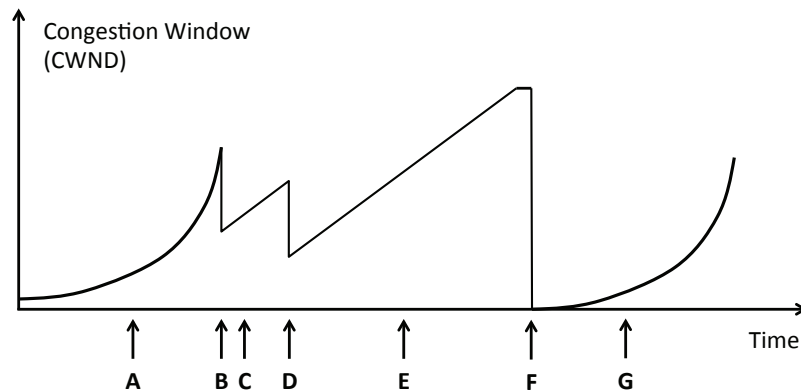


COMPUTER SCIENCE TRIPOS Part IB – 2012 – Paper 5

5 Computer Networking (AWM)

- (a) (i) Define the terms *capacity* and *latency* as applied to communication channels; explaining whether there is a **strict** relationship between the capacity of a channel and its latency. [3 marks]
 - (ii) Using a clear example explain how the latency of a channel can have a direct effect on the capacity of a higher-layer channel which uses it. [8 marks]
 - (iii) Describe how the capacity of the higher-layer channel may be improved, without any change to the characteristics of the underlying channel. [3 marks]
 - (iv) Describe in what circumstances such changes would provide only limited benefit. [2 marks]
- (b) The figure below illustrates, for a single TCP connection, changes in the advertised congestion window (CWND).



- (i) Indicate which phase of congestion control the TCP connection is in at **G**.
- (ii) Indicate which phase of congestion control the TCP connection is in at **E**.
- (iii) Describe the event that has occurred at **D**.
- (iv) Describe the event that has occurred at **F**.

[1 mark each]