. One has to do with the rhythm of the music. The other has to do with something that happens when two notes near the same frequency are played together. Explain the second use of the word 'beats'.
17. An ear bud cannot produce a low frequency, long wavelength sound wave of 50 Hz. Yet we perceive this frequency when we listen to music through an ear bud. How does this work?
18. What are the two main causes of hearing loss?
19. What are the two main types of hearing loss?
20. What is the difference between sensorineural hearing loss and conductive hearing loss?
21. What is presbycusis and what are the results?
22. Which type of hearing loss can be corrected by surgery?
23. What can go wrong in the middle ear to cause hearing loss?
24. What can go wrong in the cochlea to cause hearing loss?
25. Define each of the following auditory illusions: a) Shepard's illusion, b) octave illusion, c) Deutsch's Scale Illusion, d) glissando illusion, e) McGurk effect, f) melody illusion.