

**INFORMATION TECHNOLOGY P2**

**GRADE 12**

**TRIAL EXAMINATION – SEPTEMBER 2018**

**MEMORANDUM**

**MARKS: 150**

**These marking guidelines consist of 12 pages.**

**QUESTION 1**

**1.1.1** D (Textfile) ✓

**1.1.2** D (Local variable) ✓

**1.1.3** A (Webpage using encryption) ✓

**1.1.4** D (Can transmit over wide distances) ✓

**1.1.5** A (Once) ✓

**1.2.1** SATA / PATA ✓

**1.2.2** convergence ✓

**1.2.3** Intranet✓

**1.2.4** Logical Error ✓

**1.2.5** Internet of Things ✓

**1.2.6** CMOS ✓

**1.2.7** Click Farms ✓

**1.2.8** EULA ✓

**1.2.9** GIGO ✓

**1.2.10** Source Code✓

**[15]**

**QUESTION 2**

**2.1.1** 32 GB ✓

**2.1.2** Primary Memory temporarily stores data or instructions currently being used. Secondary Memory stores data permanently that may be loaded into RAM as required. ✓

**2.1.3** Provides a user interface

Manages processes and task

Manages memory

Manages input and output {any two}✓✓

**2.1.4** Hard Drive faulty ✓

Hard Drive fragmented

Virus damaged OS files

OS files corrupted

BIOS settings incorrect – looking for OS in the wrong drive

(ANY ONE)

**2.1.5** Attempt booting from a setup disk. ✓

Use Repair function of OS (if available)

Reinstall the OS

Replace the HDD

(ANY ONE)

**2.1.6** Loading time would be significantly higher ✓ as only 4GB out of 32GB would be used by the OS.

**2.2.1** Systems Software which enables the OS to communicate with hardware. ✓

**2.2.2** Plug and Play devices require drivers – the only difference is they are automatically configured and installed. ✓

**2.3.1** PCI ✓

**2.3.2** Laptops have significantly lesser space as everything is compact. ✓

Laptops are more costly than Desktops as miniature components are more pricey.

Laptops are designed to use less power in order to extend battery life.

(ANY ONE)

**2.3.3** Significant lag when rendering graphics ✓

Apps may run at a lower resolution / frame-rate than required by the app

Slowdown

OS may stop respond due to increased Virtual Memory usage / thrashing.

(ANY ONE)

**2.4.1** Virtual memory is an area of disk space on the drive which is set aside so that the operating system can temporarily store data there that cannot be loaded into memory at the time.✓ ✓

**2.4.2** Adding RAM is a better solution because ✓

* storage is much slower than RAM.
* the more the operating system uses virtual memory, the slower and more unresponsive the computer will become, and this will be indicated by a constantly flashing disk drive light – a phenomenon known as ‘thrashing’. ✓

**2.5.1** The processor or Central Processing Unit (CPU) is the part of the computer that executes the instructions (the software), processes the data and manages and controls all the other parts of the computer. ✓

**2.5.2** Speed ✓

Cores ✓

**2.5.3** Cache improves performance by using a limited amount of faster media to speed up access to slower media, by temporarily storing recently / frequently accessed data / instructions. ✓

Because modern CPUs run at speeds much higher than the motherboard (and therefore the RAM) they need to make extensive use of cache to keep them going at their maximum level of productivity. ✓

**2.6.1** Multithreading involves breaking an app up into multiple threads with each running as an individual process ✓whereas multiprocessing involves the use of multiple processors active at the same time. ✓

Multithreading is managed by software – the OS whereas Multiprocessing is managed by hardware – The CPU.

(ANY ONE)

**2.6.2** Creating a digital / soft version of a hardware resource such as console, computer, storage or network resource. ✓

**2.6.3** A person’s public key encrypts data and is openly available to anyone online. ✓

The private key is secret: only the intended recipient can decrypt the message. ✓

**[26]**

**QUESTION 3**

**3.1.1** Fibre transmits data via light / laser signals

UTP uses electric signals via copper cables ✓

**3.2.1** LTE is the latest mobile generation / the 4th generation ✓

**3.3.1** Data can be easily shared ✓

Data can be monitored

Easy backup

Central security

(ANY ONE)

**3.3.2** Client – receives resources / generally low specs / dependent

Server – sends resources / high specs / independent ✓

**3.3.3** Architecture of room ✓

Security reasons

Interaction of users better in a linear manner

(ANY ONE)

**3.3.4** **(a)** Cable / Wireless connection may be frayed ✓

NIC on client may not be functioning correctly

(ANY ONE)

**(b)** Drivers for NIC may not be functioning / present ✓

Client OS may not be compatible with Server OS

(ANY ONE)

**3.5** The newsletter’s LAN ✓ would not be affected by the disconnection to the ISP / WAN. ✓

**3.6.1** Wireless NIC

Wireless adapter

Wireless dongle

Wi Fi Card

Wi Fi adapter {any one}✓

**3.6.2** Limited to short range

Security can be compromised

Decreases the speed of connectivity when too many people are connected

Unreliable connection {any two} ✓✓

**3.7.1** Local Execution downloads code to the browser where the code is executed. ✓

Server-side execution generates a personalised webpage on the server and the entire personalised page is downloaded by the browser. ✓

**3.8.1** VoIP ✓

**3.8.2** While Whatsapp does not charge a fee for the service✓, both the caller and recipient incurs network data charges. ✓

**3.9.1** An army of bots (compromised computers / zombies) ✓✓ simultaneously flood a webserver with requests. ✓

3.10.1 The writers can work with resources away from the newsletter offices at any part of the day/night. ✓

3.10.2 Encryption✓

3.10.3 Firewall blocking

No Internet access

Not registered as a user on the VPN

VPN Server offline

VPN security details entered incorrectly /Incorrect password {ANY TWO}✓✓

**[24]**

**QUESTION 4**

**4.1** No primary key is indicated ✓

Repetition of data (in Writer and Salary)

Table contains data on 2 “topics” – articles and writers\

(ANY ONE)

**4.2** Advantage

Queries are simpler ✓

Anomalies are resolved

Prevents repetition / redundancy of data

Decreases overall filesize

(ANY ONE)

Disadvantages

Number of tables increase – 3NF+can lead to massive number of tables ✓

Referential Integrity rules can make deleting records more difficult

(ANY ONE)

**4.3.1** Assume a new writer joins the team and hasn’t written an article yet. The writer cannot be added to the table as all the fields related to Articles would be blank (One of the fields is likely the PK as the table is named tblArticles) ✓

**4.3.2** If a writer resigns or is dismissed, deleting that writer would also delete the article data that the writer had produced. ✓

**4.3.3** Updating a field (eg: a writer’s salary) has to be done on multiple rows leading to the risk of loss of Data Integrity. ✓

**4.4** Keeping the databases synchronized will be difficult since it would have to be stored on a Web server / FTP server in order to ensure changes are reflected on both sides. ✓

Data Integrity would also be twice as difficult as it would have to be managed at 2 separate locales.

(ANY ONE)

**4.5.1** Create multiple levels of access for designated staff and ensure that all staff members keep their access profiles secret. ✓

**4.5.2** Use of turnstiles, cameras, burglar guards, and biometric locks to control access to the workplace. ✓

**4.5.3** The use of Audit Trails, Rollback features, strong passwords, firewalls and other security software. ✓

**4.6.1** Use of programmed code to double-check the captured data by counting words in an article. ✓

The use of SpinEdits or similar components to prevent users from entering invalid input.

The checking of input using validation algorithms prior to data being written into the database.

(ANY ONE)

**4.6.2** In the case of printed articles, a data capturer would have to physically count the number of words in an article to verify the database information. ✓

**4.7.1** Collection of a large quantity of data from various sources within a business or organisation. ✓

**4.7.2** Creating analytic software ✓

Analysing mined data

Organising data sets

(ANY ONE)

**4.7.2** NoOfViews trend data coupled with PeakViews and NoOfWords could help the newsletter discern the type of articles that are most popular and whether this trend changes over time. ✓

**4.8** Database and User Interface exist as separate (independent) entities. ✓

**4.9.1** The entire staff’s salaries would be set to R15000. ✓

**4.9.2** WHERE Writer = “N Ngiba” ✓

**4.10**

|  |  |  |
| --- | --- | --- |
| tblArticles |  | **tblWriters** ✓ |
| ArticleID (PK) ✓  Title  NoOfWords  NoOfViews  PeakViews  ∞  WriterID (FK) ✓ | ✓ | WriterID (PK) ✓  I  Writer  Salary |

✓ = 1 to Many shown correctly

**[24]**

**QUESTION 5**

**5.1.1**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Code A | Code B | Code C |
| Minimum Runs | iNum  RecordCount ✓ | 0 ✓ | 1 ✓ |
| Maximum Runs | iNum  RecordCount ✓ | RecordCount ✓ | X ✓ |

**5.1.2** Until (TblData. EOF) ✓ OR ✓ (bFound) ✓

NOT((NOT TblData. EOF ) AND (NOT bFound))

**5.1.3** TRUE ✓

The While / Repeat loops support flag variables that terminate the loops as soon as the search query is found. The for loop will run for the designated number of times. ✓

**5.1.4 (a)** FALSE ✓

**(b)** TRUE ✓

**(c)** FALSE ✓

**(d)** TRUE ✓

**5.2.1 (a)** getName ✓

**(b)** setName ✓

**5.2.2** Function ✓– has a return type – Integer ✓

**5.2.3** +setSalary✓ (rSalary : Real) ✓

**5.3.1** Sequential Access – data is access one after the other – for example to access Line 3, you have to first pass Lines 1 and 2. ✓

Random Access – data is accessed in any order, as required. For example, to access element [3], we can jump directly to that element. ✓

**5.3.2** Permanent – data not lost ✓

Can store mixed data, often separated by delimiters

(ANY ONE)

**[24]**

**QUESTION 6**

**6.1.1** Data capture without a user’s knowledge or consent. ✓

**6.1.2** **(a)** Yes ✓– privacy and security remain an issue should the device be stolen

or accessed by someone without your permission. ✓

OR

No – personal devices are usually accessed by an individual or persons of

trust and deleting cookies will equal an inconvenience of constantly having to re-login.

(YES or NO with motivation. No marks will be allocated to Yes/No without motivation).

**(b)** The user would have to enter their login details again. ✓

**(c)** Cookies store user-identification data in a text file ✓ whereas the web cache stores static elements from a webpage to save loading time and bandwidth. ✓

**6.1.3** The antivirus may have not been updated. ✓

Some antivirus software do not detect spyware, only viruses

The spyware may have had root access to the system

The antivirus subscription may have expired

The spyware may have tricked the user into whitelisting it.

(ANY ONE)

**6.1.4** Yes ✓– any software which tracks user data without consent is technically spying. ✓

No – the software was performing the same task as cookies – only using an application instead of text files and a browser.

(YES or NO with motivation. No marks for Yes/No without adequate motivation).

**6.2.1** BitCoin / Ethereum / Dogecoin / NEO ✓

**6.2.2** **(a)** Video ads with sound can be disruptive in a home/work environment

To save bandwidth ✓

To save time – some ads (e.g.: Youtube ads can be as long as 1 minute)

Some websites host offensive ads (adult sites, alcohol, etc.)

Some websites host deceptive ads (Fake competitions, etc.)

(ANY ONE)

**(b)** Small applications that adds extra functionality to a browser ✓

**(c)** Yes ✓– bandwidth isn’t free and accessing a website’s content and blocking their revenue stream is the same as pirating. ✓

No – copyright is protected by Intellectual Property Laws (such as the DMCA) – web content is not covered by such laws.

(YES or NO with motivation. No marks for Yes/No without adequate motivation)

**6.3.1** A seeder provides the initial data to a “swarm” – which hosts “parts” of a file. Once each peer has all the parts, they become a seeder and the original seeder is no longer needed. ✓ There can be millions of seeders around the world in a matter of minutes. ✓

**6.3.2** Web content would be delivered at a slower rate. Some web services such as video streaming may not work correctly. ✓

**6.3.3** Updates will be delivered faster, without putting a strain / cost on Microsoft’s servers. ✓

**6.4.1** **(a)** Poor grammar / bad sentence structure✓

**(b)** Apple ID can be compromised. Credit Card details may be stolen ✓

**(c)** Check the Digital Certificate to ensure the site is authentic. ✓

**(d)** Email header is changed to create the appearance that the email is from trusted authority increasing the likelihood that the reader will click on the link. ✓

**6.5.1** Telecommuting ✓

**6.5.2** The document is saved to a Cloud Server ✓and team members create a Workgroup. They can then interact on the document together from different locations as long as they have a stable internet connection. ✓

**6.5.3** Software as a Service ✓

**6.5.4** Easier to deliver updates ✓

Uses become continuous clients instead of once-off customers

Little to no chance of piracy

(ANY ONE)

**6.5.5** Poor lighting at home / Ensure adequate lighting

Poor posture / Adjust chair or monitor to improve sitting position.

Working too long hours at the computer / Take regular breaks / Avoid a “crunch” by careful time management.

(ANY ONE ISSUE ✓ + ONE SOLUTION ✓)

**6.6.1** Web 2.0+ website where users from all over the world collaborate on content. ✓

**6.6.2** Web 1.0 content was provided by the site manager / writers and users were simply content consumers. ✓

Web 2.0 content can be provided by the site team as well as a community consisting of users as well. Users can also be contributors. ✓

**6.6.3** The credentials of writers are not easy to confirm therefore, the academic value of the articles is questionable. ✓

**6.7.1** UPS ✓

**6.7.2** Burglar Guards / Camera / Motion Detectors ✓

**6.7.3** Mirroring / RAID / Backup Utilities ✓

**6.7.4** Use of a Firewall / File Encryption software ✓

**[37]**

**GRAND TOTAL: 150**