Mark schemes

Q1.

The mark scheme gives some guidance as to what statements are expected to be seen in a 1 or 2-mark (L1), 3 or 4-mark (L2) and 5 or 6-mark (L3) answer. Guidance provided in section 3.10 of the 'Mark Scheme Instructions' document should be used to assist in marking this question.

Mark	Criteria
6	All three areas covered with at least two aspects covered in some detail. 6 marks can be awarded even if there is an error and/or parts of one aspect missing.
5	A fair attempt to analyse all three areas. If there are several errors or missing parts, then 5 marks should be awarded.
4	Two areas successfully discussed, or one discussed and two others covered partially. Whilst there will be gaps, there should only be an occasional error.
3	One area discussed and one discussed partially, or all three covered partially. There are likely to be several errors and omissions in the discussion.
2	Only one area discussed or makes a partial attempt at two areas.
1	None of the three areas covered without significant error.
0	No relevant analysis.

The following statements are likely to be present.

Analogue to Digital conversion Sample rate

- Appreciation of speech being at lower end of audio spectrum (eg 3-4 kHz bandwidth)
- Minimum is 2 × highest frequency
- If too low, then aliasing can occur
- If too high, then forces redundant data to be generated

Resolution

- Determined by number of bits (n) used to code each sample
- Number of levels available is 2^n
- If too low - leads to poor quality signal retrieval
- If too high - may exceed data rate capability of system

Transmission technique

- Name the technique 'Time Division Multiplexing'
- Data from each source transmitted in successive time slots using

synchronized switches
- Time slots are of equal length
- Time slots present to each source in a cyclical way giving availability to each source at regular intervals
- Efficient / low-cost solution for heavy use transmission channel

[6]