

MARKING GUIDELINES

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SOUTH AFRICAN COMPREHENSIVE ASSESSMENT INSTITUTE
SUID-AFRIKAANSE KOMPREENSIEWE ASSESSERINGSINSTITUUT

SECTION A

QUESTION 1: SHORT QUESTIONS

- 1.1.1 Copyright (1)
- 1.1.2 QR / barcodes (1)
- 1.1.3 Internet of things (1)
- 1.1.4 streaming (1)
- 1.1.5 Power supply (1)
- 1.1.6 OSS / Open source software /FOSS (1)
- 1.1.7 Personal Area Network (PAN) / Home Area Network (HAN) (1)
- 1.1.8 Plug-a-play (1)
- 1.1.9 8 (1)
- 1.1.10 logical (1)

(10)

1.2

1.2.1	O
1.2.2	L
1.2.3	F
1.2.4	B
1.2.5	G
1.2.6	M
1.2.7	Q
1.2.8	H
1.2.9	C
1.2.10	K

(10)

TOTAL SECTION A: [20]



SECTION B

QUESTION 2: SYSTEM TECHNOLOGIES

- 2.1.1 Any ONE; ✓
 - There is no cost associated with installing the program/app. (1)
 - Can be legally shared.
- 2.1.2 Concepts: ✓ (1)
 - You don't own the software and
 - must use it within the rules set /T&C
 - by the developer/owner.
- 2.2.2 Multi: a limited number of users or devices linked to a single licence ✓
 Site: allow for installation on a number of devices belonging to an ✓ (2)
 company/entity/school
 Accept an EXPLAINED example
- 2.3.1 Concept: independent processor units ✓
 - The CPU chip contains multiple independent processors (1)
 - Explained as: CPU can process different tasks **simultaneously**
- 2.3.2 4 (1)
- 2.4.1 To prevent the faster CPU from ✓ being slowed down by a slower component such as RAM while waiting for data ✓
OR
 Temporary storage on CPU where the most probable next instruction from RAM is stored to prevent the CPU from waiting for instructions.
OR
 Technique used by computers to store data that is likely to be used soon, in a faster form of memory so that it can be accessed more easily. (2)
- 2.4.2 Web cache: area on HD where recently visited web-pages are saved for faster retrieval
OR (2)
 Disk caching: area on RAM or HD containing recently opened documents.
- 2.5.1 When a peripheral (keyboard/mouse) is designed to lessen injury/discomfort ✓ due to excessive and long-term ✓ usage. (2)
- 2.5.2 RSI (accept carpal tunnel syndrome/tendinitis/ inflamed wrists) (1)
- 2.6 **NO INTERNET** may be stated! Any THREE ✓✓✓
 - Computers became relatively more affordable



- More people became computer literate
- Most jobs require you to be computer literate to be considered for employment
- Contains lots of organised storage as opposed to cupboards and shelves
- Never tires and can work at the same pace 24/7
- Same consistent accuracy when doing repetitive actions (3)
- High speed calculations
- Entertainment
- Automation

2.7 System: programs that controls all HW and SW ✓ actions of the computer. Must be present (GUI) before the hardware ✓ can be used
 Application: a variety of programs installed (of choice) by user ✓ to perform a required task (4)
 Can't load APP before OS is present/ the apps use the OS during installation ✓.

2.8 The design of computers with different parts ✓ to allow exchanging of some components by means of slots ✓ they are inserted/connected to.
 Any example from: ✓

- This allows for upgrading or exchanging faulty components.
- Computers are made of different parts to replace faulty ones and to upgrade. (3)
- Computers can be built according to own specifications.

2.9.1 Any ONE: ✓

- SSD Per GB more expensive (1)
- SSD has better life/duty cycle (not moving parts)
- Traditional HDDs have more storage space

2.9.2

- More durable as no moving parts
- Does not need defragmentation
- Faster access rate (2)
- Less power consumption

2.10.1

- How often to make them/ Scheduling of backups
- Which files to backup (incremental/full)
- Where to store the backups
- Size of backup data (2)

2.10.2 When copies on a device/devices and the cloud version of the same file are all the same- ✓ meaning updated ✓ as you work. (live file) (2)

TOTAL SECTION B: [30]

SECTION C

QUESTION 3: COMMUNICATIONS AND NETWORK TECHNOLOGY

3.1 Any TWO: ✓✓

- Biometric logon
- Login password
- Multi-level authentication

(2)

3.2

Risk	Explain/define	Protection
1: viruses	Malware/software to infect/disrupt your computer	Don't open attachments/ antivirus
2: identity theft	Infiltration by spyware-	Firewalls Encryption Staff training
3: social engineering	Lured into giving out personal information	Firewall- Login credentials Don't click strange links
4: ransomware	Data being locked for payment	Firewall- not click on links Encrypt data
5: worms	Self-replicating	Anti-virus
6: spam	Advertisements and mails that might be difficult to distinguish	Anti-virus or click link Use a ISP that filters spam

Can list any of the phishing and associated issues here.

(6)

3.3.1 Webinar/zoom/teams/discord

(1)

3.3.2 VoIP

(1)

3.4 LAN- owned by company and communication is 'inside'. WAN cross public area and requires an ISP for communication media.

(1)

3.5.1 A device that connects 2 different network protocols to each other-

Alternative: allows connection between LAN (you) and WAN (internet)

(2)

3.5.2 A computer (higher specifications) to only provide resources ✓ to the users of the internet. ✓

(2)

3.5.3 Amount of data transferred ✓ between 2 points in a given period ✓.

(2)

3.6.1 Switch ✓

(1)

3.6.2 Any ONE (NOT star): ✓

Bus

Ring

(1)



Mesh
Tree
Hybrid


- 3.6.3 Any TWO: ✓✓
- High bandwidth
 - No attenuation
 - No interferences.
 - Better security
- (2)
- 3.7 Any TWO:
- A single copy of a file kept in cloud- not on personal computer-
 - can access from everywhere.
 - All can add content/comments to a single file.
 - Don't have to install programs on HD- saves storage.
- (2)
- 3.8 Any TWO:
- Always have the latest version.
 - Pay as long as you need it.
 - Monthly cost cheaper than buying a full product.
 - Don't have to buy a standalone product
 - Customisable to needs
 - Access from different locations
- (2)
- 3.9.1 Warehousing- saving of lots of data ✓ of various sources into databases over the internet. Mining is the statistical analysis of saved data. ✓
ChatGPT: uses datamining ✓ of facts/information searched form data warehouses
This is used to construct the answers for construction of the answer. ✓
- (4)
- 3.9.2 Robotics make human like decisions made by using sensors.
- (1)

TOTAL SECTION C: [30]



SECTION D

QUESTION 4: DATA AND INFORMATION MANAGEMENT

- 4.1 Correct as we need the leading zero, not used as calculation- only Identification String of digits and can be too long for integer. (2)
- 4.2 Incorrect- each field should only contain one property. Also bad for analyses. (2)
- 4.3 Customertbl PK linked 1 to many ∞ with OrdersTbl FK
OR (2)
a customer can make many orders
Cellnumber (1 from customertbl)  CustomerCellNum(many)
OrdersTbl
- 4.4 Alternative key. (1)
- 4.5 Any TWO ✓✓ (2)
- Number of people that have used the kiosk.
 - Number of printouts per size and type.
 - The profit after the paper costs are deducted.
 - Any other well explained
- 4.6 Select printsize , sum(printcount) ✓ as [number printed] ✓ from ordersTbl
group by printsize. ✓ (4)
Select printsize from ordersTbl ✓
- 4.7 spinedit (1)
- 4.8 1. Checkbox for printtype (picture/document) ✓
2. Make printsize **visible/enable** associated with the selected first option ✓ (2)
- 4.9 If the table becomes too wide (has too many fields) some fields are hardly ever used or updated- save those to second table. (1)
- 4.10.1 Saving different tables of the database on different servers/locations. (1)
Specific parts of the database is stored on a server closer to the location where it is used
- 4.10.2 Multiple user access (simultaneous) (2)
Better security /multiple copies.
Better data transfer rate

TOTAL SECTION D: [20]



SECTION E

QUESTION 5: SOLUTION DEVELOPMENT

5.1.1

line	sData	sNew	i	If i<=4	output
1	file				
2		"			
3			1	1<=4 Y	
4		f*			
5			2		
3				2<=4 Y	
4		f*i*			
5			3		
3				3<=4 Y	
4		f*i*I*			
5			4✓		
3				4<=4 Y✓	
4		f*i*I*e*			
5		✓	5✓		
3				5<=4 N	
6					f*i*I*e*

(4)

5.1.2 **Change line 4 to sNew ← sNew[i]+'*' + sNew**
Or change to a downto in the FOR loop.

(1)

5.2 If POS✓ (uppercase(sName), uppercase(sPassword) ✓) >0✓

(3)

Alternative for I := 1 to length(sname) do

IF SNAME[I] IN SPASSWORD[I] ✓

Then scheck := copy(sppassword,i, length(sname); ✓

If uppercase(scheck) = uppercase(sname) ✓

Uppercase not marked

5.3 iUp ←0 (or use a Boolean set to false) ✓ **for both allocations**

iDigits ← 0

for I ← 1 to length(sPassword) ✓

begin

if spass[i] in ['0'..'9'] then inc(iDigits) ✓

if(spass[i] in ['A'..'Z']) then inc(iUp) (or set Boolean to true) ✓

end

if iUp >=1 and iDigits >=2 (or test Boolean) ✓✓

then show 'password strong' ✓ **for any message**

else show 'password not strong'

(7)



5.4

TOrder ✓	
- OrderNum	String or string(7)
- CellNum	String ✓
- OrderDate	Any date (NOT time) ✓
- NumPrints	integer ✓
- Printsize	String
- PrintType	String
- Filename	String
+ and - ✓	
+ constructor create (order, cell, size,type,name:string; num:integer) ✓	
Note: date not to be passed parameters not required	

(6)

5.5 Procedure that changes/alters/updates values of attributes.

(2)

5.6 Any TWO ✓✓

- Re-usability: OOP objects can be used across programs.
- Data redundancy: OOP avoids duplication of data by using classes.
- Code maintenance: OOP makes it easier to update and modify selected code.
- Security: OOP protects sensitive information through encapsulation.
- Design benefits: OOP encourages modular design and abstraction.
- Better productivity: OOP speeds up development and collaboration.
- Easy troubleshooting: OOP simplifies debugging and testing.
- Polymorphism flexibility: OOP allows for class-specific behaviour

(2)

TOTAL SECTION E: [25]



SECTION F

QUESTION 6: INTEGRATED SCENARIO

- 6.1 Barcodes are a 1D or 2D print with limited range/usage where a RFID is a small Device (magnetic strip) which costs more.
Needs a tag and a reader is more expensive
Barcodes are printed on all stock items during production.
RFID needs to be pasted on stock items in production. (1)
- 6.2 Any TWO: ✓✓
- Is readable even if it is not visible. (hidden in bags) – indicates theft when passing through scanners at door.
 - Can read multiple tags simultaneously. (2)
 - Can be used for data collection (barcodes as well).
 - Track movement
- 6.3 Detecting devices in the shop or vicinity ✓ of the shop by using its GPS ✓ and sends notifications to the device. (2 marks definition)
(Internet availability)
This can inform customers of products on special offers or newly received items.
Tempting them into buying more.
Make customers in the vicinity of the shop / promote the presence of the shop (4)
Plus ✓✓ 2 any well explained reasons
- 6.4 Search engine optimisation (1)
- 6.5.1
- The speed and ease with which people, goods, services and information travel around the world with the use of technology.
 - Everyone is connected around the world. (2)
 - Any well explained answer
- Concept:** Use of Technology ✓ cancel effect of time/distance ✓
- 6.5.2 Any THREE: ✓✓✓
- Instant Mobile communication
 - Online banking /- booking and -shopping
 - Video conferencing and webinars
 - E-learning
 - International news updates and disaster management
 - Social networking
 - Access to international research (3)
 - Virtual travel
- Any well explained reason



- 6.6.1 a) Physical cables (UTP/Ethernet/copper or fibre optic)
b) network range
c) encryption (NOT passwords)
d) Less susceptible to interference (4)
- 6.6.2 WAP/ Base station/ AP / router (1)
- 6.6.3 Megabits per second / Mbps / any bps (1)
- 6.7 It is used to prove that the user is human and not a computer as the information to read is not necessarily typed ✓ and in a format that a robot/computer can identify.
Multi-level authentication ✓ (2)
- 6.8.1 Static / no interaction (1)
- 6.8.2 **NOT** semantic and intelligent = it is on the picture
A web that can interpret information like humans to provide useful content tailored to user needs. (AI) (1)
- 6.9 Patching is the process of updating software to fix a problem, add a new feature and better security. Windows/anti-virus updates.(any software update) (2)

TOTAL SECTION F: [25]

GRAND TOTAL: [150]