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GRADE 12

SEPTEMBER 2021

**INFORMATION TECHNOLOGY P2
MARKING GUIDELINE**

MARKS: 150

This marking guideline consists of 12 pages.

QUESTION 1

- | | | | |
|-----|--------|--|-----|
| 1.1 | 1.1.1 | Encapsulation ✓ | (1) |
| | 1.1.2 | Record ✓ | (1) |
| | 1.1.3 | Seek time ✓ | (1) |
| | 1.1.4 | Green computing ✓ | (1) |
| | 1.1.5 | Virtual Reality/(VR) ✓ | (1) |
| | 1.1.6 | Internet Service Provider/(ISP) ✓ | (1) |
| | 1.1.7 | IT waste/E-waste/E-scrap ✓ | (1) |
| | 1.1.8 | Software as a Service (SaaS) ✓ | (1) |
| | 1.1.9 | Fuzzy logic ✓ | (1) |
| | 1.1.10 | Router ✓ | (1) |
| 1.2 | 1.2.1 | B – (rapid application development) ✓ | (1) |
| | 1.2.2 | A – (Comma Separated Values) ✓ | (1) |
| | 1.2.3 | C – (multitasking) ✓ | (1) |
| | 1.2.4 | C – (Wireless Access Point/Protocol) ✓ | (1) |
| | 1.2.5 | B – (5) ✓ | (1) |

TOTAL SECTION A: 15

SECTION B: SYSTEM TECHNOLOGIES**QUESTION 2**

- 2.1 2.1.1 Cloud application is software, where most of the processing is done in the cloud by one or more servers on the internet. ✓ (1)
- 2.1.2
- Gmail ✓
 - Facebook ✓
- (2)
- 2.1.3 Local front-end means that the cloud application has a part of the program that is stored and run locally on a device or it might run entirely as a page in a web browser. ✓ (1)
- 2.1.4 **Any TWO:** ✓✓
- Google Docs
 - Office 365
 - Microsoft Office Online
 - iWork
 - Google G Suite
 - Smart Sheet
 - Feng Office
 - Zoho Workplace
 - Quip
- (2)
- 2.1.5 **Any TWO:** ✓✓
- Scalability
 - Ubiquity (Anywhere/anytime)
 - Enables collaboration
 - Outsource maintenance and upgrades of hardware
 - Outsource software installation and upgrades
- (2)
- 2.1.6 Service Level Agreement ✓ (1)
- 2.2 2.2.1 **Any ONE:** ✓
- Augmented Reality technology superimposes/covers a computer-generated image onto a user's view of the real world.
 - It provides a composite 3D view that provides full immersion.
- (1)
- 2.2.2 **Any TWO:** ✓✓
- Product View
 - Enhance content
 - Training
 - Productivity
 - Engage the audience
- (2)

2.2.3 Any TWO: ✓✓

- To get or enhance creativity
 - Provide a new product experience
 - Able to preview the product visually
 - Build real-time data experience
 - Enjoy experimental experiences
 - Functional uses demo
- (2)

2.2.4 Any TWO: ✓✓

- Battery life
 - Bluetooth connectivity/Wi-Fi
 - Field of view in 3D view
 - On board OS/Web Browser
 - On-board storage capacity
 - Inputs/outputs (button, eye tracking, accelerometer)
 - Microphone
 - Sound capacity
 - Display capacity
 - Visual tracking
- (2)

2.3 *Archiving* is the process of moving data that is no longer actively used to a separate storage device for long term retention. ✓
Back-up is the process of making copies/duplicates of data storing it on a different device in different geographical area/location. ✓

(2)

2.4 2.4.1 *Virtualisation* is the process of running multiple computing environments (called virtual machines) on a single set of hardware. ✓

(1)

2.4.2 Any TWO: ✓✓

- Testing different operating systems and hardware
 - Cloning computers
 - Hosting cloud applications
 - Allow multiple people to use the same computer at the same time
- (2)

2.4.3 Any TWO: ✓✓

- Less expenditure
 - Save assets
 - Disaster recovery
 - Green IT
 - Long term benefits
- (2)

2.5

- Disk Check ✓
- SMART scan ✓

(2)

TOTAL SECTION B: 25

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

- 3.1 3.1.1
- Switch ✓
 - Network cable ✓
 - Wireless base station ✓
- (3)
- 3.1.2 World Wide Web ✓
- (1)
- 3.2 3.2.1 BitTorrent is a peer-to-peer protocol used to transfer and share large files across a network such as the Internet. ✓
- (1)
- 3.2.2 **Any THREE:** ✓✓✓
- The data used to upload the file is shared between all the users downloading the file.
 - The bandwidth is also shared, allowing users to download the file more quickly.
 - Since the file is not uploaded to a single website or hosted by a single user, people may continue to share it for years after it was first shared.
 - For websites using torrents to share pirated material, the website itself is not sharing the illegal materials nor the files linking to illegal materials.
 - BitTorrent allows many users to download popular files quickly because it eliminates the bottleneck problem that you get when a file is shared from a single source/server.
 - It reduces the cost to the host (no single host has to pay for millions of people downloading the file from their server).
 - It forces some equality in sharing (every time you run the client software, others can download the files in your shared folder and in your downloaded files folder).
 - It offers an effective use of available download bandwidth.
 - BitTorrent client software is usually free.
- (3)
- 3.2.3 **Any THREE:** ✓✓✓
- Many users have used torrent files to share viruses.
 - Many ISPs throttle or shape torrent downloads, preventing you from downloading them at high speed.
 - Torrents are often used to pirate videos and music.
 - Torrenting is only legal if you have a licence to use the content which you torrent.
 - BitTorrent is purely a content distribution method and does not incorporate any technology to monitor or restrict any activity.
- (3)

- 3.3 3.3.1 Remote access refers to several technologies or applications that allow you to connect to a computer over the network. ✓ (1)
- 3.3.2 **Any THREE:** ✓✓✓
- Opening applications
 - Sending e-mails
 - Fixing problems
 - Use the computer as if it is your computer
 - See the remote computer's display on your monitor or view the screen of the remote target computer on your local computer.
 - Use the local computer's mouse and keyboard to control the target computer remotely. (3)
- 3.3.3 Local network ✓ – is a remote access that allows you to connect to a computer on your local network and use it as if it was your own computer. ✓
- Online remote access/Virtual Private network ✓ – allows you to connect and manage a computer anywhere in the world. ✓ (4)
- 3.4 **Any TWO:** ✓✓
- Software firewall installed on the user's computer OR (Firewall installed on user's computer).
 - Software firewall that is installed on a server or router
 - Hardware firewall installed between a local computer and the Internet. (2)
- 3.5 Network Topology refers to the layout/structure of a network. ✓ (1)

TOTAL SECTION C: 22

SECTION D: DATA AND INFORMATION MANAGEMENT**QUESTION 4****4.1 Any TWO: ✓✓**

- Accuracy
- Consistent
- Current
- Complete
- Relevant

(2)

4.2 4.2.1 *Data verification* is a manual technique that is used to make sure that the data on a database is correct and accurate. ✓

(1)

4.2.2 *Full verification* – requires that each piece of data that is entered into a database is read and checked by someone. ✓

Sample verification – a process in which randomly selected samples of data is checked to ensure that there are no systematic errors. ✓

(2)

4.2.3 Any TWO: ✓✓

- Records who made changes to the system
- Records what the user changed from the system
- Records when they made changes

(2)

4.3 Any TWO: ✓✓

- Designing a database
- Security or setting up and enforcing user rights, encryption etc.
- Backup, restoration plans and policies to determine whether the database is out-growing the hardware that it runs
- General maintenance of the database
- Monitoring the database performance

(2)

4.4 4.4.1 Any FOUR: ✓✓✓✓

- Primary key
- Alternate key
- Synthetic **OR** Surrogate key
- Foreign key
- Composite key **OR** Concatenated key

(4)

4.4.2 Field **OR** Column ✓

(1)

4.5 4.5.1 (True/False) **OR** (Yes/No) **OR** (Boolean) ✓ (1)

4.5.2 (a) **In the diagram below (Marks allocation):**

tblCustomer table

- CustNo(PK) ✓

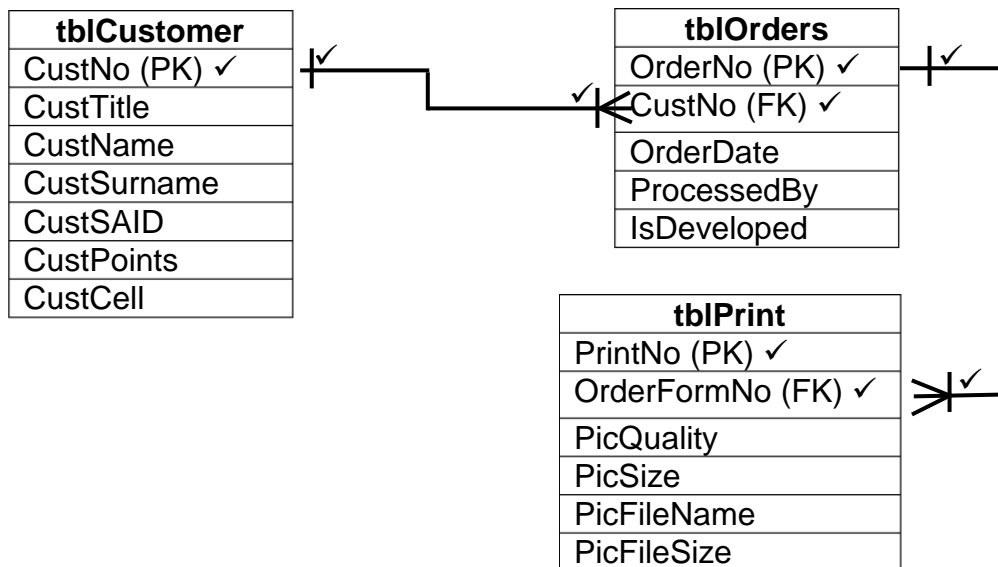
tblOrders table

- OrderNo(PK) ✓
- CustNo(FK) ✓

tblPrint table

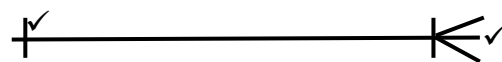
- PrintNo(PK) ✓
- OrderFormNo(FK) ✓

(5)

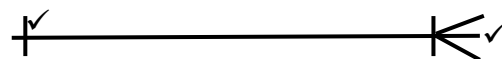


4.5.2 (b) **In the diagram above (ERD mark allocation):**

tblCustomer table and tblOrders table



tblOrders table and tblPrint table



(4)

TOTAL SECTION D: 24

SECTION E: SOLUTION DEVELOPMENT**QUESTION 5**

- 5.1 5.1.1 Debugging refers to the process of locating and removing errors found in a program. ✓ (1)
- 5.1.2 Exception handling ✓ (1)
- 5.1.3 Try..Except block/statement ✓ (1)
- 5.1.4 Exception ✓ (1)
- 5.2 5.2.1
- Class name section ✓
 - Attributes section ✓
 - Methods section ✓
- (3)
- 5.2.2 **Any ONE:** ✓
toString is used to format the output of a class by converting selected attributes of a class into string format.
OR
toString method is used to display the state of the class, i.e. displays the values currently held by each of the attributes. (1)
- 5.2.3 Unified Modelling Language ✓ (1)
- 5.2.4 (a) Getters ✓ (1)
- (b) Setters ✓ (1)
- (c) Helper ✓ (1)
- 5.3 5.3.1 11 ✓ (1)
- 5.3.2 25 ✓ (1)
- 5.3.3 Digital World ✓ (1)

5.4 5.4.1

| Line No | Item | Num | Price | Cost | Total | redOut |
|---------|---------------|-----|--------|--------|--------|--------------------------|
| 1 | | | | | 0 ✓ | |
| 2 | Baked beans ✓ | | | | | |
| 3 | | 3 ✓ | | | | |
| 4 | | | 3,29 ✓ | | | |
| 5 | | | | 9,87 ✓ | | |
| 6 | | | | | 9,87 ✓ | |
| 7 | Kewl Drink ✓ | | | | | |
| 8 | | 5 ✓ | | | | |
| 9 | | | 1,95 ✓ | | | |
| 10 | | | | 9,75 ✓ | | |
| 11 | | | | | 9,87 ✓ | |
| 12 | | | | | | Total amount to pay: R ✓ |
| 13 | | | | | | 9 ✓✓ |

14 ÷ 2 (7)

5.4.2 Logical error ✓ (1)

5.4.3

- Total := Total + Cost; ✓
- redOut.Lines.Add(FloatToStr(Total)); ✓

(2)

TOTAL SECTION D: 25

SECTION F: INTEGRATED SCENARIO

QUESTION 6

- 6.1 6.1.1
- Fix errors or bugs in our existing programs ✓
 - Close security loopholes that hackers and malware might try to exploit ✓
 - Add new features and improvements to the existing software ✓ (3)
- 6.1.2 *Patch* is an update that can be downloaded to fix a specific bug in your software. ✓
Service pack is a collection of fixes, updates and new features since the release of the original software or previous pack OR is a release of corrections and new features since the release of the original software. ✓ (2)
- 6.2 6.2.1 *Computer criminal* is anyone who uses ICT to commit a crime. ✓ (1)
- 6.2.2 **Any THREE:** ✓✓✓
- Theft of physical computer equipment
 - Theft of intellectual property
 - Identity theft
 - Financial gain/Theft of money
 - Theft of data/Espionage
 - Theft of resources (3)
- 6.2.3
- *Backdoor* is a hidden way to gain access to a computer, system or software. ✓
 - *Piggybacking* is when criminals gain access to and use someone else's internet connection without paying for it. ✓ (2)
- 6.2.4 **Any THREE:** ✓✓✓
- Installing and updating anti-virus software
 - Using a firewall
 - Keeping all your software up-to-date
 - Being aware of current trends in computer crime
 - Applying common sense
 - Following a good password policy (3)
- 6.2.5
- *White hat hacker (Good hacker)* ✓ – helps companies to improve their security by trying to hack into their computers. ✓
 - *Black hat hacker (Bad hacker)* ✓ – illegally break into the computer with malicious intention. ✓ (4)
- 6.2.6 Distributed Denial Of Service/DDOS ✓ (1)

- 6.3 6.3.1 *Globalisation* is an increase in the rate and ease with which people, companies and governments from different countries interact. ✓ (1)
- 6.3.2
- Transportation ✓
 - Improvements in computers and computer networks ✓ (2)
- 6.3.3 **Any THREE:** ✓ ✓ ✓
- Allowing families to keep in touch, even over large distances.
 - Helping people to keep and maintain larger social networks.
 - Increasing people's social and romantic opportunities.
 - Improving job opportunities, with citizens from other countries working in foreign countries.
 - Helping people understand different points of view, with research showing how communicating with different people can increase empathy. (3)
- 6.4 6.4.1 *Data cap* is a term used to describe the data limit. ✓ (1)
- 6.4.2
- Bitcoin ✓
 - Bitcoin is digital money used on the Internet for various services. ✓ (2)
- 6.4.3 Cascading Style Sheets ✓ (1)
- 6.4.4 .js ✓ (1)
- 6.5 Knowledge-based systems ✓ (1)
- 6.6 Identifies and removes temporal files that are no longer needed and cleans out old files, programs and settings that cause a computer to slow down. ✓ (1)
- 6.7 6.7.1 Internet of Things ✓ (1)
- 6.7.2 *IoT* refers to the billions of devices around the world that are connected to the Internet through sensors or Wi-Fi. ✓ (1)
- 6.7.3 **Any TWO:** ✓ ✓
- Increasing processing power of embedded platforms
 - Development of smaller Oses and protocols
 - Development of wireless communications (2)
- 6.8 *Memes* is an image, video piece or text typically/normally humorous/funny in nature that is copied and spread rapidly by the Internet users. ✓ (1)
- 6.9 **Any TWO:** ✓ ✓
- Use disk clean-up tool
 - Uninstall unused software
 - Empty recycle bin
 - Compress data not frequently used (2)

TOTAL SECTION F: 39
GRAND TOTAL: 150