

UNIVERSITY OF MALTA  
BOARD OF STUDIES FOR INFORMATION TECHNOLOGY  
Department of Computer Science & A.I.  
B.Sc. I.T.(Hons.) Year II  
June 2005 Special Assessment Session

CSA2100: Techniques in Operating Systems      23rd June 2005

09.00-11.30

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*Answer **two** questions out of the **three** provided. Each question carries 25 marks for a total of 50% of this paper.*

**Section A**

## Section B

4. (a) Explain how a particular computer can be identified for reception and transmission purposes at Layer 2 of the OSI Model. Furthermore explain how this identification scheme cannot be used when connecting to computers on the Internet. **[5 marks]**
- (b) Describe the difference between bandwidth and throughput. **[3 marks]**
- (c) List all the layers making up the OSI Model, briefly describing each layer's function and give an example of a protocol that resides at each layer. **[10 marks]**
- (d) Explain the steps involved when a router receives a packet and it has to decide how to send this packet onwards in a subnetted environment. **[7 marks]**
5. (a) Explain the difference between class-based IP addressing and CIDR IP addressing. **[5 marks]**
- (b) Explain the three types of subnetting making sure you give an example of each. **[5 marks]**
- (c) Why is there a range of addresses that are termed as *private*? Give an example of their use. **[5 marks]**
- (d) How does ICMP aid in verifying if a host is reachable, and also how can ICMP find out the intermediate routers to that host. **[10 marks]**
6. (a) What is the difference between an IGP and an EGP? **[3 marks]**
- (b) Explain the difference between *Static Routing* and *Dynamic Routing* in terms of administrative costs and in terms of routing operation. Include in your answer an example of a *dynamic routing protocol*. **[5 marks]**
- (c) What is meant by the *convergence time* in dynamic routing and explain an enhancement over the standard RIP protocol aimed to reduce this time. **[5 marks]**
- (d) What are the limitations found in RIP version 1. **[5 marks]**
- (e) Explain the steps involved in establishing a connection when using TCP/IP sockets. Also mention how the client knows on which port the server is listening on for well-known services. **[7 marks]**
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