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SUBJECT	Information Technology Theory	DATE	November 2015
GRADE	11	MARKS	150
EXAMINER NAME	Mrs Kench and Mr Gill	MODERATOR	Mrs Gill
CLASS	MEMO	DURATION	2.5 hours

COGNITIVE LEVELS			
LOW ORDER	30 %	MIDDLE ORDER	40 %
		HIGH ORDER	30 %

STUDENT'S RESULT	
COMMENT	
TEACHER'S SIGNATURE	
PARENT'S SIGNATURE	

QUESTION 1: TERMINOLOGY**10 MARKS**

Various options are given as possible answers to the following questions. Choose the answer and write only the letter (A–D) next to the question number (1.1–1.10) in the

- 1.1 C ✓ (1)
- 1.2 B ✓ (1)
- 1.3 A ✓ (1)
- 1.4 C ✓ (1)
- 1.5 D ✓ (1)
- 1.6 B ✓ (1)
- 1.7 B ✓ (1)
- 1.8 D ✓ (1)
- 1.9 D ✓ (1)
- 1.10 A ✓ (1)

QUESTION 2 HARDWARE**22 MARKS**

- 2.1 Hard drive ✓ (1)
- 2.1.1 Attaches to south bridge OR is slow. ✓ (1)
- 2.2 Graphics card ✓ (1)
- 2.3
- 2.3.1 Memory location on the CPU ✓ to speed up slower RAM. ✓ (2)
- 2.3.2 Disk cache ✓ - use RAM to speed up slower HDD ✓.
- Web cache/Proxy ✓ - Use a server to in a netowrk to speed up slow Internet ✓
- Browser cache- store recently accessed web site on a computer \
- ANY TWO (4)
- 2.4
- 2.4.1 No moving parts, ✓ smaller in size. ✓ (2)

2.5

- 2.5.1 Increase the speed✓ of the system bus ✓ OR increase the clock multiplication factor of a component. (2)
- 2.5.2 Heat✓ – provide better cooling. ✓ (2)

2.6

- 2.6.1 Clock multiplication✓ – each device detects the system bus speed and multiplies by a factor. ✓ (2)
- 2.6.2 There are many instructions to be processed which are stored in cache. ✓ The CPU does not need to access the motherboard all the time. OR ANY OTHER LOGICAL ANSWER. (1)

2.7

- 2.7.1 BIOS - runs the POST, ✓ is involved in booting the computer and provides basic communication for devices. ✓ (2)

QUESTION 3 SYSTEM SOFTWARE

22 MARKS

- 3.1 Operating system – provides an interface✓ between hardware and applications. ✓ (2)
- 3.2 Mobile network goes down✓, speed on mobile connection, size of files. Not enough rights ANY ONE. (1)
- 3.3
- 3.3.1 More than one application in memory ✓ that can be processed. ✓ (2)
- 3.3.2 Hyperthreading – more than one set of registers✓ on the CPU✓
multithreading – one application can run more than one process✓ at the same time. ✓ (4)
- 3.3.3 Each thread of a program✓ can be allocated to a set of registers. ✓ (2)
- 3.4
- 3.4.1 Virtual memory✓ (1)
- 3.4.2 32-bit OSs can't address more than 4Gb of RAM✓✓. The extra 4Gb is not being used.✓ (3)
- 3.5
- 3.5.1 Interrupt✓ signal sent to CPU✓ for device or application. ✓ (3)
- 3.5.2 The device only requests attention✓ when it needs it. ✓ OR the operating system does not waste time checking devices that don't need attention. (2)

QUESTION 4 NETWORKING AND E-COMMUNICATION

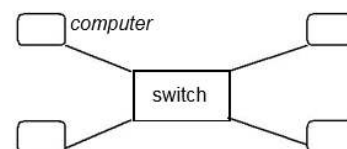
45 MARKS

4.1

4.1.1 Correct layout ✓

Diagram includes:

computer Switch ✓/Hub switch ✓



(3)

4.1.2 Industry standard ✓, cheap ✓, easy to install. ANY TWO

(2)

4.1.3 Bus OR ring ✓.

(1)

4.1.4 Extremely costly ✓, difficult to install. ✓

(2)

4.2.1 Gateway ✓

(1)

4.2.2 Repeater ✓

(1)

4.2.3 Wireless bridge ✓

(1)

4.2.4 Wireless mesh ✓

(1)

4.3

4.3.1 CS – a node listens to the network ✓

MA – all nodes have qual access to the network ✓

CD – if 2 nodes send at once, a collision is detected and node retransmit after ran random amount of time ✓

(3)

4.3.2 Each switch only send to specific node ✓ eliminating Collision. ✓ OR Point to point not broadcast.

(2)

4.4

4.4.1 4G is provided by cellular service providers as an extension of mobile voice service ✓, while WiMAX is a service dedicated for Internet connection only ✓

(2)

4.4.2 More expensive. ✓

(1)

4.4.3 Both use radio/microwave. OR both are wireless. ✓

(1)

4.5

4.5.1 When a web site appears to be valid ✓ but is an unauthorised copy. ✓

(2)

4.5.2 Phishing is an email ✓ sent to users to lure them to clicking on a link which is a spoofed web site. ✓

(2)

4.5.2 Install antivirus, ✓ block sites, ✓ do not allow users to run exe files. ANY TWO

(2)

4.6

4.6.1 Delete files ✓, install a virus, ANY ONE

(1)

4.6.2 No. ✓ It is not illegal ✓ it is unethical because she needs to keep user data secure ✓ and her husband's business is not related to the centre ✓

(4)

4.7

- 4.7.1 Unethical ✓ as the browsing history of a person which is private can be used ✓ (2)

QUESTION 5 – SOCIAL IMPLICATIONS

16 MARKS

5.1

- 5.1.1 The act of manipulating people into divulging confidential information ✓ with a view to committing some sort of computer fraud. ✓ (2)
- 5.1.2 Any two of: (1 mark for name, 1 for description)
- Shoulder surfing: Observational technique to get information while the user is inputting sensitive data
- Dumpster diving: Use of discarded items to get information
- Role playing: Pretending to be an authority to persuade the user to give information
- Trojan horse: Social engineer tricks user into downloading a backdoor onto their machine. (4)
- 5.1.3 Any one of: (1 mark for name, 1 for description)
- Malware: the link could install malware onto her PC
- Social engineering / Web spoofing: The link could lead to a fraudulent site where she could enter her login details
- Any other reasonable answer (2)

5.2

- 5.1.1 Any TWO of: (1 mark each)
- Implements and manages an information encryption system
- Defending against viruses and worms
- Designing a Wi-Fi security system (2)
- 5.1.2 No use of petrol to commute ✓ or any other reasonable answer (1)
- 5.1.3 His home machine may not have the same security measures as the office computers (accept answer such as may have a virus / Trojan horse) ✓
- Intruders may break into his home ✓
- Accept an answer which acknowledges the encryption of the connection but states that a sophisticated attack may break it. (2)
- 5.1.4 No need to pay for a transport allowance ✓
- Happier workers are more productive ✓ or any other reasonable alternatives (2)
- 5.1.4 No supervision may lead to Joash wasting company time ✓ or any other reasonable alternative (1)

QUESTION 6 – DATA STRUCTURES

22 MARKS

6.1 Public

(1)

- 6.2 Information hiding ✓ protects against changing fields in a way that will cause the methods to produce inaccurate results ✓ (2)
- 6.3 Most methods are meant to be accessed ✓ from outside the class ✓ (2)
- 6.4 Void ✓ (1)
- 6.5 Address ✓ (1)
- 6.6
- 6.6.1 Address ✓ can be set by its mutator ✓ (2)
- 6.6.2 + Member(String, String, integer, Boolean)
OR public Member(String name, String address, int age, boolean valid)
1 mark for naming Member, 1 mark for parameters (address could be excluded), 1 mark for not having a return type / void (3)
- 6.7 To enable the class to output all field values ✓ (1)
- 6.8
- 6.8.1 Neither ✓ (1)
- 6.8.2 if (age > 21) ✓ OR ✓ (age > 16 AND validMembership) ✓
return true ✓
else
return false ✓ (4)
- 6.9 An integer will not store leading zeros ✓ no calculations will be performed on the telephone number ✓ (2)
- 6.10 No ✓ (any reasonable explanation ✓ such as: the Member class is meant to hold the details of only one member OR the array is meant to be of Member objects and can't reference itself) (2)

QUESTION 7 – PROGRAMMING

28 MARKS

- 7.1
- 7.1.1 Read days (1)
- 7.1.2 (Days > 0) AND (Days < 100) (1 mark for condition, 1 mark for AND. Penalise 1 mark for use of Java) (2)
- 7.2
- 7.2.1 Count starts at 1 ✓ and continues until it is less than 6 ✓ so it only loops 5 times ✓ (3)
- 7.2.2 while count <= 6 (1)
- 7.2.3 Either: Count will now become 7 ✓ which means that the average will be calculated incorrectly ✓ (2)
- 7.2.4 Initialise count to 0 ✓✓ (2)
- 7.3
- 7.3.1
findAddress(n)

```
i ← 0 ✓  
while ✓ i < size ✓  
    if ✓ name of memberArr[size] = n ✓  
        return address of memberArr[size] ✓  
    end if ✓  
endwhile ✓  
return null ✓  
end method ✓ (10)
```

- 7.3.2 The algorithm searches for the first occurrence of a name in an array ✓ if two members have the same name ✓ and the second occurring member returns an item late the first occurring member will receive the fine ✓ (3)
- 7.3.3 Logical ✓. The program runs but does not produce the correct result ✓ (2)
- 7.3.4 We could add an membership number field ✓ the field must only accept unique values ✓ (2)