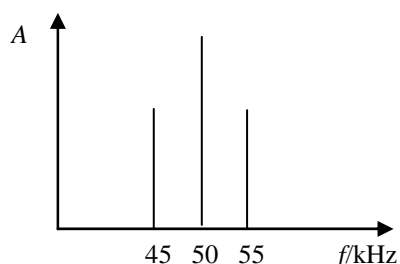
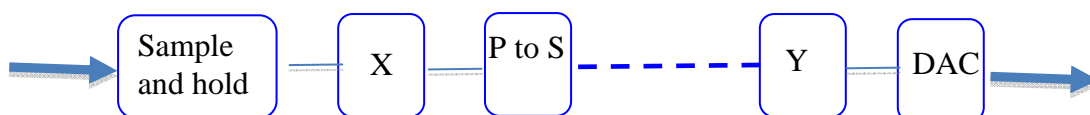


## Support Worksheet – Option F, Worksheet 1

- 1 State what is meant by **modulation** of a carrier wave. [1]
- 2 Describe amplitude modulation (AM). [2]
- 3 Describe frequency modulation (FM). [2]
- 4 The diagram shows the power spectrum of an AM modulated carrier wave.



- State the frequency of the carrier wave, the frequency of the information signal and the bandwidth. [3]
- 5 Convert the decimal number 13 into a binary number. [1]
  - 6 Convert the binary number 1011 into a decimal number. [1]
  - 7 State two advantages of digital over analogue transmission of information. [2]
  - 8 State what is meant by **time division multiplexing**. [1]
  - 9 The block diagram shows a system used in the digital transmission of an analogue signal.



- Describe the role of blocks X and Y. [4]
- 10 Define the term **critical angle**. [1]
  - 11 Calculate the critical angle when light is incident from glass on a glass–air boundary. The refractive index of the glass is 1.43. [1]
  - 12 Distinguish between **material** and **modal dispersion**. [2]
  - 13 State what is meant by **attenuation**. [1]
  - 14 State what is meant by **noise**. [1]
  - 15 State one source of noise in an optic fibre. [1]
  - 16 State two properties of an ideal operational amplifier. [2]



- 17 State what is meant by an **inverting amplifier**. [1]
- 18 A mobile phone, in a cell of a mobile phone system, is turned on. Describe what happens at the base station and the cellular exchange. [3]
- 19 A passenger in a train uses his mobile phone as the train moves. Describe how the passenger can talk on his phone even though the train moves from one cell to another. [2]