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SENIOR CERTIFICATE EXAMINATIONS

INFORMATION TECHNOLOGY P2

2018

MARKING GUIDELINES

MARKS: 150

These marking guidelines consist of 13 pages.

SECTION A: SHORT QUESTIONS**QUESTION 1**

1.1	1.1.1	C ✓	(1)
	1.1.2	D ✓	(1)
	1.1.3	D ✓	(1)
1.2	1.2.1	C ✓✓	(2)
	1.2.2	B ✓✓	(2)
1.3	1.3.1	RIA (Rich Internet Applications) ✓	(1)
	1.3.2	Decision Support System(DSS) ✓	(1)
	1.3.3	Adware ✓	(1)
	1.3.4	Botnet ✓	(1)
	1.3.5	CMOS ✓	(1)
	1.3.6	Data verification ✓	(1)
	1.3.7	Black hat hacker/cracker ✓	(1)
	1.3.8	Point of Sale (POS) system ✓	(1)
	1.3.9	Spam ✓	(1)

TOTAL SECTION A: 16

SECTION B: SYSTEM TECHNOLOGIES**QUESTION 2**

- 2.1 2.1.1 The motherboard is made up of separate components ✓ (1)
- 2.1.2 *Any ONE* ✓
- Keyboard
 - Mouse
 - Monitor
 - Network cable
 - Sound cable/Speaker (1)
- 2.1.3 To hold the data and instructions being processed ✓ (1)
- 2.1.4 Cache memory is high speed memory that holds data and instructions likely to be used next by the CPU and so speeds up the processing by speeding up access to data and instructions stored on a slower medium.
- Concepts:*
- ✓ High speed memory
 - ✓ Stores data and instructions likely to be used/recently used
 - ✓ Don't have to wait for slower medium/fetch from slower medium (3)
- 2.1.5 *Multiprocessing:*
Multiple cores ✓ are used to run multiple programs/threads simultaneously ✓ (2)
- 2.2 2.2.1 *Any TWO reasons for preferring mobile devices:* ✓✓
- Always on functionality
 - Availability of communication
 - Convergent
 - Powerful/speed
- Also accept: Any other suitable reason/example (2)
- 2.2.2 *Any TWO limiting factors of using mobile devices:* ✓✓
- Limited battery life
 - Small screen size
 - Difficulty typing on small virtual keyboard
 - Limited storage capacity (2)

2.2.3 Any TWO reasons for using SSDs instead of HDDs: ✓✓

- No moving parts that can be damaged in mobile environment/More robust
 - Faster at boot time/Faster data transfer rate
 - Smaller dimensions to fit into small devices
 - Lower power usage to save power
- (2)

2.3 2.3.1 Any ONE explanation of Cloud application:✓

The processing of the software is done on servers on the Internet

OR

An application that resides on the Internet and not on a local computer

(1)

2.3.2 Any TWO reasons for using SaaS: ✓✓

- Software is rented not bought/Cheaper as do not have to buy/pay for updates/updating software
 - Always have access to latest version of software
 - Can use software on a number of devices/Can open programs in any browser
 - Get limited free cloud storage
- (2)

2.3.3 Any ONE disadvantage of cloud computing: ✓

- The service provider could go out of business
 - Security issues
 - Still need a good backup policy
 - Slow access upload/download problems
- (1)

2.3.4 Virtualisation

- Splitting the resources of powerful machines between multiple users ✓
 - Combining resources of many machines into one powerful machine ✓
- (2)

2.4 2.4.1 Online digital media repository:

Online storage location ✓ used exclusively for digital content such as music and videos

(1)

2.4.2 Any TWO reasons for using a media repository: ✓✓

- Centralised data/easy access
 - Saves on local device storage space
- (2)

2.5 Any ONE reason for using online backup: ✓

- To have a copy of the data off-site
 - To back up data in case disaster strikes
- (1)

TOTAL SECTION B: 24

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

- 3.1 3.1.1 *Any ONE ✓*
- Portability and mobility/a user can connect via a laptop or other device/Access to network from a wider range
 - A device can be added to the network easily
 - Cost effective by saving on data costs (1)
- 3.1.2 *Any ONE ✓*
- Provides a unique address for communication
 - To prevent conflicts in addresses during communication (1)
- 3.1.3 *Any TWO ✓✓*
- Too far away from the router
 - Too many users are accessing at the same time/Lack of sufficient bandwidth
 - Interferences like EMI
 - Interferences by structures like trees/buildings (2)
- 3.2 3.2.1 *Any TWO ✓✓*
- Email
 - Secure web hosting
 - Spam filtering (2)
- 3.2.2 *Any TWO ✓✓*
- High speed/permanent connection
 - Allows for internet access and telephone use at the same time
 - Relatively cheap when using a lot of data
 - Scalability (2)
- 3.2.3 Connects devices to one another ✓ and directs traffic between devices. ✓ (2)
- 3.2.4(a) *Any ONE ✓*
- Glass fibers
 - Light
 - Laser (1)

- 3.2.4(b) Any TWO ✓✓
- Less interference/less EMI
 - Secure and difficult to tap/No eavesdropping
 - Very fast speed
 - Can cover larger distances without regeneration (2)
- 3.3 3.3.1 Any ONE ✓
- A thin client has:
- No hard drive
 - Limited hardware resources (1)
- 3.3.2 Any TWO ✓✓
- Software will only need to be installed on the server
 - Save on cost due to lower specifications of clients
 - Space saving due to smaller dimensions (2)
- 3.3.3 Any ONE ✓
- Provides power for a short while if there is a power failure
 - Provides power to have sufficient time to shut down the server properly (1)
- 3.4 3.4.1 The staff can work with resources away from the business premises/offices at any part of the day or night ✓
- OR**
- Can remotely access the business network with the same security as a local connection (1)
- 3.4.2 Encryption ✓ (1)
- 3.4.3 Any TWO ✓✓
- Firewall blocking
 - VPN security details entered incorrectly/Incorrect password
 - No Internet access
 - Not registered as a user on the VPN
 - Incorrect VPN software configuration (2)
- 3.5 Scalability ✓ (1)

TOTAL SECTION C: 22

SECTION D: DATA AND INFORMATION MANAGEMENT**QUESTION 4**

- 4.1 4.1.1 Relational database is a database consisting of different tables✓
which are linked with relationships✓ (2)
- 4.1.2 Any ONE ✓✓
Record locking is required:
 - To prevent changes made by one of the staff members from being lost
 - If the record is locked only one user may be allowed to make changes to the content of the record.
 - Accessing the same record at the same time can corrupt data
 - Anomalies may occur- data should stay consistent
(2)
- 4.1.3 Any TWO responsibilities of database administrator ✓✓
(excluding planning and creating database)
 - Setup user accounts and user rights
 - Setup backup strategy for database
 - Create queries for users of the database
 - Monitor the working of the database
(2)
- 4.2 4.2.1 It refers to a field/s that makes possible that the record can be uniquely identified. ✓ (1)
- 4.2.2 Foreign key✓ (1)
- 4.2.3 It means that the primary key can consist of more than one field. ✓ (1)
- 4.2.4 One to many relationship ✓
One student can borrow many books ✓ (2)
- 4.2.5 Any ONE ✓✓
A record on the one (tblStudents) side of the relationship cannot be deleted if it is linked to records on the many (tblBooksBorrowed) side of the relationship.
OR
A new record cannot be entered on the many (tblBooksBorrowed) side of a table without a corresponding record on the one (tblStudents) side of the relationship. (2)

- 4.2.6 (a) `SELECT StudentName, StudentSurname, FundsAvailable
FROM tblStudents WHERE FundsAvailable <= 30`
- ✓ Select with 3 correct fields -StudentName,
StudentSurname, FundsAvailable
 - ✓FROM tblStudents
 - ✓WHERE FundsAvailable <= 30 (3)
- (b) `SELECT tblStudents.StudentNumber, Count(ISBN) AS
NumberBorrowed FROM tblStudents, tblBooksBorrowed
WHERE tblStudents.StudentNumber =
tblBooksBorrowed.StudentNumber GROUP BY
tblStudents.StudentNumber HAVING (NumberBorrowed > 2)`
- ✓SELECT tblStudents.StudentNumber
 - ✓Count(ISBN)
 - ✓AS NumberBorrowed
 - ✓FROM tblStudents, tblBooksBorrowed
 - ✓WHERE tblStudents.StudentNumber =
tblBooksBorrowed.StudentNumber
 - ✓GROUP BY tblStudents.StudentNumber
 - ✓HAVING (NumberBorrowed > 2) (7)

TOTAL SECTION D: 23

SECTION E: SOLUTION DEVELOPMENT**QUESTION 5**

- 5.1 5.1.1 Code to be executed when the application starts/when program opens/runs ✓ (1)
- 5.1.2 Any ONE: ✓
- The number of repetitions is unknown
 - The number of repetitions is dependent on the condition (1)
- 5.1.3 To determine the ASCII/ordinal value of a character ✓ (1)
- 5.2 5.2.1 (a) When a class/unit keeps/declares its variables private ✓ so it cannot be accessed from outside the class/unit ✓
OR
 Details of attributes are hidden and not directly available/accessible outside the class/unit (2)
- (b) Any ONE: ✓
- DateTime
 - String
 - Date (1)
- (c) +getStudentCode:String ✓ (1)
- (d) +setLoginNumber(iLoginNumber:integer) ✓ (1)
- (e) Auxiliary/formatting ✓ method (1)
- 5.2.2 (a) Linear/sequential ✓ (1)
- (b) Any ONE: ✓
- Provide for testing uppercase and lowercase characters
 - Avoid using fixed values such as 1000/Can only be used for 1000 students and more
 - Search continues even after record has been found (1)
- (c) bFound ←false ✓
 iPos←1 ✓
 while bFound = false ✓ AND iPos <= length of array ✓
 if arrStudNumbers[iPos] =sSearch ✓
 arrMathResults[iPos] = new mark input✓
 bFound ←true✓
 increase iPos✓ (8)

5.3

sName	NOT(Uppcase(sName[A]) in ['A','E','I','O','U'])	sCode	A	Is sName[A] = ' '?	Display
Mark Simon		"	1		
	True				
		M			
			2		
				False	
	False✓				
			3✓		
				False✓	
	True✓				
		Mr✓			
			4✓		
				False✓	
	True✓				
		Mrk✓			
			5✓		
				True✓	
					Mrk✓

(12/2
=6)**TOTAL SECTION E: 25**

SECTION F: INTEGRATED SCENARIO**QUESTION 6**

- 6.1 6.1.1 Acceptable Use Policy ✓ (1)
- 6.1.2 To provide the user of a network environment with the rights and responsibilities ✓ when using their ICT resources/network ✓ (2)
- 6.2 *File syncing:*
Ensure that all devices ✓ contain the most up to date version of the same document ✓ (2)
- 6.3 6.3.1 *Any TWO skills: ✓✓*
 • Software programming skills
 • Graphic design skills
 • Knowledge on HCI principles
 • Creativity and imagination
 • Knowledge on advances in technology (2)
- 6.3.2 *Any TWO factors: ✓✓*
 • Page must automatically resize/provide for smaller screens
 • Different format and page layout/readability
 • Reduced size of image files/less data to download
 • Exclude certain content/functionality/flash players
 • Work cross platform
 • Limitations in terms of processing and storage on smaller devices (2)
- 6.4 6.4.1 *Any ONE definition of metadata: ✓*
 • Additional data/information on the video that is saved with the file
 • Data about data (1)
- 6.4.2 *Any ONE ✓*
 • MPEG-2
 • MPEG-4
 • .MP4
 • .avi
 • MKV
 Also accept any other acceptable compression format (1)
- 6.5 6.5.1 Online seminars ✓ (1)

- 6.5.2 *Any ONE ✓*
- Make use of RSS feeds
 - Suitable apps
 - Message alerts/SMS
- (1)
- 6.6 6.6.1 *Any THREE functions of an operating system: ✓✓✓*
- Provides an interface
 - Manages processes and tasks
 - Manages memory
 - Manages input and output
 - Manages the disk/s
- (3)
- 6.6.2 *Any ONE advantage of using proprietary operating system: ✓*
- Formal support in terms of help is available/The company owning the operating system supplies a help desk
 - Patches/service packs are released with updates which are made available to everyone
- (1)
- 6.7 6.7.1 Radio Frequency Identification✓
- (1)
- 6.7.2 Passive tags receive all the power they need from the RFID reader✓and they can only start interacting with the reader once they enter the electromagnetic field generated by the reader. ✓
Active tags receive their power from on-board batteries, which allow them to communicate over longer distances/constant communication. ✓
- (3)
- 6.7.3 *Any TWO ✓✓*
- Prone to mistakes (human errors)
 - Time consuming
 - Cost incurred with hiring of personnel
- (2)
- 6.8 Netiquette describes behaviour when sending e-mails or any form of electronic communication ✓
- (Any ONE acceptable example ✓)*
- You should not advertise products using e-mail
 - Do not send lengthy e-mails
 - Do not attach very large documents to your e-mail
 - Avoid spelling errors
 - Do not take part in flame wars
 - Do not forward spam/hoaxes
 - Do not use only capital letters
- NOTE:**
Do not accept general comments – the example must be linked to electronic communication.
- (2)

- 6.9 *Any ONE ✓*
- People often aspire to what seems to be the more popular, common and desirable culture and so discard their own.
 - Often people gravitate to what looks to be the more sophisticated and appealing cultures and abandon their own traditions, languages and lifestyles.
 - Any other acceptable answer (1)
- 6.10 6.10.1 (a) *Encryption* is the scrambling of text/data into a new format✓ using a specified set of rules ✓ (2)
- (b) Public key encryption:
- A public key is transmitted to user/client. ✓
 - Message is encrypted with public key ✓
 - Message can only be decrypted with private key that is kept by the receiver.✓ (3)
- 6.10.2 (a) The URL contains https: ✓ (1)
- (b) *Any TWO ✓✓*
- The certificate is provided by a third party company like VeriSign
 - It is linked to a specific web address, confirming its validity
 - Date of validity (2)
- 6.10.3 (a) Social engineering refers to 'conning' or tricking ✓ a person into willingly ✓ giving out personal information. (2)
- (b) Sensitive information such as passwords or other information that can be used to commit identity theft.✓
Or any other sensible/realistic consequence (1)
- 6.11 6.11.1 Initiatives to design, use and dispose of technology in an environmentally or eco-friendly way. (1)
- 6.11.2 *Any TWO ✓✓*
- Store records electronically – use less paper
 - Scan research from books rather than copying
 - Switch computers off when not in use
 - Set computers to sleep mode (2)

TOTAL SECTION F: 40
GRAND TOTAL: 150