

## COMPUTER SCIENCE TRIPOS Part II – 2012 – Paper 9

### 13 Topical Issues (RKH)

- (a) (i) Discuss the resilience of UWB impulse radio systems to multipath fading. Explain how they avoid causing interference to traditional narrowband communications systems. [5 marks]
- (ii) The Wireless USB standard describes a high bandwidth radio protocol intended to replace wired USB systems. In the course of its development, both the 3.1–10.6 GHz UWB band and the unlicensed EHF radio band (57–64 GHz) were considered for the physical layer. Suggest **two** advantages of UWB over EHF in this context. Explain your answers. [4 marks]
- (b) Describe how UWB radio can be used for pulse radar. Include in your answer the two approaches for handling slow and fast-moving objects and explain why there is a well-defined maximum operating distance for such systems. Explain what effect separating the transmitters and receivers spatially would have. [11 marks]