



BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

END OF TERM EXAMINATION

DEPARTMENT: COMPUTING AND INFORMATION TECHNOLOGY
COURSE CODE: BSIT107
COURSE TITLE: SYSTEMS AND HARDWARE SUPPORT
CAMPUS: ROYSAMBU
EXAM DATE: APRIL 2023
TIME: 5:30PM – 8:30PM

SECTION A (COMPULSORY)

Question One

- a) Troubleshooting requires an organized and logical approach to problems with computers and other components. Sometimes issues arise during preventive maintenance. At other times, customers may contact you with problems. Taking a logical approach to troubleshooting allows you to eliminate variables and identify causes of problems in a systematic order. Discuss the benefit of using elimination process when troubleshooting computer problems. **[2 Marks]**

- *Process of elimination involves making a list of things that could be causing the problem and then test them out one by one to eliminate them.*
- *Once the source of the computer issue is identified, it will be easier to find a solution.*

- b) Explain the impact of a CMOS battery failure on the functioning of a computer. [2

Marks]

- *Sometimes the Operating System will also not load.*
- *There is constant beeping noise from the motherboard.*
- *The date and time have reset.*

- c) Data is a vital asset in an organization. The ability to recover data from backup is crucial for the sustainability of any business. Outline three benefits of scheduling regular data backups by an IT Backup Administrator. [3 Marks]

- i. To prevent data loss both intentional and unintentional*
- ii. To recover old data because there is a problem with editing the current data or invalid files and want to return to the old data previously*
- iii. Prevent storage media damage If the storage media is damaged It will be very difficult to recover data back.*
- iv. Prevent virus infection and theft of information from the hacker*

- d) Mary is the Marketing manager in ABC Company. She intends to use her home computer to connect to Company's network in order to access sales data but suspects that her home computer might be infected by computer virus. Highlight any two unusual events that could alert Mary of a possible computer virus.

[2

Marks]

- o *Unexpected Pop-Up Windows*
- o *Your Computer is Running Slowly*
- o *Unusual Hard Drive or SSD Access*
- o *Missing Storage Space*
- o *Files Going Missing*
- o *Unusual Crashes or Error Messages*
- o *Excessive Network or Internet Activity*
- o *People Receive Strange Email from Your Address*

SECTION B

(Answer any THREE (3) Questions in this section)

Question TWO

- a) Explain two Command prompts (CMD) that an IT officer can use to test network connectivity in an organizations' network. **[2 Marks]**
- *The ping and ipconfig commands are used to test network connectivity.*
- b) A user computer is overheating slowing down the whole system and leads to frequent crashes. Highlight two reasons a computer heats up and propose a solution to this computer problem. **[4 Marks]**
- *Either the cooling system isn't working properly or the PC is heating to the point your cooling system can't handle it anymore.*
- c) Your computer is displaying the error below. Identify the error, stating three possible causes leading to the computer problem. **[4 Marks]**



```
A problem has been detected and Windows has been shut down to prevent damage
to your computer.

UNMOUNTABLE_BOOT_VOLUME

If this is the first time you've seen this error screen,
restart your computer. If this screen appears again, follow
these steps:

Check to make sure any new hardware or software is properly installed.
If this is a new installation, ask your hardware or software manufacturer
for any Windows updates you might need.

If problems continue, disable or remove any newly installed hardware
or software. Disable BIOS memory options such as caching or shadowing.
If you need to use Safe Mode to remove or disable components, restart
your computer, press F8 to select Advanced Startup Options, and then
select Safe Mode.

Technical Information:

*** STOP: 0x000000ED (0x80F128D0, 0xc000009c, 0x00000000, 0x00000000)
```

- i) *Corrupted drivers - A corrupt driver may be the cause of Blue Screen of Dead.*
- ii) *Too much pressure on the RAM.*
- iii) *Faulty hard disk.*
- iv) *Heating PC.*

Question THREE

- a) Explain loopback address in a computer system stating its significance in a testing IT applications. **[2 Marks]**

- *It's an address that, for testing purposes, transmits outgoing signals back to the same computer. It is totally controlled by the operating system, allowing the client and server to run on the same machine and communicate with one another. It is not physically connected to a network, but it is beneficial in that it provides an interface for IT workers to test IP applications without having to worry about broken or corrupted discs or hardware.*

- b) Change is an inevitable part of the world. Hence, development is a continuous process. However, a newly introduced change might leave some impact on other areas of the application. Discuss three benefits of performing systems impact analysis after software modification process. **[6 Marks]**

- *To understand the situations when the modifications required in the software system affect large segments of software code or several components of the software.*
- *To identify the relationship among the components that are affected with the change and thereby helping to understand the overall software structure.*
- *To record the history of modification, which helps in maintaining quality in the software system.*
-

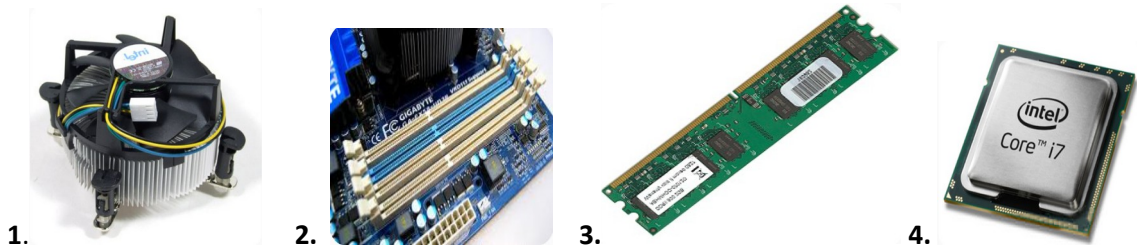
- e) A user computer is producing a continues beeping sound. Identify the computer problem and propose a solution. **[2 Marks]**

- *Faulty RAM/Motherboard/video card.*
- *Replace the faulty hardware component.*

Question FOUR

a) Identify the following parts of mother board below, explaining their functions.

[8 Marks]



1. **Heat Sink** – for cooling purposes.
2. **Expansion card** - whose function is to generate and output images to a display. Many video cards offer added functions.
3. **RAM** - A temporary storage files.
4. **Central Processing Unit (CPU)/Processor** - Is the portion of a computer system that carries out the instructions of a computer program, and is the primary element carrying out the computer's functions.

b) Solid State Drives (SSDs) are gaining in popularity for use in laptops, desktop PCs and servers. A storage professional can increase storage space of an old desktop PC or laptop by upgrading to an SSD from a hard disk drive. Discuss the benefit of installing SSDs on a computer device (HDD)

[2 Marks]

- *The main advantage is speed: an SSD has much faster data-access speeds than a traditional hard disk.*

Question FIVE

a) Supposing PAC University installed an authentication system to enhance user access control. Using Examples, explain three user characteristics that the authentication system can use to establish the identity of a user.

[6 Marks]

- i) *What the user knows (Password, PIN)*
- ii) *What the user has (Badge, Smart Card)*
- iii) *What the user is (Finger Print, Retina, Voice)*

- b) An employee informs you that their work smartphone, which they extensively use Android OS on, probably has malware. Suggest an action the employee can undertake. **[2 Marks]**

- *Scan the software file with an antivirus program to see if it contains any hidden malware nasties.*

- c) A small error window just popped up on your screen indicating that your IP address is already in use. Explain the possible cause of IP address conflict on the network. **[2 Marks]**

- i) System administrator could have assigned two computers on a local area network (LAN) the same static IP address.
- ii) Your internet service provider accidentally assigned two people the same IP address.
- iii) The network's Dynamic Host Configuration Protocol (DHCP) server has allowed the same dynamic address to be assigned to multiple computers automatically.
- iv) System administrator has assigned a static IP address to a computer within the local network's DHCP range, and the same address is automatically given by the local DHCP server

Question SIX

- a) Describe two security measures that you would recommend to improve the security of a home PC connected to the internet using a broadband connection. **[4 Marks]**

- *Install a reliable and updated anti-virus program on all computers.*
- *Make sure firewalls are setup and configured correctly.*
- *User authentication*

- b) Software rejuvenation helps in enhancing organizations' systems effectiveness and efficiency. Discuss three categories of Software rejuvenation a Software developer can consider while performing Software maintenance in an organization.

[6

Marks]

- i) ***Re-documentation*** - uses static analysis of the source code to produce additional information, which helps the software maintenance team to understand and refer to the code.

- ii) **Restructuring** - involves the transformation of unstructured code into structured code thereby making it easier to understand and change.
- iii) **Reverse engineering** - focuses on providing information about the specification and design information using the software code.
- iv) **Reengineering.** - Is an extension of reverse engineering. This technique refers to the systematic transformation of the present software system into a new form to make quality improvements in operation, system capability, functionality, and achieving high performance at low costs.