

# THE HEARING AID COUNCIL

## EXAMINATION PAPER 1 – OCTOBER 2001(2)

### SECTION A

Answer **THREE** of the following four questions:

- 1A1** (a) Draw an annotated diagram of the ossicular chain – include the tympanic membrane.
- (b) Describe the function of this system.
- (c) Describe briefly what you understand by the term otosclerosis.
- (d) Show with the aid of an audiogram the effect of otosclerosis on hearing.
- 1A2** (a) The middle ear is an air filled space inside the temporal bone. What structures surround the space?
- (b) What structures are inside the space?
- (c) What structures have openings in the space?
- (d) What are the consequences if the space becomes full of fluid – as in glue ear for example?
- (e) Why should you be concerned about unilateral effusion in a person of middle age or older?
- 1A3** Describe with the aid of a diagram how the cochlea responds to the vibration of the stapes footplate. Include both frequency and intensity resolution.
- 1A4** Write short notes on:
- (a) Otitis externa;
- (b) Chronic otitis media;
- (c) diplacusis;
- (d) the resonant frequencies of the concha and ear canal;
- (e) baro trauma.

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## EXAMINATION PAPER 1 – OCTOBER 2001(2)

### SECTION B

Answer THREE of the following four questions:

- 1B1** (a) What information can you glean from a pure tone audiogram and uncomfortable loudness levels that would assist in the selection and modification of a non-programmable BTE hearing aid.
- (b) The type of hook and earmould can alter the acoustic output of a hearing aid.  
Discuss the acoustic properties of these attachments.
- 1B2** If a sound is originated from a loudspeaker close to the left ear of a normal hearing person, it may not be perceived as equally loud to the right ear:
- (a) why not?
- (b) is the frequency of the hearing aid relevant?
- (c) how does the normal person make use of this difference?
- 1B3** Describe in full the three rules of masking recommended by BSA for pure tone audiometry, and explain:
- (a) why each rule is needed;
- (b) why the decibel values are as stated; and
- (c) give examples of the errors of interpretation that might arise if the rules are not followed.
- 1B4** (a) Define abnormal loudness growth.
- (b) List three tests that could establish the presence of abnormal loudness growth.
- (c) Describe the test procedure of one of these tests.

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## EXAMINATION PAPER 2 – OCTOBER 2001(2)

### SECTION A

Answer **THREE** of the following four questions:

- 2A1** Discuss the relationships between sensorineural hearing loss and the use of hearing aids with non-linear amplification. Include in your answer:
- (a) a definition of non-linear amplification and an explanation of the different types which are currently available.
  - (b) two cases with different degrees of sensorineural hearing loss which may require different forms of linear amplification.
- 2A2** With the assistance of diagrams where appropriate, explain the effect on the performance of a hearing aid system when the following are available or selected and when they would be beneficially used:
- (a) a high pass filter in the form of either switch or trimmer potentiometer;
  - (b) peak clipping trimmer potentiometer;
  - (c) a 'threshold knee' trimmer potentiometer;
  - (d) a 'T' switch;
  - (e) an 'open-ear' or non-occluding ear fitting.
- 2A3** Difficulty in hearing both clearly and comfortably in difficult listening conditions is a common problem for those with sensorineural hearing loss.
- (a) Explain the term 'signal-to-noise ratio'
  - (b) Explain what your recommendations for a hearing aid system might be in order to minimise the problem of poor speech discrimination and/or uncomfortable loudness in the presence of noise.
- 2A4** Write short notes on:
- (a) Real-ear to Coupler Differences (RECD)
  - (b) Advantages of body worn aids over behind-the-ear aids
  - (c) Directional microphone
  - (d) The reference test gain of a hearing aid

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## EXAMINATION PAPER 2 – OCTOBER 2001(2)

### SECTION B

All candidates must answer question 2B1 and 2 out of the other 3 questions

**2B1** Look at the documentation shown below and identify 6 Clauses with which this report invoice would be non-compliant with the Code of Practice. Where appropriate give explanatory notes and suggest further action that needs to be taken.

**2B2** New clients are advised that they need time to adapt to their new hearing instruments;

- (a) Explain why this is and what processes need to occur.
- (b) What advice would you give the client to support them through this initial acclimatisation stage?
- (c) How would you advise a client to respond constructively when they fail to hear somebody talking to them?
- (d) List 5 other actions that are either to do with the environment, the speaker or the hearing impaired listener that will facilitate effective communication.

**2B3** Clause 4 requires shall, ‘ Dispensers shall, where appropriate, make known to their clients that a hearing aid may not necessarily be of benefit.

Give examples of the situations where you would give such advice, and any alternative management that would be of benefit.

**2B4** Mrs. C is a 65 year old lady who works as a counsellor with Relate. She had a successful left stapedectomy in 1958. In 1960 she had a right stapedectomy which, regrettably, resulted in total loss of hearing on that ear. She is now experiencing difficulty at work, especially in interview situations. What advice can you give her?

# THE HEARING AID COUNCIL

## EXAMINATION PAPER 3 – OCTOBER 2001(2)

### SECTION A

Answer **FOUR** of the following 5 questions:

- 3A1** Discuss the relationships between sensorineural hearing loss and the use of hearing aids with non-linear amplification. Include in your answer:
- (a) a definition of non-linear amplification and an explanation of the different types which are currently available.
  - (b) two cases with different degrees of sensorineural hearing loss which may require different forms of linear amplification.
- 3A2** With the assistance of diagrams where appropriate, explain the effect on the performance of a hearing aid system when the following are available or selected and when they would be beneficially used:
- (a) a high pass filter in the form of either switch or trimmer potentiometer;
  - (b) peak clipping trimmer potentiometer;
  - (c) a 'threshold knee' trimmer potentiometer;
  - (d) a 'T' switch;
  - (e) an 'open-ear' or non-occluding ear fitting.
- 3A3** Difficulty in hearing both clearly and comfortably in difficult listening conditions is a common problem for those with sensorineural hearing loss.
- (a) Explain the term 'signal-to-noise ratio'
  - (b) Explain what your recommendations for a hearing aid system might be in order to minimise the problem of poor speech discrimination and/or uncomfortable loudness in the presence of noise.
- 3A4** Write short notes on:
- (a) Real-ear to Coupler Differences (RECD).
  - (b) Advantages of body worn aids over behind-the-ear aids.
  - (c) Directional microphone.
  - (d) The reference test gain of a hearing aid.
- 3A5** Describe the advantages and disadvantages of a body worn hearing aid over the BTE hearing aid.

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## EXAMINATION PAPER 3 – OCTOBER 2001(1)

### SECTION B

Answer **BOTH** questions:

**3B1** Look at the documentation shown below and identify 6 Clauses with which this report invoice would be non-compliant with the Code of Practice. Where appropriate give explanatory notes and suggest further action that needs to be taken.

**3B2** In order to comply with the HAC Code of Practice:

- (a) How far in advance can a prior arrangement be made for a home visit?
- (b) Before supplying a hearing aid system, to what standard must the audiometry be carried out and what information must be recorded about the audiometer used?
- (c) Before supplying or effecting the supply of a hearing aid, what information must the dispenser provide to the client in writing (Clause 11).