

DUBLIN INSTITUTE OF TECHNOLOGY
KEVIN STREET DUBLIN 8

BSc. (Honours) Degree in Computing

Year 1

Semester 1 Examinations 2013/2014

NETWORKING 1 - FUNDAMENTALS

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Wednesday 08 Jan 2014 4.00-6.00

Attempt *three* out of *four* questions

Question 1 carries 34 marks

All other questions carry 33 marks each

1. (a) The following acronyms have been extracted from a networking glossary:
ASCII, FTP, RIP, SMTP, WAN.
 - (i) State the full version of each acronym.
(10 marks)
 - (ii) Give a *definition* for each acronym.
(15 marks)
- (b) Explain the difference between *bandwidth* and *throughput*.
(9 marks)
2. (a) List and briefly describe the *Open System Interconnection (OSI) reference model* layers.
(15 marks)
- (b) List and describe *two* protocols that operate at the *application* layer of the TCP/IP *model*.
(10 marks)
- (c) Describe the main difference between *Ethernet, Fast Ethernet* and *Gigabit Ethernet*.
(8 marks)
3. (a) Using suitable *diagrams* describe the following *network* topologies:
 - (i) *Bus*
(5 marks)
 - (ii) *Star*
(5 marks)
 - (iii) *Hierarchical*
(5 marks)
- (b) Describe *multicast transmission* and give some examples of its usage.
(10 marks)
- (c) Explain *half-duplex* and *full-duplex* transmission giving an example for each.
(8 marks)
4. (a) Describe the *four* main *classes* of *IP addresses* with the aid of a diagram, showing the division between *networks* and *hosts*.
(15 marks)
- (b) Explain the difference between *public* and *private* IP addresses.
(10 marks)
- (c) With a Class *C* address and a *subnet mask* of 255.255.255.224:
 - (i) How many bits have been borrowed to create subnets? Explain your calculations.
(4 marks)
 - (ii) How many subnets can be created? Explain your calculations.
(4 marks)