



The University of Fiji



Undergraduate Programme
Department of Computer Science and Mathematics
Semester 1 Year 2018

FINAL EXAMINATION PAPER

ITC362 SYSTEM AND NETWORK ADMINISTRATION

Important Instructions to Students:

1. Read the questions, instructions carefully and answer the questions.
2. You are allowed an **extra 10 minutes reading time** (during this time, you are not allowed to write with pen) and **180 minutes (3 Hours) to complete this paper**.
3. Silent, non-programmable calculators are allowed, but not supplied.
4. Write all your answers in the answer booklet provided. If you need extra sheets, please ask from the supervisor. Write your name, course code and student identification number in the answer booklet and in the attendance sheet.
5. This Final Course Examination Paper is worth 100 marks contributes 50% of the total course assessments.
6. This paper contains only One (1) section, Section A. Answer all questions.
7. Write all your answers legibly. The marker has the right to award zero for answers that are not legible.
8. This is a **Closed Book Examination**. The University views plagiarism, cheating and dishonest practice as serious offences and if found, offenders are penalized.

Examination Paper Content (Format):

<u>Section</u>	<u>Question</u>	<u>Content</u>	<u>Marks</u>	<u>Suggested Time</u>
A	1 - 35	Open-Ended Questions	100	180 minutes
		TOTAL	100	180 Minutes

All questions are compulsory.

1. Briefly explain the following terms with an example:
 - a. **Network documentation** [2 marks]
 - b. **Ethernet** [2 marks]
2. How is **Version 4 IP addresses** arranged and displayed? [2 marks]
3. What is the primary advantage of a **wireless local area network (WLAN)**? [2 marks]
4. Describe a **star network** topology. Also draw a labelled diagram to support your answer. [3 marks]
5. What type of cabling does **802.3z** and **802.3ae** standards support? What is the **data transfer rate**? [2 marks]
6. List and briefly describe each of the **seven OSI layers**. [7 marks]
7. Describe main difference between **TCP** and **UDP**. [2 marks]
8. What **protocols** are the following ports associated with? [4 marks]
 - a. 21
 - b. 53
 - c. 80
 - d. 443
9. Differentiate between **straight through** and **crossover cables**. [2 marks]
10. Explain how to prepare a CAT6 straight through cable using TIA/EIA-568-B standard. [5 marks]
11. Explain the difference between a WAP and a wireless repeater. [3 marks]
12. Explain how **electromagnetic interference (EMI)** and **radio frequency interference (RFI)** problems can be solved. [3 marks]
13. How do **802.11g** and **802.11n** standards differ in data transfer rate and frequency? [2 marks]
14. What do **WEP** and **AES** stand for and what is their **encryption level (key size)**? [4 marks]

15. What is the IP range (1st octet) and default subnet mask of the following classes of network address?
- a. **Class A** [2 marks]
 - b. **Class C** [2 marks]
16. Explain **Automatic Private IP Addressing (APIPA)** with an example. [3 marks]
17. Describe **network address translation (NAT)**, with an example. [3 marks]
18. What is a **default gateway**? [1 mark]
19. What is a **Dual IP Stack**? [1 mark]
20. Consider the IP Address 10.20.21.31 with a subnet mask of 255.255.255.0. Find out the following using the above information:
- a. Number of Subnets [1 mark]
 - b. Number of Hosts per Subnet [1 mark]
21. Explain the difference between **IPv4** and **IPv6**? [6 marks]
22. Explain the Address range and purpose of the following types of addresses:
- a. **Unicast** [2 marks]
 - b. **Anycast** [2 marks]
 - c. **Multicast** [2 marks]
23. **Truncate** the following IP address:
- 2001:4860:0000:2001:0000:0000:0000:0040 [2 marks]
24. Explain the purpose of the following commands:
- a. **Ipconfig** [2 marks]
 - b. **Ping** [2 marks]
 - c. **Tracert** [2 marks]

25. What does the acronym **ICMP** stand for? What is the function of ICMP? [2 marks]
26. What is the command **nbtstat -s** used for? What is the difference when using **nbtstat -S**? [2 marks]
27. What does the acronym **DNS** stand for? What is the function of DNS? [2 marks]
28. Expand **DHCP** and describe how it works? [2 marks]
29. DHCP sessions use a four-step process known as **DORA**. Describe the four steps? [4 marks]
30. Describe **RRAS**. [2 marks]
31. Describe the following routing protocols:
- A. **RIP** [1 mark]
 - B. **OSPF** [1 mark]
 - C. **IGRP** [1 mark]
32. Describe **Packet Switching**. [1 mark]
33. Describe a **VPN**? [1 mark]
34. Explain the purpose of a **firewall**? [1 mark]
35. What is a **proxy server**? [1 mark]

End