# INFORMATION TECHNOLOGY

# GRADE 12

# PAPER 2 (THEORY)

# TRIAL EXAM

# 2013

**SUGGESTED ANSWERS**

**QUESTION ONE**

* 1. C✓
  2. D✓
  3. C✓
  4. C✓
  5. D✓
  6. D✓
  7. D✓
  8. C✓
  9. B✓
  10. B✓ **[10]**

**QUESTION TWO**

|  |  |  |  |
| --- | --- | --- | --- |
| 2.1.a) | Memory management✓  Managing files on disk✓  Input and output control✓  User interface✓ **(ANY THREE)** | (3) |  |
| 2.1.b) | 1GB✓(32bit) or 2GB (64bit) | (1) |  |
| 2.2.1 | Redundant Array of Inexpensive/Independent Disks✓ | (1) |  |
| 2.2.2 | A group of disks are grouped together by a special controller and treated as one big disk. ✓  Spreads/duplicates data across the disks✓  Used to improve data reliability✓ | (3) |  |
| 2.2.3 | Level 1 – Mirroring OR Level 5 – striping with parity ✓  same data is written to a pair of disks ✓  high fault tolerance – if one disk fails, data available on other disk✓ | (3) |  |
| 2.3.a) | Multi-core processing: | (2) |  |
|  | two or more independent actual processors (called "cores") in a single chip package ✓  multiple cores can run multiple instructions at the same time thus increasing overall speed ✓ |  |  |
| 2.3.b) | Pipeline processing: | (4) |  |
|  | The CPU can collect the next instruction from the RAM or cache ✓ before the instruction with which it is currently busy is completed. ✓  The processor therefore handles various instructions all in different stages of completion ✓and this speed up the process of processing instructions.✓ |  |  |
| 2.3.c) | RISC: | (2) |  |
|  | Uses a small, highly optimized set of instructions✓ that can easily be pipelined✓ |  |  |
|  |  |  |  |
| 2.4 | Any THREE ✓✓✓   * Very compact and light * Low power consumption, generally speaking. On average, 50-70% less energy is consumed than CRT monitors. * No geometric distortion. * Little or no flicker depending on backlight technology. * Not affected by screen burn-in (though an analogous but less severe phenomenon known as [image persistence](http://en.wikipedia.org/wiki/Image_persistence) is possible). * Can be made in almost any size or shape. * No theoretical resolution limit | (3) |  |
|  |  |  |  |
| 2.5.1 | 56K Modem ✓ NIC, 802.11b/g *✓* | (2) |  |
| 2.5.2.a) | FSB connects processor✓ with high speed components✓ | (2) |  |
| 2.5.2.b) | FSB: high speed components whereas the external bus connects (the South Bridge) to slower peripheral connection slots/devices. ✓✓ | (2) |  |
| 2.5.3.a) | Any ONE advantage: ✓   * No cabling required * Quick and easy to add components to the network * Provides mobility in terms of access points etc.   Any ONE disadvantage: ✓   * Slower * Security concerns (eavesdropping etc.) * Varying strengths of signal * Requires reasonable amount of knowledge to set up * Susceptible to interference etc. | (2) |  |
| 2.5.3.b) | Wi-Fi to setup the wireless network. ✓  Bluetooth is used in PAN (Personal Area networks) like the communication between smartphones✓, headphones, MP3 players, etc. | (2) |  |
| 2.6.1. | Any TWO of : ✓✓   * Extremely high bandwidth. * Resistance to electromagnetic interference (EMI) and power surges * Lower attenuation than UTP * Immune to eavesdropping * Early detection of cable damage | (2) |  |
| 2.6.2. | Any TWO of : ✓✓   * To share the hardware * To share data and software * For the centralisation of the data * Improved communication | (2) |  |
| 2.6.3. | The physical layout ✓of computers in a network✓ | (2) |  |
| 2.6.4 | Star topology✓ | (1) |  |
| 2.7.1. | The new operating system does not have the drivers for the required hardware. ✓ They need to install the drivers from the driver disk that accompanied the disk drive. ✓ | (2) |  |
| 2.7.2. | Plug-and-play : - Operating system automatically detects ✓and makes new hardware devices ready for use without user intervention✓  Hot-swappable – devices can be connected and disconnected safely✓ while the computer is on✓ | (4) | **[45]** |
|  |  |  |  |
| **QUESTION THREE** | | | |
| 3.1.1. | It is communication software✓ that allows users to communicate over the Internet. ✓or using the VoIP protocol | (2) |  |
| 3.1.2. | It is when you make a call ✓and you can see the person ✓while you are speaking to him or her over | (2) |  |
| 3.1.3. | VoIP✓ | (1) |  |
| 3.2. | |  |  | | --- | --- | | **IM** | **E- Mail** | | Instant/live/Synchronous | Does not have to be live/ Asynchronous | | Does not allow for attachments | An attachment is allowed | | Initiated by mutual consent | Not necessarily mutual consent | | Users must have the same IM service | Does not have to have the same service | | The size of messages are limited | The size of messages can be much bigger. |   Any THREE ✓✓✓ | (3) |  |
| 3.3.1. | These spaces/sites ✓ have been specially designed for viewing on mobile devices ✓ /hand held devices such as cell phones.  Or  It’s a top level domain for accessing the Internet✓ via mobile Web. ✓ | (2) |  |
| 3.3.2. | **Any ONE**: ✓  The site is accessible to a larger group of people  A computer is not required.  Access from a mobile device | (1) |  |
| 3.4.1. | A person who attempts to break through the security of a computer network or computer✓ in order to steal information, cause damage to the target or prove the inadequacies of the security. ✓ | (2) |  |
| 3.4.2. | It is an attempt to gather information from individuals for example by fooling them into filling forms on-line which seem to be a genuine service of a recognized company. ✓ They then use the information to impersonate or defraud the individual. ✓ | (2) **[15]** |  |
|  |  |  |  |
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|  |  |  |  |

**QUESTION FOUR**

4.1.1. Biometric devices are devices that translates a personal characteristic, ✓

such as a fingerprint, etc into a digital code,that is compared to a digital code stored on a computer✓

(2)

4.1.2. fingerprint reader, face-recognition system, retinal scanners, voice verification system

and a signature verification system.

**ANY TWO**✓✓ (2)

4.2.1. Computer Vision Syndrome✓ (1)

4.2.2.

* Take an eye-break every 10-15 min by focusing on another object for 2-3 seconds
* Blink your eye every 5 seconds
* Use large fonts
* Keep your monitor about an arm’s length away and at eye-level
* adjust the lighting
* Use glasses with refractive lenses

**ANY TWO**✓✓ (2)

4.2.3. CTS, RSI, Lower back ache, Headaches (2)

**ANY TWO**✓✓

4.3.1. Social networking are like ‘public diaries’ that allow people to keep in touch with each✓ other even if they are far apart, and do not have the time to meet in real life✓

(2)

4.3.2. –can result in invasion of privacy

- can lead to identity theft

- can result in exploitation of teenagers and others by paedophiles etc

**ANY TWO✓✓**  (2)

4.4.1. This involves reducing electricity and environmental waste while using

the computer ✓✓ (2)

4.4.2. - Use LCD instead of CRT monitors

-Use ‘Energy Star’ monitors – emit no (or less) radiation and heat

- Turn off the monitor or tower when not in use

- Use paperless ways to communicate (if possible)

- Use Video Conferencing and VOiP instead of meeting physically

**ANY TWO✓✓** (2)

4.5.1. e-waste – electronic waste , waste that is produced through the use of computers,

technology and it’s by-products✓✓ (2)

4.5.2 .

* Use/ buy recycled paper
* recycle toner cartridges
* recycle old computers, printers and other devices
* Use paperless methods to communicate(if possible)
* print on both sides of page when printing
* proof-read document and edit before printing

**ANY TWO✓✓**

(2)

**[20]**

**QUESTION FIVE**

5.1.1. RegistrationNo ✓

– Every runner has a unique registration number✓ (2)

5.1.2. Best\_time ✓

– should be declared as a date/time field✓ (2)

5.1.3. Although these fields have numeric values, they will not be used for calculation

purposes, and furthermore they are very large values to set as numeric fields. Also the zero at the beginning of the telephone no, will not be retained if it were declared as a numeric field✓✓ (2)

5.1.4. You could use : Validation rules, input masks, Combo/list boxes

**ANY TWO✓✓** (2)

5.1.5. Combo/list box✓ (1)

5.1.6.1. The size of the text entered for this field cannot exceed 100 characters✓ (1)

5.1.6.2. Not very suitable , since it is saying that a person’s name must exceed 10

characters, but this may not always be possible for example if name is

Tom Jones…✓ (1)

5.1.6.3. It implies that the field is a compulsory field and MUST contain a value for

every record. Cannot be left blank✓ (1)

5.2.1. Eliminating redundancy – implies that the data in the database should not be

unnecessarily repeated/duplicated, thereby saving space in the database ✓✓ (2)

5.2.2. Insert anomaly✓, Update Anomaly, ✓ and Delete anomaly ✓ (3)

5.2.3.

* remove all repeating column groups
* remove data with multiple values
* ensure that each table has a primary key

**ANY TWO**✓✓ (2)

5.3.1.

* Tracetables
* Walkthroughs
* Breakpoints
* Logging error messages
* 􀂃Stepthroughs
* Debugger on the computer

**ANY TWO✓✓** (2)

5.3.2.1. Syntax error✓

5.3.2.2. Logical✓

5.3.2.3 Logical✓ (3)

5.4.1. sum🡨sum + time✓✓ (2)

5.4.2. average🡨 sum / numRaces ✓✓ (2)

5.4.3. Variable initialisation is to ensure that any calculations involving the variable would

be accurate, and to clear the memory of any previous values✓✓ (2)

5.4.4. quick🡨 1000 ( or any large value) ✓✓ (2)

5.4.5. line 8 – should read: if ( time < quick …)✓✓ (2)

5.5

5.5.1. False✓

5.5.2. False✓

5.5.3. True✓

5.5.4. True✓

5.5.5. False✓ (5)

5.6.1 a) regNo, athleteName or bestTime

**ANY ONE✓** (1)

b) getRegNo() : String ; getName() : String;getTime() : int

**ANY ONE✓** (1)

c) setTime(time); OR setName(name) ✓ (1)

5.6.2. They give you ‘access’ to the values of the instance variables, which are otherwise

not accesible outside the class they are declared in✓✓ (2)

5.6.3. Used for display purposes, to output the values of the instance variables✓ (1)

5.6.4. From the class above we see that there are three constructors , but they each have

different method signatures. In this way it is permissible for a class to have more than

one method with the same name, but they must have a different method signature.

This is called method overloading ✓✓ (2)

**[47]**

**QUESTION SIX**

6.1.1. - a website or part of a website that appears in a new window

- It is a form of online advertising. ✓✓

- they are generally new web browser windows to display advertisements (2)

6.1.2. - Popups can be used maliciously

- Can be used for unwanted advertising

-Web-browser block them for security reasons ✓✓ (2)

6.1.3. - Popups are a way of displaying additional information ✓✓

- To avoid having too much information on a screen – keep interface simple (2)

6.2.1. PDF(Portable Document Format) is a representation of a document that provides an electronic image of text and graphics that looks like a printed document. It is commonly used because it’s easy to create; used for sending forms etc. ✓✓ (2)

6.2.2. Yes – eg. you can use Adobe Reader to read pdf documents✓ (1)

6.3.1. A blog is an online personal journal whereas a wiki is a web application which allows people to add, modify, delete content collectively ✓✓ (2)

6.3.2. - information on how to register

- advertising

- training tips

- important dates/times

**ANY TWO ✓✓** (2)

6.3.3. Yes✓ – people interested can pose questions related to the comrades and others can answer/collaborate✓ - etc (2)

6.4.1. A virus is a program that is written intentionally to disrupt the normal functioning of a person’s computer without the person’s permission or knowledge. ✓✓ (2)

6.4.2. Anti-virus software is software that tracks viruses, deletes viruses, removes, quarantine viruses. It is updated through the internet. ✓✓ (2)

6.4.3. Yes

The stand-alone pc can get viruses from CDs and flash disks during transfer of files etc. It doesn’t necessarily mean that if the pc is not connected to a network or internet that it would not get infected. ✓✓✓ (3)

* + - * 1. a) - Someone who uses the Internet/network to destroy or damage

computers for political /religious reasons.

- The extensive damage might destroy a nation's air-traffic control

system, electricity-generating companies or a telecommunications

infrastructure. ✓✓ (2)

b) - Intrusion technique in which an individual attempts to detect wireless

networks via their mobile devices while driving a vehicle through

areas they suspect have a wireless network.

- the damage caused to other people range from using Internet data

cap; having access to confidential material ✓✓ (2)

c) - Has the same intent as a cracker but does not have the technical

skills and knowledge.

- Script kiddies are often teenagers who use pre-written hacking and

cracking programs to break into computers. ✓✓ (2)

* + 1. - user names and passwords

- encryption techniques

- biometrics

- firewalls

**ANY TWO✓✓** (2)

* + 1. - A honeypot is a vulnerable computer that is set up to entice an

intruder to break into it.

- Honeypots are used by companies so they can analyse an attack.

- These computers, which appear real to the intruder, actually are

separated safely from the company's network. ✓✓ (2)

6.6. - Allows you to display maps

- Listen to music – portable media player

- Receives and sends e-mail

- Share photos and videos – built-in camera

- Provides PDA capabilities such as running applications

- GPS capabilities

- Touch Screen

- Has a more powerful/advanced operating system than a normal

phone

- Has more memory

- Allows for Internet access

- Instant messaging **ANY THREE** ✓✓✓ (3)

6.7. - look for the yellow colored padlock at the bottom right corner

- the URL should have ‘https’ instead of just http. ✓✓ (2)

6.8.1 RFID – radio frequency identification ✓✓ (2)

6.8.2 - uses radio signals to communicate with a transponder(tag) ✓✓

- these signals can be analysed on computer (2)

6.8.3 - to track/identify animals in a game reserve

- can be used in cars to collect road tolls etc

- used in passports to trace travel history ✓✓ (2)

**[43]**