1707
Department of Examination
Earth University College

BIT-Pre-Semester
System and Network Administration – 1
11401
2017.12.23
(02.30pm – 04.30pm)
Mid Examination – Proper
Essay Paper

Important Instructions:

- The duration of the paper is **2 (two)** hours.

- The medium of instructions and questions is English.

- The paper has **4** questions and **12** pages.

- All questions should be answered. All questions **do not carry equal marks**.

- Answers should be marked on the space given under each question.

- Note that questions appear on both sides of the paper.
  If a page is not printed, please inform the supervisor immediately.

- Do not tear off any part of this answer book. Under no circumstances may this book, used or unused, be removed from the Examination Hall by a candidate.
  *****

To be filled by the applicant:

| Registration Number	
NIC No:	
Batch:	
Exam Center:	

To be filled by the examiner:

Q1 :	Q2 :	Q3 :	Q4 :	Total :

1.

a) Susantha is a BIT undergraduate and was buying a newer laptop computer from the market few days ago. Following images captured from laptop which Susantha bought. Identify the following images and write down one (1) purpose related with them. *(note that: sizes of images are not equal with actual sizes of interfaces)* **[8 Marks]**

(i)
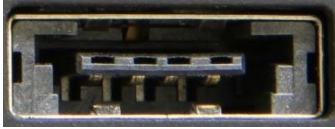

```
e SATA (external Serial Advanced Technology Attachment)

SATA device and also USB device can be connected
```

(ii)


```
Thunder Bolt 3.0

USB 3.0 device and thunder bolt devices can be connected
Can be used to charge some devices (laptop)
```

(iii)


```
HDMI (Hi Definition Media Interface)

Provide HD video output with audio signal
```

(iv)


```
Display port

Provide HD video output with audio signal
```

b) Following specification captured from surface of modern CPU.

> INTEL®CORE™ i5 4200U
> SRORG 3.3GHZ/4M/09A
> L220B869

(i) Identify the CPU generation. **[1 Marks]**

> 4th Generation

(ii) List down one factor that directly related with generation of CPU. **[1 Marks]**

> Graphic version

(iii) What is the indicated as 3.3GHZ? **[1 Marks]**

> Operation frequency of CPU

c) Draw a block diagram to represent a conceptual view of CPU according to the following specification.
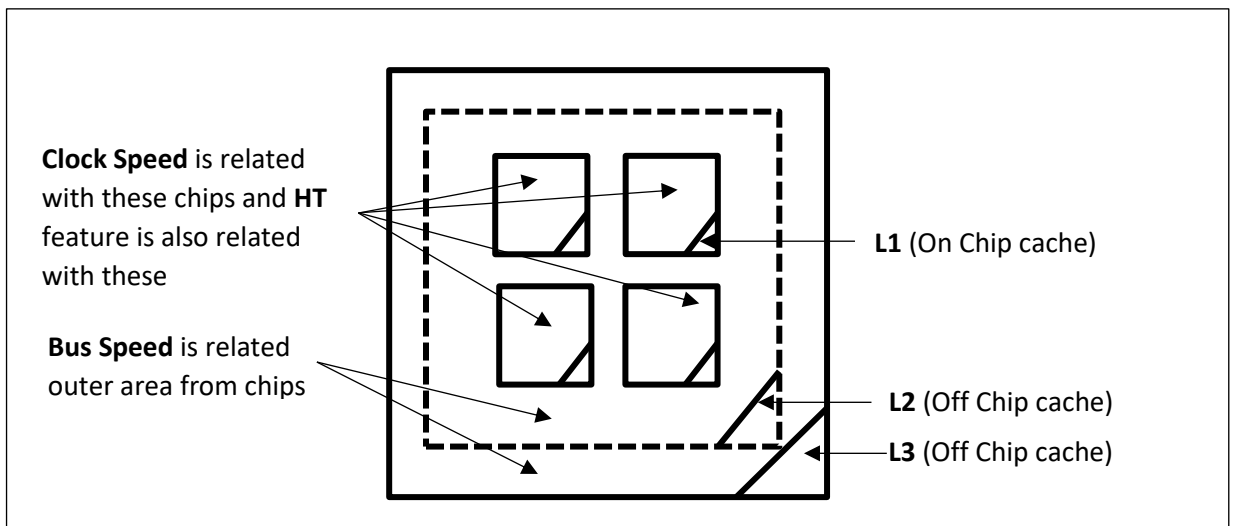   **[3 Marks]**

   Specification: Quad core (Intel HT included)

   L1, L2, L3 cache memory

   CPU Clock speed

   CPU Bus speed

Clock Speed is related with these chips and **HT** feature is also related with these

Bus Speed is related outer area from chips

L1 (On Chip cache)

L2 (Off Chip cache)
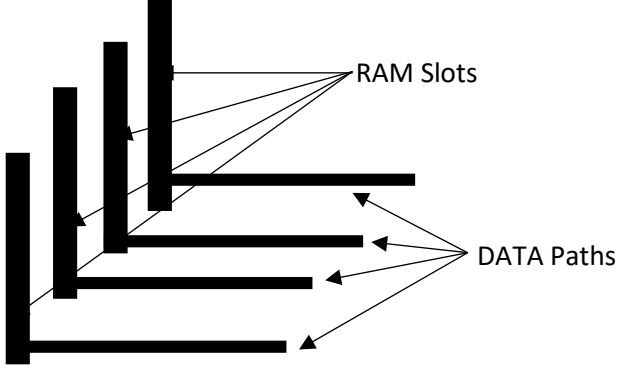
L3 (Off Chip cache)

d) Briefly describe the quad channel memory architecture according to following specification. **[5 Marks]**

Supported RAM Type: DDR4

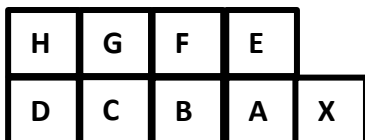**Another device need to be supported:** Mother Board

Description: Separate four data paths are employed to transfer data from four RAMS.

RAM Slots

DATA Paths

e) Following diagram shows you power SW, reset SW, power LED and HDD LED connecting area of a typical desktop board. Identify the contact pin correctly named A to H. **[4 Marks]**

H	G	F	E	
D	C	B	A	X

A – Reset Switch

B – Reset Switch

C – HDD LED (-)

D – HDD LED (+)

E – Power switch

F – Power switch

G – Power LED (-)

H – Power LED (+)

f) One of the friend of Susantha named Asitha hope to buy a new desktop PC for doing day to day educational exercises at home. He suggests the following specification to you and ask the required cost estimation approximately. Provide rough cost estimation for following specification. **[12 Marks]**

Processor: Intel core i3 7th Gen – 20000 LKR (18000 - 22000)

Mother board: H 110 Asus - 12000 LKR (90000 - 14000)

RAM: 8 GB DDR 4 - 10000 LKR (9000 - 11000)

Storage: 1TB HDD - 7500 LKR (6000 - 8000)

Storage: 128 GB SSD - 17000 LKR (15000 - 18000)

Optical drive: DVD R/W - 2800 LKR (2000 - 3000)

Casing with PSU: 450W (Normal) - 3000 LKR (2700 - 3500)

Monitor: 20" IPS (AOC) - 13500 LKR (12000 - 14000)

K/B and mouse: USB K/B & Mouse (Normal) - 1500 LKR (1000 - 2000)

Speaker: 2.1 Subwoofer (Basic level) - 3500 LKR (2500 - 5000)

---

600 VA Single battery UPS - 3800 LKR (3500 - 5000)

2.

a) Diskpart is built in command line tool allows you to create an either GPT or MBR type bootable flash drive. Fill the following steps with relevant commands regarding diskpart. Note that we need to create a GPT type flash drive. **[6 Marks]**

Connect flash dive with the PC and Open "Run" dialog and then type "diskpart"
1. `list disk`
Assume that in disk prat tool, flash drive is indicated as "Disk 2"
2. `select disk 2`
3. `clean`
4. `create partition primary`
5. `format fs=ntfs quick`
6. `assign`
Exit

b) Following statements are related with Windows 10 OS and its environment. State that statements are true or falls. If false, give a reason in brief. **[10 Marks]**

(i) Any edition of windows 10 including home, Pro, Student and Enterprise can be bought from general market.

```
False

Student and Enterprise edition cannot be bought from general
market.
```

(ii) Windows hello focused only on face detection technique.

```
False

It focuses on biometric authentication using Face or Finger
```
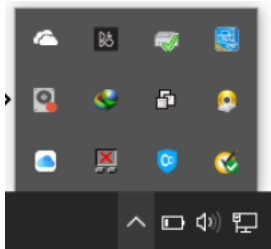
(iii) Windows 10 home single language version is compatible up to 4GB RAM capacity.

```
Cannot say exactly (may either be true or false)

It is depending on 64 bit or 32 bit type.
```
                           All applicants will get the marks for this question

(iv) Both "control panel" and "settings" options can be used to uninstall installed programs.

```
True
```

(v) This is known as Action center of Windows 10.

```
False

This is known as system tray
```

(vi) Page file is the space allocated from physical RAM to enhance performance of PC.

```
False

Page file is the space allocated from HDD to store temporarily
released data from RAM
```

(vii)   System information window allow one to identify BIOS mode.

```
True
```

(viii)   Settings window provides the most of the option available through default control panel of windows 10.

```
True
```

(ix)   TestUser   According to this sign, user account named TestUser is currently signed out.

```
False

This account currently disabled
```

(x)   If you have administrative privileges, you can reset local user account log in password without knowing the existing password.

```
True
```

c) You observe that your newly bought laptop PC is taking more time to get ready to use. Means time taken load desktop form welcome screen is long. In such a situation you can do something without changing any hardware devices. What will the action be? **[2 Marks]**

```
Remove unwonted programs from startup window.
```

d) Your friend told you that when he shut down the laptop, display is turned off very quickly but some indicators like HDD and Power took more time to power off. That means system unite not turn off properly. You can attempt some settings in the shutdown settings on control panel. What do you attempt? **[2 Marks]**

```
Un tic (disable) the option "Turn on fast startup"
```

3.

a) Compare and contrast L2 network switch and hub using 3 factors. **[3 Marks]**

L2 switch	Hub
Port base bandwidth	Shared bandwidth
Filter data based on MAC address	Cannot filter data
Manage network traffic	No traffic management

b) Read the following passage and fill in the blanks using suitable terms from given list. **[7 Marks]**

(Bridge / Firewall / Crimp tool / Splitter / Switch / RJ 11 / RJ 45 /Router / Hub / ISP / NID / NIC / Public / Private)

……………ISP…………. gives us to one (1)……pubic……. IP address but according to our requirement we may require more than one PCs. To manage such a situation we need to apply ………NAT……….………… . Most of the time this process is automated by ……router………. .Sometimes…………firewall……. can also be used to do the same thing. In ADSL technology both voice and internet data came in same cable. At the end station (home) ………splitter…… is used to separate the voice and data and It uses ……RJ 11…. port to insert signal in to it and RJ 11 to out put the signal from it.

c) "ABC Group" is one of most famous digital animation production company and no branches. Crew is consisting of hundred (100) employees including animation designers, production managers, project managers and other operational level employees. The management have decided to turn to a new network infrastructure due to some obstacles in the existing network. This project has been governed by reputed network solution provider named "Eternal IT Solution". Imagine you are one of active network engineer which have to be worked with mention project. Following list of facts will help you to get some idea about the requirement of the client (ABC Group).

- ABC Group has normally transmitted data with somewhat high capacity in between 1GB and 2GB.

- They used file server to store their project files.

- Main office consists of 3 floors.

- All 3 floors require both wired and wireless communication.

- Employees of ABC Group are using 40 desktop PC (10-first floor / 15-second floor / 15-third floor) and 15 gaming laptops (5 per each floor).

- They have 5 tablet PCs.

- All the employees have to surf web and access mail.

- ABC Group have decided to be used dedicated SDSL line form SLT. (ABC Group employee only SDSL service from ISP. You have to buy additional equipment to implement SDSL connection)

- EMI level is very low with in the organizational premises.

(i) Identify the needed component to establish the required infrastructure and explain shortly why you require them for the implementation. **[6 Marks]**

```
------------------------------------------------------------
  Ex: Cable type (category and type)
------------------------------------------------------------

CAT 6 UTP cable – CAT 6 for high bandwidth requirement and UTP
                  because of low EMI

Access switch – to connect core switches and file server

Core switch – to provide connectivity for wired devices of each
              floor
ADSL router – to connect SDSL connection with network

Splitter – to separate voice and data

WAP – to provide wireless connection for needed devices

Firewall – to maintain adequate security level

Server computer – to store data files
```

(ii)   Estimate rough cost estimation for all required network equipments except network cable and server computer. **[6 Marks]**

```
Access switch Gigabit Ethernet (8 port) – 20000 LKR

Core switch Gigabit Ethernet (24 port) – 18000 LKR

ADSL router – 3500 LKR

Splitter – 700 LKR

WAP – 5500 LKR

Firewall – 150000 LKR (not considered for marking)
```

(iii)   Draw a physical lay out of network using block diagram. **[8 Marks]**
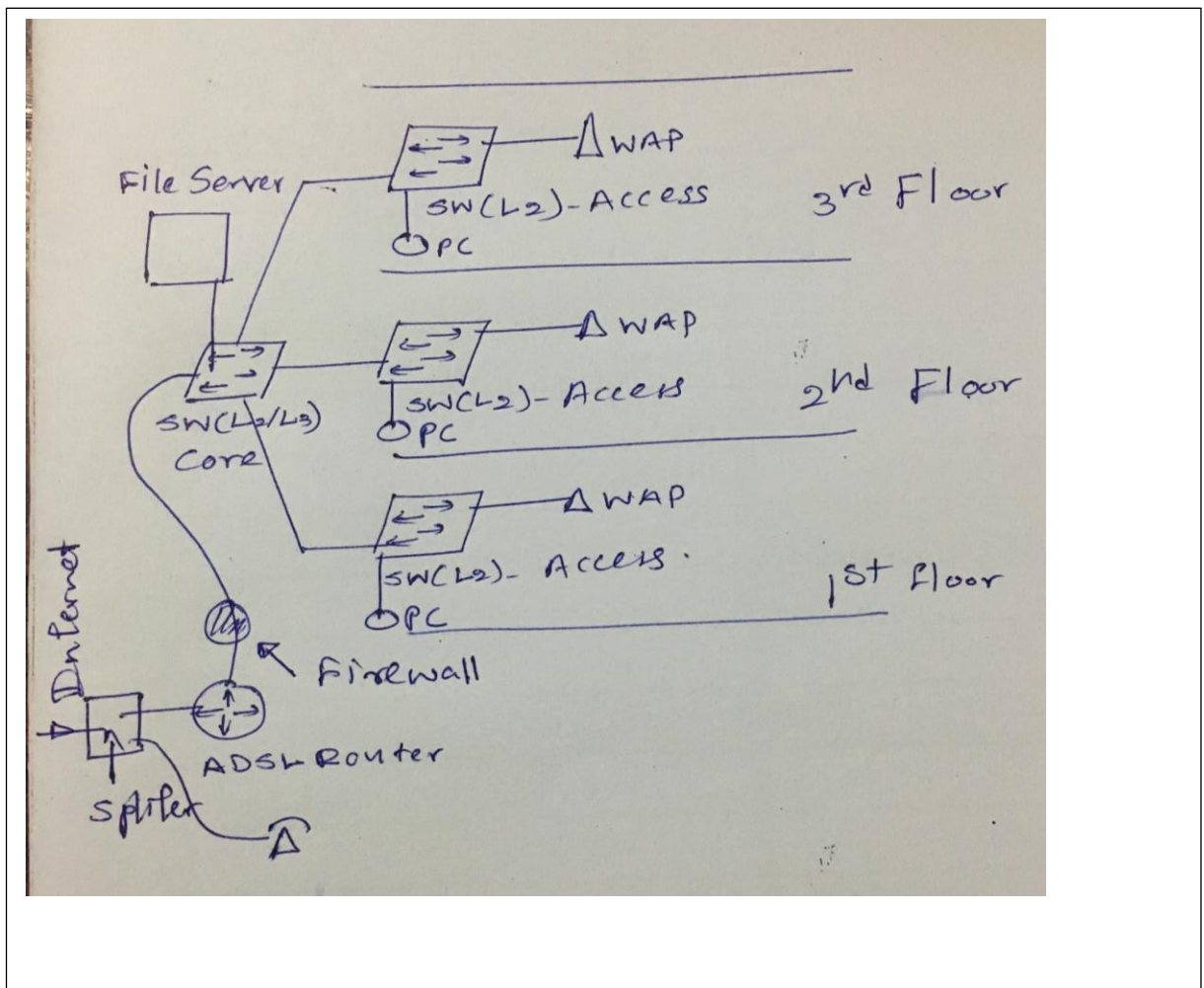
4.

a) Following screen shot is captured from computer which is connecting with some network.

Network status

EliteBook   Home   Internet

You're connected to the Internet
If you have a limited data plan, you can make this network a
metered connection or change other properties.

Change connection properties

Show available networks

(i)   Extend the SSID. **[1 Mark]**

> Service Set Identifier

(ii)   What is the device you have to access to configure SSID? **[2 Marks]**

> Router or wireless access point

(iii)   What is the SSID of this network? **[1 Mark]**

> Home

b) Following snapshot is captured form network properties of PC which is connected to internet. Answer
   the questions regarding snapshot.

Protocol:	802.11ac
Security type:	WPA2-Personal
IPv4 address:	192.168.1.25
IPv4 DNS Servers:	192.168.1.1
Manufacturer:	Intel Corporation

(i)   Identify whether this network is wired or wireless. **[1 Mark]**

> ```
> Wireless
> ```

(ii)   How could you say that (whether it is wired or wireless)? **[2 Marks]**

> ```
> Protocol is 802.11ac. IEEE 802.11 (a,b,g,n,ac) is a wireless
>
> specification for Wi-Fi
> ```

(iii)   Identify the IP address of computer. **[1 Mark]**

> ```
> 192.168.1.25
> ```

(iv)   Identify internal IP address of default gateway. **[1 Mark]**

> ```
> 192.168.1.1
> ```

(v)   If you need to connect another three (3) PCs including two (2) laptops and one (1) desktop with this network. Suggest suitable IP V4 address for each. **[3 Marks]**

> ```
> Any address from 192.168.1.2 to 192.168.1.224 except 192.168.1.25
> ```

c) One of your friend told this scenario with you. I have changed the Wi-Fi password for existing Wi-Fi connection few days ago. Now it unable to connect with that network even correct password have been provided. What action should you take to resolve that problem? **[3 Marks]**

> ```
> Forget the connection from windows and reconnect with the network again
> ```

****