

**UCSC****University of Colombo, Sri Lanka***University of Colombo School of Computing***DEGREE OF BACHELOR OF INFORMATION TECHNOLOGY
(EXTERNAL)**Academic Year 2024 — 3rd Year Examination — Semester 5**IT5406 — Systems & Network Administration***Structured Question Paper*
(2 Hours)**To be completed by the candidate****Index Number**

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Important Instructions

- The duration of the paper is **2 hours**.
- The medium of instructions and questions is English. Students should answer in the medium of English language only.
- This paper has **4 questions** on **11 pages**. Answer **all** questions.
- All questions carry **equal** marks.
- Write your answers **only on the space provided** on this question paper.
- Do not tear off any part of this question paper. Under no circumstances may this paper (or any part of this paper), used or unused, be removed from the Examination Hall by a candidate.
- Note that questions appear on both sides of the paper. If a page or part of a page is not printed, please inform the supervisor/invigilator immediately.
- Any electronic device capable of storing and retrieving text, including electronic dictionaries, smartwatches, and mobile phones, is not allowed.
- Calculators are **not allowed**.
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**To be completed by
the examiners**

1	
2	
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4	
Total	

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- 1.** (a). Write down **three (03)** important questions you should answer before adopting a Linux distribution.

[3 marks]

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- (b). Write down **three (03)** Red Hat Package Management System based Linux distributions.

[3 marks]

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- (c). What is the purpose of a “man page”?

[2 marks]

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- (d). Write down a Linux command that allows you to determine if a software is already installed or not.

[2 marks]

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(e). Briefly describe the role of a **Security Operations Engineer**.

[3 marks]

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(f). Explain the given GRUB commands, using a single sentence.

[1 marks]

boot

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[1 marks]

linux

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[1 marks]

search

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(g). Briefly describe the **Single-user Mode** in a Linux system.

[3 marks]

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(h). Write down **three (03)** configurations found in a unit with respect to a service in **systemd**.

[6 marks]

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2. (a). i. What is the Linux utility command that can be used to set a network interface's media-specific parameters such as link speed?

[1 marks]

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- ii. Write down the Linux command that can be used to set the network interface **eth0** to **100 Mbps full duplex**.

[3 marks]

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- iii. Write down the Linux command that can be used to ignore ICMP ping messages.

[3 marks]

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- iv. A time value measured in milliseconds can be found in the output of a ping command. Explain what is that measurement and how it is useful.

[3 marks]

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- (b). Explain why it is not recommended to use Linux, UNIX, or Windows systems as firewalls?

[3 marks]

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- (c). Network troubleshooting is an essential skill a System and Network Administrator should have. Write down **four (04)** basic principles to follow when troubleshooting a system or network.

[6 marks]

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- (d). List **three (03)** core features of a Virtual Private Cloud (VPC) in cloud networking.

[6 marks]

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- 3.** (a). Write down the **three (03)** most commonly used cloud service categories and explain how each one is different from the others.

[12 marks]

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- (b). Cloud providers maintain data centers around the world. They use “Regions” and “Availability zones” as standard terms to describe geography-related features. Describe each term and explain the difference using examples.

[10 marks]

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- (c). Write down **three (03)** cloud service providers.

[3 marks]

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4. (a). What is a privileged network port?

[3 marks]

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(b). In a Linux system `/etc/shadow` file contains user passwords. However, the file is owned by the user root and assigned group is also root. Explain how Linux system has made regular users to change their own password without superuser privileges.

[5 marks]

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(c). Explain the niceness of a Linux process using the nice values.

[5 marks]

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(d). Explain the schedule of the linux cron configuration given below.

```
*/30 4,16 * * 1,3,5 /usr/bin/backup_script
```

[5 marks]

--

(e). Explain the following log rotation configuration.

```
/var/log/sss/*.log {  
    weekly  
    missingok  
    notifempty  
    rotate 2  
    compress
```

[5 marks]

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- (f). What is the Linux utility command that can be used to display every system call that a process makes and every signal it receives?

[2 marks]

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