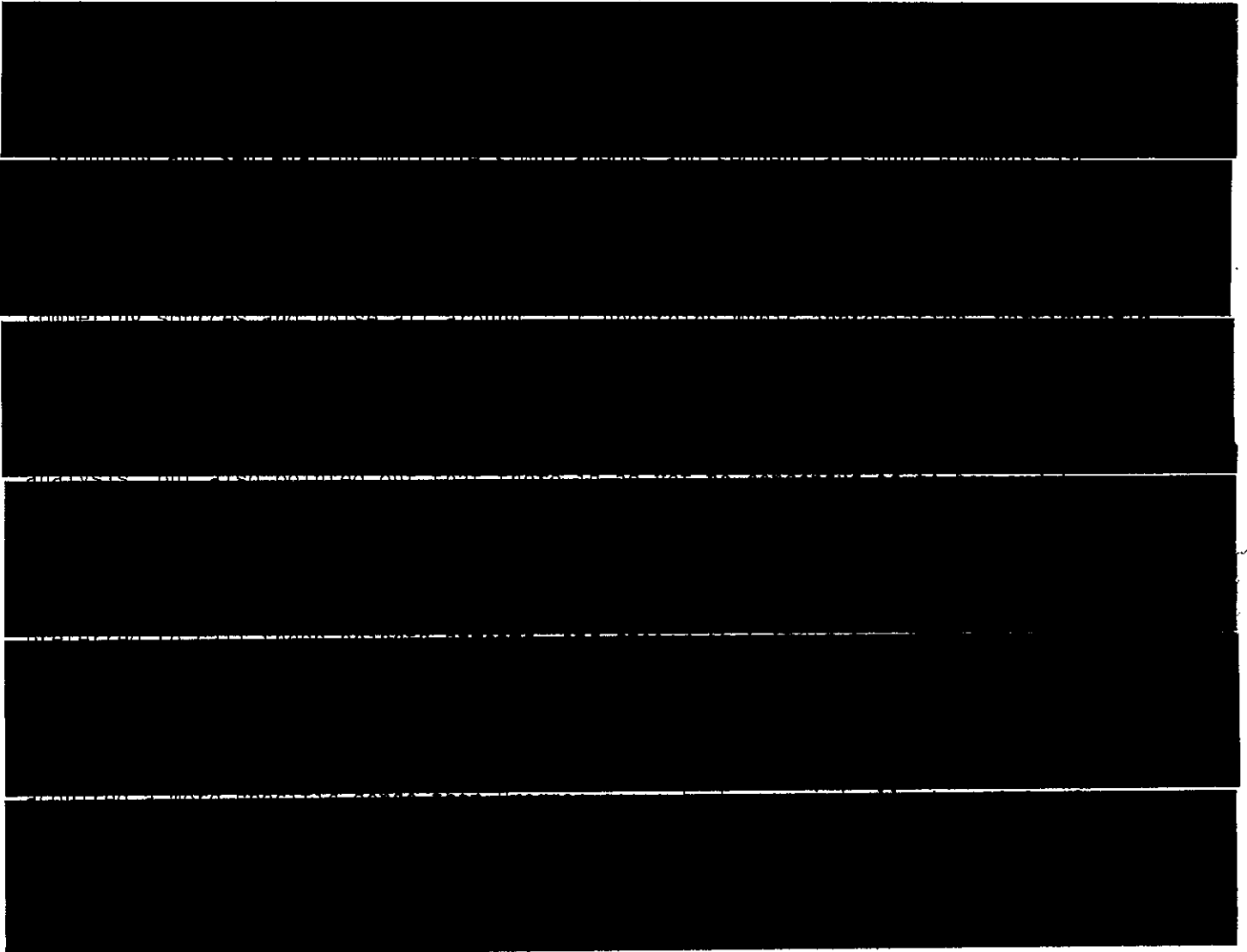


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Note: Use only the specified answer sheets.

Question 1



From Schnupp, J., Nelken, I., and King, A. (2011). *Auditory Neuroscience: Making Sense of Sound*, pp. 264–265, Cambridge, MA: The MIT Press.

Question (1) Describe in general terms the main difference(s), according to the author, between an “auditory object” and an “auditory stream”. (10 points).

Question (2) Describe with examples as many factors as possible that can contribute to sequential or simultaneous auditory stream formation. (40 points).

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Note: Use only the specified answer sheets.

Question II

Choose three out of the following six questions and answer them. You are allowed to draw figures for explanations, however, the main part of your answer should be logical explanations in English. Specify the number of each question of your choice on the answer sheet. (90 points; 30 points for each question)

- (1) Draw the middle ear structure, including the names for each part of the ossicles. Furthermore, explain how the middle ear transmits sound from the outer ear to the inner ear through its structure.
- (2) Explain "source-filter theory" of speech production.
- (3) It has been known that loudness can be described with the power law in a limited range. Describe a typical example of the power law and an experiment examining whether or not the power law fits the data.
- (4) Describe the phenomenon of "upward spread of masking" and explain the mechanism within the cochlea that is responsible for the phenomenon.
- (5) About the notion, "speech can transmit language information under various adverse conditions," describe example(s) of the adverse conditions, showing actual example(s) in the investigations on speech perception.
- (6) Suppose an experimenter in perceptual psychology would like to prove that a phenomenon, e.g., a perceptual illusion, is existent. Typically, the experimenter sets up both control conditions and experimental conditions in an experiment. Describe an example of such a case, and explain how conclusions are deduced from the experimental results. You don't have to confine yourself to the field of auditory psychology.

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Note: Use only the specified answer sheets.

Question III

Choose six terms from the list of 10 terms below, and explain the meaning of the terms in several lines for each. You are allowed to draw figures for explanations, however, the main part of your answer should be logical explanations in English. Specify the term you choose at the beginning of each answer. (60 points; 10 points for each question)

- (1) non-simultaneous masking
- (2) cone of confusion
- (3) basilar membrane
- (4) psychometric function
- (5) critical band
- (6) beating
- (7) statistical test
- (8) inner hair cell
- (9) sone
- (10) tone height