

Marks

Question 28 — Communication (25 marks)

- (a) (i) Outline the function of the organ of Corti in hearing. **1**
- (ii) State the relationship between wavelength, frequency and pitch of a sound. **2**
- (iii) Compare TWO structures used by animals to produce sound. **2**
- (b) (i) During a first-hand investigation, a student acquired three photographs of cross-sections of the human brain. The student then lost the labels and mixed up the photographs. **3**
- What structural features of the cerebrum, cerebellum and medulla oblongata could the student use to identify each photograph correctly?
- (ii) Draw a sketch of the brain and clearly label those regions involved in speech. **3**
- (c) The data in the table gives the focal length of six lenses which have the same diameter but different thickness.

<i>Thickness of lens (mm)</i>	<i>Focal length (cm)</i>
10	12.5
9	14.0
8	15.5
7	18.0
6	21.0
5	25.0

- (i) Graph the data on the graph paper provided on page 33. **4**
- (ii) State the relationship between lens thickness and focal length. **1**
- (iii) Refer to the information above in explaining how human eyes can focus on objects at different distances. **2**
- (d) The light signal reaching the retina is transformed into electrochemical signals. **7**
- Describe the different structures and processes in the retina that can achieve the energy transformation described above.