

## **WARNING**

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|-----------------|------------------|--|--|--|--|
| Family Name     |                  |  |  |  |  |
| Given Name/s    |                  |  |  |  |  |
| Student Number  |                  |  |  |  |  |
| Teaching Period | Semester 1, 2019 |  |  |  |  |

|  |  |                    |                                      |  |                                      |  |                                      |   |
|--|--|--------------------|--------------------------------------|--|--------------------------------------|--|--------------------------------------|---|
| <b>HIT172 – Operating Systems and Applications</b>   | <b>DURATION</b>  |                    |                                      |  |                                      |  |                                      |   |
|  |  |                    |                                      |  |                                      |  |                                      |   |
|  | Reading Time:  | <b>10 minutes</b>  |                                      |  |                                      |  |                                      |   |
|  | Writing Time:  | <b>180 minutes</b> |                                      |  |                                      |  |                                      |   |
| <b>INSTRUCTIONS TO CANDIDATES</b>  |  |                    |                                      |  |                                      |  |                                      |   |
| <p>1.1 The examination has <b>3</b> sections</p> <table border="1" style="width: 100%;"> <tr> <td style="width: 20%;"><b>Section A:</b><br/>Suggested Time:</td> <td><b>Multiple Choice Questions:</b> Answer ALL 25 questions<br/>50 minutes Marks:30</td> </tr> <tr> <td><b>Section B:</b><br/>Suggested Time:</td> <td><b>Short Answer Questions:</b> Answer ALL 8 questions<br/>80 minutes Marks:40</td> </tr> <tr> <td><b>Section C:</b><br/>Suggested Time:</td> <td><b>Mathematical Problems:</b> Answer ALL 2 questions<br/>50 minutes Marks:30</td> </tr> </table> <p>1.2 Note that questions <b>ARE NOT</b> of equal value.</p> <p>1.3 For <b>Section A:</b> Read <b>ALL</b> questions carefully. Questions must be answered on the answer sheet provided in <b>this</b> examination paper and <b>must be handed</b> in with your answer sheet booklet. Refer to the last page of the examination paper for the answer sheet.</p> <p>1.4 For <b>Section B and C:</b> Read <b>ALL</b> questions carefully. Questions must be answered in the Answer Booklet provided.</p> |  |                    | <b>Section A:</b><br>Suggested Time: | <b>Multiple Choice Questions:</b> Answer ALL 25 questions<br>50 minutes Marks:30 | <b>Section B:</b><br>Suggested Time: | <b>Short Answer Questions:</b> Answer ALL 8 questions<br>80 minutes Marks:40 | <b>Section C:</b><br>Suggested Time: | <b>Mathematical Problems:</b> Answer ALL 2 questions<br>50 minutes Marks:30 |
| <b>Section A:</b><br>Suggested Time:   | <b>Multiple Choice Questions:</b> Answer ALL 25 questions<br>50 minutes Marks:30 |                    |                                      |  |                                      |  |                                      |   |
| <b>Section B:</b><br>Suggested Time:   | <b>Short Answer Questions:</b> Answer ALL 8 questions<br>80 minutes Marks:40     |                    |                                      |  |                                      |  |                                      |   |
| <b>Section C:</b><br>Suggested Time:   | <b>Mathematical Problems:</b> Answer ALL 2 questions<br>50 minutes Marks:30      |                    |                                      |  |                                      |  |                                      |   |
| <b>EXAM CONDITIONS</b>   |  |                    |                                      |  |                                      |  |                                      |   |
| <p><u>You may begin writing from the commencement of the examination session.</u> The reading time indicated above is provided as a guide only.</p>  |  |                    |                                      |  |                                      |  |                                      |   |
| This is a CLOSED BOOK examination  |  |                    |                                      |  |                                      |  |                                      |   |
| No calculators are permitted   |  |                    |                                      |  |                                      |  |                                      |   |
| No handwritten notes are permitted   |  |                    |                                      |  |                                      |  |                                      |   |
| No dictionaries are permitted  |  |                    |                                      |  |                                      |  |                                      |   |
| <b>ADDITIONAL AUTHORISED MATERIALS</b>   | <b>EXAMINATION MATERIALS TO BE SUPPLIED</b>                                      |                    |                                      |  |                                      |  |                                      |   |
| No additional printed material is permitted  | 1 x 20 Page Book   |                    |                                      |  |                                      |  |                                      |   |

**THIS EXAMINATION IS PRINTED  
DOUBLE-SIDED.**

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LEFT BLANK.**

**Section A**  
**Multiple Choice Questions**  
**Total No of Marks for this section: 30**

**This section should be answered on the Answer Sheet provided.**

Please ensure that your name and student number have been written on the Answer sheet and place in the completed answer Booklet.

Marks for each question are indicated. Suggested Time allocation for Section A: 50 mins

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## Section B

### Short Answer Questions

Total No of Marks for this section: 40

This section should be answered in the Answer Booklet provided.

Marks for each question are indicated. Suggested Time allocation for Section B: 80 mins

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#### Question 1

Suppose you are given a new computer and asked to do the following tasks. Briefly explain in your own words how you can accomplish the following tasks:

- (a) Install Windows 7 64 bit Ultimate in your host machine. (Marks: 1.5)
- (b) Create one virtual machine to support all Windows XP applications. Which Operating system should you choose for your virtual machine? (Marks: 1.5)
- (c) Build network connectivity between two virtual machines running in your host machine. (Marks: 2.0)

#### Question 2

Write down the commands for the following operations:

- Create a file in Linux
- Command for renaming a file from **cdu.txt** to **hit172.txt**
- Using *Method-1* for **chmod**, set permission for **hit172.txt** in the format **r-x -wx --x**
- Using *Method-2* for **chmod**, 'Deny **Execute** and **Write**' permission to group and owner for **hit172.txt**, but leave the **Read** permission intact

(Marks: 5.0)

### Question 3

(a) What is an operating system? Describe some of the important functions of the operating system. Write at least four differences between the desktop operating system and the network operating system.

(Marks: 3.0)

(b) Define the following components of the Application Compatibility Toolkit:

- Internet Explorer Compatibility Test Tool
- Compatibility Administrator

(Marks: 2.0)

### Question 4

(a) You are asked to build a network of 130 computers comprising of 4 servers and 160 clients. Explain briefly the services you should have in your network to support automatic assignment of the IPv4 address and resolve local host names and fully qualified domain names.

(Marks: 3.0)

(b) Explain the use of:

- Enabling “Network Discovery”
- Enabling “File Sharing Connections”

(Marks: 2.0)

### Question 5

(a) Draw the Gantt chart and find the average waiting time of the following processes using SJF scheduling:

| Process | Burst Time |
|---------|------------|
| P1      | 7          |
| P2      | 2          |
| P3      | 4          |
| P4      | 1          |
| P5      | 3          |

(Marks: 2.5)

(b) Draw the Gantt chart and find the average waiting time of the following processes using Priority scheduling (lowest Priority Integer denotes the highest priority):

| Process | Burst Time | Priority |
|---------|------------|----------|
| P1      | 9          | 3        |
| P2      | 2          | 1        |
| P3      | 1          | 5        |
| P4      | 5          | 4        |
| P5      | 1          | 2        |

(Marks: 2.5)

## Question 6

(a) Explain the purpose of the following command:

- Net localgroup Management /add
- netsh interface ipv4 set address "local area connection" static 192.168.10.5 255.255.255.0
- netsh advfirewall firewall add rule name="ICMPv4" protocol=icmpv4:any,any dir=in action=allow

(Marks: 3.0)

(b) What is "PID"? Which type of base or number system is used to represent "PID"?

(Marks: 2.0)

## Question 7

(a) What is NAP? Define at least two criteria that the administrators can use to configure NAP to restrict network access.

(Marks: 3.0)

(b) Explain briefly the purpose of the following command:

- Net user Dan\_Park P@ssword / ADD
- Runas /savecred /user: Canberra \ Dan\_Park notepad

(Marks: 2.0)

## Question 8

(a) Evaluate the importance of creating a virtual hard disk (VHD).

(Marks: 2.0)

(b) Define briefly how the OS manage process from inactive state to final state. What is the technique used to prevent deadlock and starvation?

(Marks: 3.0)

**Section C**  
**Mathematical Problems**  
**Total No of Marks for this section: 30**

This section should be answered in the Answer Booklet provided.

Marks for each question are indicated. Suggested Time allocation for Section B: 50 mins

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**Question 1**

Convert the following binary number into the equivalent base numbers.

$$(1110110)_2 = ( \quad )_{10} = ( \quad )_{16} = ( \quad )_8$$

(Marks: 3)

Write down the simplified version of the following IPv6 address.

$$21cd:0053:0000:0000:03ad:003f:af37:8d62 = [ \quad ]$$

(Marks: 3)

**Question 2**

You work in an international IT company which is named ABC. As a network administrator you need to chop the whole network into a number of subnets such that each subnet will have maximum 30 usable hosts IP. Given the network address:

Network address: 201.196.130.0 / 24

Find:

- (a) Number of bits borrowed: \_\_\_\_\_
- (b) Total number of subnets available: \_\_\_\_\_
- (c) Total number of hosts/subnet: \_\_\_\_\_
- (d) Total number of usable hosts/subnet: \_\_\_\_\_

(Marks: 4x1 =4)



(e) Write down the subnet address with slash notation.

| Subnet | Network Address | First Host IP | Last Host IP | Broadcast address |
|--------|-----------------|---------------|--------------|-------------------|
| 1      |                 |               |              |                   |
| 2      |                 |               |              |                   |
| 3      |                 |               |              |                   |
| 4      |                 |               |              |                   |
| 5      |                 |               |              |                   |

(Marks: 10.0)

(f) You are asked again to have another 3 sub-subnets in subnet 3. What will be the new address for the computers in subnet 3?

| Subnet 3 | Network Address | First Host IP | Last Host IP | Broadcast address |
|----------|-----------------|---------------|--------------|-------------------|
| 1        |                 |               |              |                   |
| 2        |                 |               |              |                   |
| 3        |                 |               |              |                   |

(Marks: 6.0)

(g) You are required to install a DNS server and a printer in subnet 01. Write down the address and the subnet mask for DNS server and the printer.

(Marks: 4.0)

**Student ID:**

**Answer Sheet for Section A**

|            |            |            |            |            |
|------------|------------|------------|------------|------------|
| <b>Q1</b>  | <b>Q2</b>  | <b>Q3</b>  | <b>Q4</b>  | <b>Q5</b>  |
| <b>Q6</b>  | <b>Q7</b>  | <b>Q8</b>  | <b>Q9</b>  | <b>Q10</b> |
| <b>Q11</b> | <b>Q12</b> | <b>Q13</b> | <b>Q14</b> | <b>Q15</b> |
| <b>Q16</b> | <b>Q17</b> | <b>Q18</b> | <b>Q19</b> | <b>Q20</b> |
| <b>Q21</b> | <b>Q22</b> | <b>Q23</b> | <b>Q24</b> | <b>Q25</b> |