1. We hear sounds through two basic physiologic pathways. Please (1) describe the two pathways of sound, and (2) illustrate the clinical application of comparing the two pathways of sounds during a hearing test. (20%)

2. The following figure shows the arrangement of nerve fibers to the inner and outer hair cells. Please describe the cochlea’s sensory innervation based on the following figure. (20%)

3. The following table shows the four possible outcomes for any given test trial in the theory of signal detection. Please describe (1) the four possible outcomes from (a) to (d), and (2) the rationale of approaching hearing from the standpoint of the theory of signal detection. (20%)
4. The following figure displays the equal-loudness contours. Please (1) explain the figure and (2) illustrate how to obtain the equal-loudness contours. (20%)

5. The following figure shows the value of threshold required to just discriminate a difference in frequency from a given frequency. Please explain the figure. (20%)