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GRADE 12

SEPTEMBER 2020

**INFORMATION TECHNOLOGY P2
MARKING GUIDELINE**

MARKS: 150

This marking guideline consists of 11 pages.

SECTION A: SHORT QUESTION**QUESTION 1**

1.1	1.1.1	Constructor ✓	(1)
	1.1.2	Composite keys ✓	(1)
	1.1.3	Bus ✓	(1)
	1.1.4	Digital Divide ✓	(1)
	1.1.5	Utility Software ✓	(1)
	1.1.6	Bandwidth ✓	(1)
	1.1.7	Identity theft ✓	(1)
	1.1.8	Core ✓	(1)
	1.1.9	Outsourcing ✓	(1)
	1.1.10	RIA (Rich Internet Application) ✓	(1)
1.2	1.2.1	A – 2579 ✓	(1)
	1.2.2	C – 15 ✓	(1)
	1.2.3	C – Interpreter ✓	(1)
	1.2.4	B – Click farms ✓	(1)
	1.2.5	B – Delimiter ✓	(1)

TOTAL SECTION A: 15

SECTION B: SYSTEM TECHNOLOGIES**QUESTION 2**

- 2.1 2.1.1 Any ONE: ✓
- (a) Refers to operating systems on mobile devices that are designed to keep the device on and working at all times – even when the display is dark.
States that mobile technology is never off, it is always working in the background. (1)
- (b) Smartphone ✓
Tablets ✓ (2)
- (c) Any ONE: ✓
- It makes mobile devices fast and responsive.
 - It makes them seem smart and intuitive. (1)
- 2.1.2 (a) *Wearable* refers to devices that you wear on your body instead of carrying them around in a pocket or bag. (1)
- (b) Any TWO: ✓✓
- Goggle Glass
 - Apple Watch / Smart watch
 - Pebble/Gear smartwatches (2)
- 2.2 2.2.1 We want them to perform at their best and deliver results we can rely on. ✓ (1)
- 2.2.2
- Security ✓
 - Saving time ✓
 - Reliability ✓ (3)
- 2.2.3
- Keep your software installation CD/DVD/download in a place where you can easily find and access them ✓ (NOT in a folder on your hard drive, but on some removable storage).
 - Make sure you have records of all your license keys and serial numbers ✓/ Keep printouts of this information (License keys and serial numbers).
 - Make sure you follow a good backup policy and know how to restore your data ✓ (3)
- 2.2.4 A firewall is the hardware or software that monitors which applications are using the communication link and which communication ports are being used. ✓
- Any ONE function: ✓
- Checks and changes settings for individual applications and control access to specific ports.
 - Restricts computer's communication to the most common settings. (2)

- 2.3 2.3.1 Any ONE: ✓
- The disk is fragmented when files are broken up into several pieces and stored all over the disk/storage device.
 - The disk is fragmented when the files are scattered all over the disk/storage device. (1)
- 2.3.2 It takes the computer longer to read files from/write files to a fragmented disk. ✓ (1)
- 2.3.3 Disk defragmentation is the task of running a special software that re-arranges the files on the disk so that the files are stored in sequence. ✓ (1)
- 2.4 2.4.1 Any TWO tips: ✓✓
- Install only ONE anti-virus product.
 - Set the software to download new virus definitions automatically.
 - Set the software to scan removable drives automatically when they are plugged in.
 - Set your software to scan your entire computer automatically at least once a week. (2)
- 2.4.2 Any TWO tips: ✓✓
- Use different passwords for different accounts
 - Make your passwords long
 - Avoid passwords that can be found in a dictionary
 - Avoid personal information about yourself or your family (2)

TOTAL SECTION B: 23

SECTION C: COMMUNICATION AND NETWORK TECHNOLOGIES**QUESTION 3**

3.1 3.1.1 Any THREE permissions ✓✓✓

- Read – allows a user to only read or copy a file or folder.
- Write – allows a user to write to and modify the contents of a file or folder.
- Execute – allows a user to view and access a folder and file's content as well as to execute/run the program file.
- List Folder Contents – allows the listing of files and subfolders in a folder.
- Modify – allows the reading, writing and deletion of files and folders.
- Full Control – allows reading, writing, changing and deleting of files and folders. Also allows you to add, change and remove access permissions for users.

(3)

3.1.2 Administrators ✓

Any ONE explanation ✓

- They have full control over the system.
- They can install software and hardware drives.
- They create and modify new user accounts and groups and reset passwords.
- They have full access to all the files and folders.

Standard users ✓

Any ONE explanation ✓

- They are permitted to log on to the computer, run programs, customise their accounts.
- Work with files in their user folders or in those common folders to which they have been granted access.
- They can change their own passwords but not those of others.
- They are restricted from making system changes.

(4)

3.2 3.2.1 BitComet ✓
uTorrent ✓

(2)

- 3.2.2
- Seeders refer to people who are sharing the file ✓ in BitTorrent processing.
 - The more seeders a torrent has, the faster you are likely to be able to download the file. ✓

(2)

- 3.3 3.3.1 Remote controlling a computer ✓ – allows you to control a computer (from anywhere in the world) as if you are sitting in front of it. ✓
Virtual Private Network (VPN) ✓ – allows you to log on to a network from a remote location via the Internet. ✓ (4)
- 3.3.2 Third party remote access/control software: Any TWO ✓✓
• TeamViewer
• LogMeIn
• GoToMyPC (2)
- 3.4 3.4.1 Digital signature is an electronic signature that is used to identify the sender of a message or signatory/signer of a document. ✓

Any ONE function: ✓
• It provides proof to the recipient that the file or email comes from the person who claims to have sent it.
• It verifies the data has not been altered/changed in any way since the moment it was signed. (2)
- 3.4.2 Thawte ✓
Verisign ✓
Accept any other verifiable CA. (2)
- 3.5 3.5.1 Appification is the trend for information to be accessed via dedicated apps on mobile devices. ✓ (1)
- 3.5.2 Any THREE reasons ✓✓✓
• An app's interface is easier to navigate.
• An app has a dedicated purpose and does not result in distraction and loss of focus.
• With an app you do not have to remember the URLs or manage menus of bookmarks to get where you want to go.
OR
• The app knows where to find its data and does not need to be directed by you.
• All the interface data (pictures, layout etc.) is already installed on your device as part of the app and does not need to be downloaded.
• Apps can be set to fetch data on their own in the background, even when you are not using them and also notify you automatically of significant changes or events.
• Apps can work with a syncing service.
• Apps can use additional sensors in your mobile device (e.g. GPS, compass, accelerometers etc). (3)
- 3.6 The Internet of Things/IoT ✓ (1)
- 3.7 Local storage ✓ – data is stored on the user's computer/local hard drive. ✓
Online storage ✓ – data is stored on the web server. ✓ (4 ÷ 2) (2)

TOTAL SECTION C: 28

SECTION D: DATA AND INFORMATION MANAGEMENT

QUESTION 4

4.1 DBMS is the software that allows you to work with electronic databases. ✓ (1)

4.2 Transaction refers to any activity regarding the creation, loading, editing, saving or deleting of data managed by a DBMS. ✓ (1)

4.3 *Commit/Post* – occurs when the DBMS gets the instruction to save whatever changes have been made back to storage. ✓
Purge/Consolidate – removes deleted records from the database to compact and streamline the file. ✓ (2)

4.4 • The unnecessary repetition of data across multiple fields in a database, which can lead to update anomalies. ✓
• The intentional duplication or distribution of the database across multiple storage media to ensure that the data will always be available and accessible even if one storage medium fails **OR** Mirroring the database. ✓ (2)

4.5 4.5.1 *Parallel data set* is a technique whereby multiple copies of data are kept. ✓
It is used immediately, resulting in no downtime when there is data failure. ✓ (2)

4.5.2 Doubling the storage requirements for the system. ✓ (1)

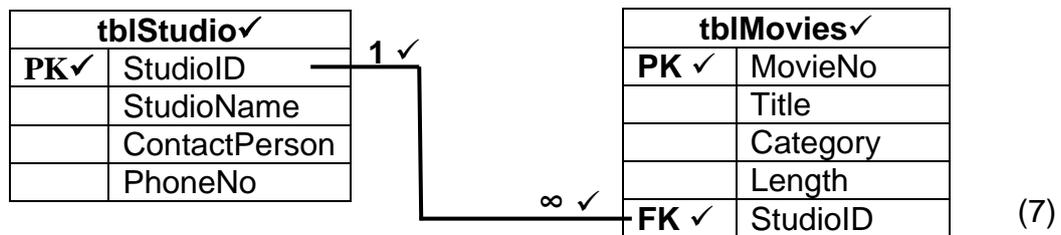
4.5.3 For safety and security. ✓ (1)

4.6 *Overflow* is an error condition that occurs when there are not enough bits available to represent an integer value accurately. ✓

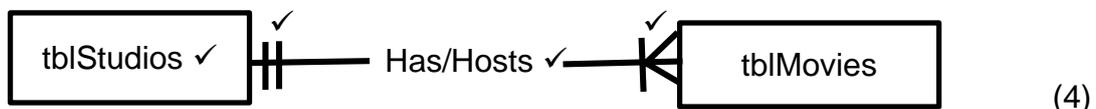
Truncation is the misrepresentation of a string variable because there are not enough bytes available to store all the characters in the string. ✓ (2)

4.7 4.7.1 Any ONE: ✓
• To ensure that there is no redundant data.
• To ensure that data is not being repeated in one way or another.
• To ensure that there is no duplication of data.
• To ensure that a database is in an optimal state, with no chance of anomalies. (1)

4.7.2



4.7.3



TOTAL SECTION D: 24

SECTION E: SOLUTION DEVELOPMENT**QUESTION 5**

- 5.1 5.1.1 Try / Except ✓ (1)
- 5.1.2 Any ONE: ✓ (1)
- Bug
 - Exception
- 5.1.3 *Step-and-watch* refers to a debugging facility in Delphi used to control execution of the program ✓ and view the values of variables while the programming code is executed. ✓ (2)
- 5.1.4 Trace table ✓ (1)
- 5.2 5.2.1 *Data structure* refers to the way data is organised. ✓ (3)
- Arrays ✓ and Text files ✓
- 5.2.2 Arrays ✓ (1)
- 5.2.3 (a) 18 ✓ (1)
- (b) 9 ✓ (1)
- (c) I just L ✓ (1)
- (d) VE Delphi ✓ (1)
- (e) VEXTRA Delphi ✓ (1)
- 5.3 5.3.1 Constructor is a method used create an object in memory ✓ and to initialise ✓ the properties/private fields of an object. (2)
- 5.3.2 *Free* ✓ OR *Destroy* ✓ (2)

5.4

Line No	Value1	Value2	Value3	Value4	Value5	Screen Output
1	9 ✓					
2						Solution ✓
3		12 ✓				
4			6 ✓			
5					6 ✓	
6				48 ✓		
7		54 ✓				
8			0 ✓✓			
9	3 ✓					
10						3 ✓
11						54 ✓

(12 ÷ 2) (6)

TOTAL SECTION D: 24

SECTION F: INTEGRATED SCENARIO**QUESTION 6**

- 6.1 6.1.1 (a) Any ONE ✓
- *E-waste* refers to broken, outdated and discarded hardware that we neither want nor need.
- OR**
- *E-waste* is anything electronic or related to electronics that is thrown away. (1)
- (b) Any THREE ✓✓✓
- Old computers
 - Old CRT monitors
 - Broken hard drives
 - Dead or unwanted cellphones
 - TVs
 - Gaming devices
 - Batteries (3)
- (c) Any TWO ✓✓
- Cancer
 - Pollution
 - Causes radiation
 - Poison water
 - Damage living things that come into contact with them
 - Contamination (2)
- (d) Poisonous parts are removed ✓ properly before the materials get put into the dump site. (1)
- 6.1.2 *Green computing* refers to initiatives to design, use and dispose of technology in an environmentally or eco-friendly way. ✓ (1)
- 6.2 6.2.1 (a) *Spammer* refers to someone who sends out unsolicited / unasked-for/unwanted e-mails in the form of advertisements. ✓ (1)
- (b) Any ONE ✓
- Spam clogs the Internet with a lot of unnecessary traffic (impacts on speed).
 - It also wastes time because you have to sift through so much junk in inbox. (1)
- (c) Any ONE ✓
- Use a spam filter in your e-mail client program.
 - Avoid entering your e-mail address into website forms. (1)

- 6.2.2
- There is low risk of physical danger (They are not physically present when they commit the crime). ✓
 - It is difficult to detect the crime. ✓
 - It is difficult to trace who committed the crime. ✓
- (3)
- 6.2.3 Malware / Virus ✓ (1)
- 6.2.4 Zombie PC ✓ (1)
- 6.3 6.3.1
- Decision Support Systems (DSS) ✓
 - Expert systems / Knowledge-based systems ✓
- (2)
- 6.3.2 Any THREE ✓✓✓
- Genetic research
 - Weather modelling and climate prediction
 - Physics research (e.g. nuclear research)
 - Circuit design
 - Financial modelling
 - Web searching / indexing
- (3)
- 6.3.3 Any ONE ✓
- SETI@Home
 - Cimateprediction.net
 - Folding@home
- (1)
- 6.4 6.4.1 Any TWO ✓✓
- Turn off notifications on your mobile device when you are busy.
 - Only enable them for a limited group of people.
 - Set aside specific time for engaging with social media.
 - When doing important work, switch off your phone or put it on silent and disable vibrate option.
 - Try to remove yourself from FOMO (Fear of Missing Out) phobia.
- (2)
- 6.4.2 Any TWO ✓✓
- The Internet never forgets.
 - The Internet is a public space.
 - You cannot be sure how your information/uploads are going to be shared.
 - The personal information you share today/now might come back to haunt you in future.
 - There is nothing stopping anyone who can access what you have shared from copying it, saving it or sharing it in other places.
- (2)
- 6.5 Transaction Processing System ✓ (1)
- 6.6 *Software as a Service* refers to the concept of renting software instead of buying a license to use it forever. ✓ (1)

- 6.7 Any TWO places ✓✓
- DRM (Digital Rights Management)
 - ATM
 - Internet browsers
 - Skype calls
 - Online storage services (2)
- 6.8 *Backdoor* is a hidden way to gain access to a computer, system or software. ✓ (1)
- 6.9 *Skimmer* reads the electronic details from a card. ✓
Video camera records your PIN/password. ✓ (2)
- 6.10 Any TWO effects ✓✓
- Decreased discretionary spending (we spend a lot of money on things to make us safer).
 - Decreased productivity (time that could be spent on productivity is wasted on preventing crime).
 - Increased social stratification (it separates different social classes from each other).
 - Development of a culture of fear and suspicion. (2)

TOTAL SECTION F: 36
GRANDTOTAL: 150