



**RAJARATA UNIVERSITY OF SRI LANKA  
FACULTY OF APPLIED SCIENCES**

**B.Sc. (Four-Year) Degree in Information and Communication Technology  
Fourth Year - Semester I Examination – June / July 2018**

**ICT4303 – ADVANCED COMPUTER NETWORKS**

**Time: Three (03) hours**

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**Instructions to Candidates:**

- This paper has **six (06)** questions in **two (02)** pages.
  - Each question carries **equal marks**.
  - Answer any **five (05)** questions.
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1.

- a) What is the problem of IP address exhaustion? What are the solutions proposed?  
(05 Marks)
- b) Discuss the use of private IP addresses within a Local Area Network that provides Internet connectivity to its hosts.  
(05 Marks)
- c) What are the possible mechanisms to interconnect two distant Local Area Networks, each of which are using private IP addresses?  
(05 Marks)
- d) What are the essential precautions that the administrator must take before connecting two distant Local Area Networks, each of which are using private IP addresses?  
(05 Marks)

2.

- a) Compare and contrast circuit switching with packet switching in terms of their advantages and disadvantages and applications. (10 Marks)
- b) Elaborate the applications of virtual circuit switching. (05 Marks)
- c) Briefly explain how Link State Routing algorithms work. (05 Marks)

3.

- a) Explain why Classless Interdomain Routing is based on hierarchical routing. (10 Marks)
- b) How do defining multicasting groups improve bandwidth utilization? Explain. (10 Marks)

4.

- a) Discuss the applications of tunneling. (05 Marks)
- b) Discuss how Point-to-Point Protocol over Ethernet can be used to share an Internet connection. (05 Marks)
- c) What is the importance of burstiness of a virtual circuit? (05 Marks)
- d) Elaborate the need for a higher port capacity than the Committed Information Rate. (05 Marks)

5.

- a) Explain why it is necessary to have a separate network management architecture in a heterogeneous network. (10 Marks)
- b) How do network management protocols communicate with different nodes in a network? (05 Marks)
- c) Discuss the difference between reactive management and proactive management of computer networks. (05 Marks)

6.

- a) Briefly discuss why secure shell (SSH) is preferred to Telnet. (05 Marks)
- b) What are the advantages of using optical fibres in data communication? (05 Marks)
- c) Discuss how Software Defined Network (SDN) systems work. (10 Marks)

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