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**UMLAZI DISTRICT**

**INFORMATION TECHNOLOGY**

**GRADE 11**

**PAPER 2: THEORY**

**Date of examination: 9 November 2015**

**MARKS: 150 TIME: 3 hours**

**This question paper consists of 9 pages.**

**INSTRUCTIONS AND INFORMATION TO CANDIDATES**

1. This question paper consists of FIVE sections subdivided as follows:

SECTION A: Multiple-choice questions (10)

SECTION B: System Technologies: Hardware and software (45)

SECTION C: Communication Technologies and Network Technologies (25)

SECTION D: Programming and software development (30)

SECTION E: Integrated scenario (40)

2. Answer ALL the questions.

3. Read ALL the questions carefully.

4. The mark allocation, in general, gives an indication of the number of facts/reasons required.

5. Number the answers correctly according to the numbering system used in this question paper.

6. Write neatly and legibly.

SECTION A: MULTIPLE CHOICE QUESTIONS

* 1. User configurations such as the real time clock or boot order are stored in

a) BIOS

b) CMOS

c) RAM

d) ROM (1)

* 1. Flash drives use this type of memory

1. ROM
2. PROM
3. EPROM
4. EEPROM (1)
   1. Memory that stores data and instructions that the CPU is currently executing
5. L1 Cache
6. L2 Cache
7. Registers
8. RAM (1)
   1. When you format a hard disk, the following is recreated.
9. Sectors
10. Clusters
11. Tracks
12. Platters (1)
    1. A sound card could fit in the following slot(s)
13. PCI
14. PCI-e
15. Both PCI and PCI-e
16. Neither PCI nor PCI-e (1)
    1. The S in SDRAM stands for
17. Static
18. Synchronous
19. Southbridge
20. Solid (1)

1.7 Which ONE of the following statements is TRUE?

1. A class may NOT have more than ONE constructor.
2. A mutator method provides the facility to change a class variable.
3. A class is an instantiation of an object.
4. An accessor method provides the facility to change a class variable. (1)

1.8 *Dropbox*, *iCloud* and *oneDrive* are examples of….

1. Online storage – backup
2. Online storage –file synching
3. Media repositories
4. Cloud applications (1)

1.9 In the following pseudocode of an IF-statement the incrementing of a counter is dependent on the value of B:

**IF (B < 4) AND (B > 12)**

***increase counter by 5***

**Else**

***display message***

The value of the counter will never be incremented because …

1. The value of B is smaller than 4 and smaller than 12, for example 3.
2. Negative value has been assigned to B.
3. The value of B is greater than 12.
4. Both conditions will never be true at the same time. (1)
   1. …… refers to a network of remotely controlled and malware infected PC’s
5. remote access
6. zombies
7. botnets
8. keygens (1)

**(10)**

SECTION B: SYSTEMS TECHNOLOGIES AND HARDWARE

2.1 One often hears the term “modular design”. Describe this concept. (2)

2.2 Why is modular design so popular? (3)

2.3 One **of the most important components is the motherboard.**

2.3.1 State the function of the motherboard. (1)

2.3.2 What is the term used to describe a communication channel on the motherboard. (1)

2.4 “**Cache refers to special high speed RAM.”**

2.4.1 Provide a suitable definition for Web Caching. (2)

2.4.2 Explain how disk caching is different from Web Caching. (2)

2.5 **The firmware represents the basic code to get the computer started.**

2.5.1 What is firmware? (1)

2.5.2 Where is firmware stored? (1)

2.6 “**Storage and Memory confuse me… Is there a difference”**

2.6.1 Explain clearly the difference between **storage** and **memory.** (4)

2.6.2 Name TWO major differences between HDD and SSD. (2)

2.6.3 Name the technology that flash drives and SSD make use of. (1)

2.7.1 Which type of operating system is called the ‘Jellybean’? (1)

2.7.2 Explain the difference between an interpreter and a compiler. (2)

2.7.3 Explain the concepts of “virtual memory “and “virtualisation”. (4)

2.8.1 Explain **GIGO** with a suitable example? (2)

2.8.2 What are the consequences for the owner of a stolen laptop? (2)

2.8.3 What IT security risks do portable storage devices pose for companies (2)

2.8.4 How can power failure cause a loss of data? ` (2)

2.8.5 What crucial piece of equipment protects a network database’s against

data corruption in case of a power failure? (2)

2.9 Define the following term referring to network vulnerability: (6)

2.9.1 Trojan

2.9.2 Rootkit

2.9.3 E-mail spoofing

2.10 Discuss the difference between a full backup and an incremental backup. (2)

**TOTAL FOR SECTION A: 45**

**QUESTION THREE**

**SECTION C: COMMUNICATION TECHNOLOGIES AND NETWORK TECHNOLOGIES**

***Short Scenario***

*Your dad runs his own business from home. His office is a granny flat next to the main house. He wants to put the whole house as well as his offices on a wireless network*.

***Your dad heard that he will need a WAP.***

3.1 Explain to your dad what a WAP is. (1)

* 1. Explain to him why he will need a WAP in this case. (1)
  2. ***Your mom constantly needs to visit new prospected clients, but***

***unfortunately she always gets lost.***

* + 1. Name one way in which she can use her Smartphone to assist her in

finding her clients' locations (1)

3.3.2 How does this technology work? (2)

* 1. Define the term **‘range’** in terms of signal strength. (2)
  2. Explain to your dad the difference between **Wi-Fi** and **WiMAX.** (4)
  3. Name a web browser each for the following operating systems:
     1. Android
     2. Blackberry (2)
  4. One browser has a unique feature called ‘night mode’. What is the

advantage of this feature? (2)

3.8 Name a browser that will function on a kindle. (1)

3.9 What does ‘Push Technology’ refer to? (1)

3.10 Can you open any attachment on your mobile device?

Motivate your answer. (2)

3.11 Explain the term ***VidCast*** and how is it different from podcasting. (4)

3.12 Explain why it might be important to compress multimedia files. (2)

**TOTAL FOR SECTION C: 25**

**QUESTION FOUR**

**SECTION D: SOLUTION DEVELOPMENT**

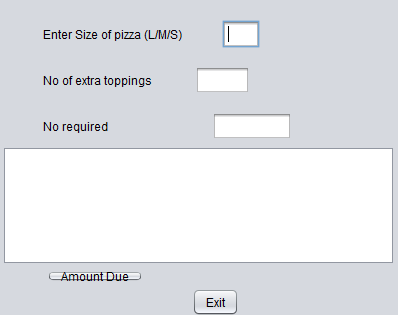
4.1 *Looping structures are often used in programming when the need arises. There are generally two types of loops, namely conditional and unconditional loops*

4.1.1 In programming terms what is a loop? (2)

4.1.2 Mention an example of an unconditional loop (1)

4.1.3 Under which conditions, would it be more preferable to use an unconditional loop, rather than conditional loop (2)

4.2 Consider the GUI screen below, developed for a Pizza parlour to capture telephonic orders.



**Component A**

4.2.1 State two improvements that can be made to this GUI design, that would enhance its’ usability. (2)

4.2.2 State one shortcoming of using component A, to enter the size of the

pizza. (2)

4.2.3 State TWO other possible GUI components that would be more suitable to use in this instance. (2)

4.3  **PizzaHut** would like to create an application that would input details of their clients. The following class called **Order** is suggested:

|  |
| --- |
| **Order** |
| * tourRef * name * dateOfOrder * destination |
| + Order()  + Order(tourRef,name, destination)  + getName()  + getDateOfOrder()  + getDestination()  + setDestination()  + toString() |

4.3.1 What is the purpose of a constructor in a class? [2]

4.3.2 Identify and explain the differences between the two types of constructors shown in the class diagram. [3]

4.3.3 Which one of the methods in the class is declared incorrectly?

Explain how this should be corrected. [2]

4.3.4 Which methods of the class would you use if you wish to:

a) display the details of an instantiated object

b) change the destination for a client

c) instantiate an object

d) retrieve the destination [4]

* 1. Consider the following algorithm which determines if a number is prime or not and answer the questions that follow :

1. read num
2. count 🡨0
3. countFact ….
4. loop num times
5. inc(count)
6. if …(a)….. then

…(b)…….

1. end loop
2. if countFact = 2 then

print …(c)…..

else

print …(d)…

4.4.1 Explain the purpose of the following counters in the algorithm:

a) *count* [2]

b) *countFact* [2]

4.4.2 Complete the initialisation in line 3 [2]

4.4.3 Complete the rest of the algorithm(**a- d**) [5]

**TOTAL SECTION B: [30]**

**QUESTION FIVE: SECTION E: INTEGRATED SCENARIO**

* 1. What does it mean when we say a website is static? (1)
  2. What is the main difference between static and dynamic websites? (2)

5.3 ***The URL of a web page sometimes indicates that the page is dynamic when it contains various parameters after the filename.***

5.3.1 What are the parameters in the URL of a dynamic web page? (1)

* 1. Give two advantages of dynamic websites over static web pages. (2)
  2. Briefly explain what an app is. (1)
  3. Give two reasons why websites use apps in this context. (2)
  4. Give two examples of websites that developed apps with which one can

access the information on their websites. (2)

5.8 ***SSL is a protocol used to ensure the security of communications and transactions over the Internet***.

5.8.1 How Does the SSL Certificate create a secure connection? (2)

* 1. ***Online banking is becoming more popular than ever***.
     1. List a few transactions that can be done online. (2)

5.9.2 Discuss the attacks that are done on online banking. (2)

* 1. Name four categories of online bookings sites. (4)
  2. ***E-learning can be explained as the use of ICT in education.***
     1. Discuss the advantages and disadvantages of E-Learning. (4)
  3. **Video conferencing** is an extremely useful method of communication.

List at least one use of video conferencing in the following sectors:

education and media. (4)

5.13 List three prominent examples of social media and briefly explain the purpose of each one. (6)

* 1. A friend complains that when he watches a video on YouTube, it

Sometimes ***“freezes***.” He gets a message saying that it’s ***"buffering".***

Briefly explain what it means and what the likely cause of the problem is. (2)

* 1. What is live ***blog***. (1)
  2. Explain what the term Video on-Demand **(VoD)** refers to? (1)
  3. *VOD (Video-on-Demand) is usually a* ***'pay-as-you-watch'*** *service.* Briefly explain what it means. (1)

**TOTAL FOR SECTION E:40**