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ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Education

Computing 5511/6511

CPT1 Computer Systems, Programming and Network Concepts

Mark Scheme

2006 examination – June series

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

INSTRUCTIONS TO EXAMINERS

The following forms of notation should be used on candidates' scripts:

- Ticks - To indicate what is accepted as correct or creditworthy, placed in the body of the answer, and on diagrams;
- Underscoring – To identify errors/irrelevance in written answers;
- Crosses – to indicate a wrong answer;
- Brief comments – placed at suitable points in the body of the text to amplify the marking;
- BOD – means benefit of the doubt and is used where the candidate's answer has been given a mark on the balance of probabilities that the candidate's answer has met the requirements of the mark scheme even though it could be interpreted differently;
- NE – means not enough and is applied to an answer that falls short of what is required;
- O/S – means outside the mark scheme. The candidate's answer is creditworthy but the answer does not match any of the answers on the mark scheme for the particular question. Nevertheless a mark is awarded;
- C/F – means carried forward. This arises when a candidate offers an answer which is not creditworthy in one question but is creditworthy in a later question. The mark is carried forward to the question which is creditworthy;
- C/B – means carried back. This is similar to a carry forward but the mark is carried back to an earlier question.
- T/O – means talked out. The candidate's answer is contradictory.
- ^ - means missing term or symbol.
- F/T – means followed through. If a candidate made a mistake in the earlier part of an answer, mar the answer using the correct method on their answer from the earlier part.

The following notation is used in the mark scheme

- ; - means a single mark;
- A - means an acceptable creditworthy answer;
- R – means reject answer as not creditworthy.
- I – ignore
- / - means alternative word or sub-phrase
- // - means alternative answer.

<u>General Rules for Marking</u>
Ignore Abbreviations
Ignore Brand Names

1 (a) more/larger programs resident in (main) memory;
faster execution (running) of programs;
less disc access / or equivalent;
R. stores more data
R. more programs can be run simultaneously
R. PC runs faster **max 1**

(b) 512 MB; **1**

(c) *stored program concept*
program consists of a sequence of instructions;
program/instructions stored in main memory;
and can be replaced by another program at any time;
instructions are fetched ;
instructions are decoded ;
Instructions are executed; **max 3**

Total 5

2 (a) salesperson 7;
April /month 4 ;
The number of storecards 'taken out' ; **max 2**

(b) StoreCards + sensible subscripts [1..10, 1..6] / (1 to 10, 1 to 6) / [0..10, 0..6]
/ (0 to 10, 0 to 6) / (10,6) / [10] 6];
StoreCards + Integer / Byte; **2**

(c) StoreCards (8, 1);
= 13 / := 13 / ← 13 ;
Must be an *assignment statement* **2**

(d) key in / Input the employee number ;
the program calculates the total number of store cards for a single person
// print/outputs/displays the total for a single person ;
over six months; **max 2**

(e) (i) single / real / float ;
R. Floating point / Double **1**

(ii) Boolean /Yes-No / True-False ; **R.** Y/N / T/F **1**

(iii) integer/ byte; **1**

Total 11

3 (a) allows for the sharing of peripherals/hardware ; **R**. 'Resources'
programmers can access their work from any terminal ;
better communications / internal e-mail/instant messaging ;
easier/quicker/instant sharing of a program library/ sharing program code/ data files ;
central storage of documents e.g. program specifications;
changes to important documents are held centrally / document management;
setting up of an Intranet (for document management);
easier for the backup of data ;
R. anything about program updates **max 2**

(b) (i) Easier/quicker installation/maintenance of the application software / easier backup (only if not in(a)) ; **1**
R. Saves space on the PCs / 'Security' / cheaper (licensing)

(ii) if server goes down software (may) still be available;
software will load/accessed faster from secondary store;
software can be personalised for individual user ;
helps to avoid degradation in network performance ; **max 2**
R anything about the software runs faster

(c) (i) *dial-up networking*
only connected when in use/when Internet required/non-permanent connection / need to re-connect to go on line ;
R public line / shared line **1**

(ii) *modem*
translates digital signal into analogue / analogue signal into digital;
computer uses digital signals / telephone line transmits analogue signals ; **2**

(d) (i) *protocol*
set of rules (about the way devices communicate) ; **1**
A standards **R.** Instructions

(ii) *handshaking …*
sending signals between devices + implication of 2-way ;
confirmation of ready for sending / receiving data;
acknowledge that a transfer is completed; **max 2**

(e) smk-solutions.co.uk ; **1**
R. www.smk-solutions.co.uk

Total 11

4 (a) (i) 101 0110 ; **1**

(ii) 1101 0110 / or follow-through from 'their 7 bit code from (a) ;
A. Parity bit positioned in bit position 0 **1**

(b) (i) 'D'; **1**
R. Lower case

(ii) 'J';
R. Lower case **1**

(c) (i) FirstName // Surname; **1**

(ii) Surname // FirstName; (i) and (ii) must be different **1**

(iii) FullName;
I. any incorrect case **1**

(d)

Position	NextNumber	NextChar	FinalString
			''
1	(65)	'A'	'A'
2	78	'N'	'AN'
3	32	<Space>	'AN '
4	69	'E'	'AN E'
5	82	'R'	'AN ER'
6	82	'R'	'AN ERR'
7	79	'O'	'AN ERRO'
8	82	'R'	'AN ERROR'

Position values incrementing to at least 4 ;

to maximum 8 ;

NextNumber[2] has value 78 ;

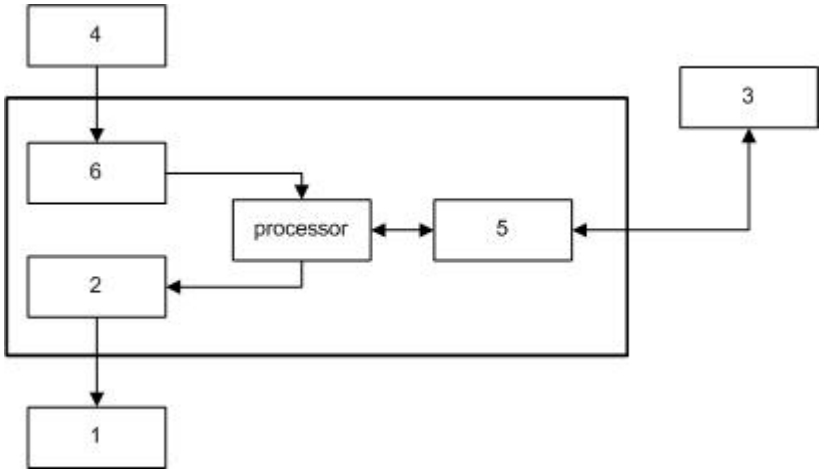
Remaining NextNumber values are all correct and in correct positions ;

NextChar[3] has <Space> character + NextNumber[3] is 32 ;

FinalString correct / f/t from their NextChar column ; **6**

Total 13

5 (a)



6

A. text labelling of the diagram

(b) (i) Sound which has been produced using the computer/from software ;
Sound which has been digitally produced ;
R. 'electronically' produced **max 1**

(ii) Any plausible example where sound is not naturally produced
e.g. keyboard synthesiser /computer generated voice response / mobile phone ring-tone ; **1**
R. anything 'geographically'
R. edited sound files

Total 8

6 (a) (i) (line) thickness / style ;
(line) colour ;
Label (text) ;
(object) name ;
co-ordinates;
A. length ;
R. start-end points / position / location **max 2**

(ii) label (text) / co-ordinates / etc - if not used for (a)(i) ;
Fill colour / style ;
Width ;
Height ; **max 1**

(iii) vector graphics stored properties for objects // vector graphics use mathematical equations/formulae ;
bitmaps show a staircase effect / size of each pixel is enlarged //
vector graphics will re-calculate the equations/formulae ; **2**

(b) (i) 4; **1**

(ii) each byte can represent 256 different numbers/bit patterns/combinations ;
each number represents a different colour ;
2^8=256 and 8 bits = 1 byte ; **max 1**

(iii) 1024 x 768 div 1024 KB // 768 (KB) ; **1**

(iv) Header data will be stored about the file e.g. file type ;
width value / height value;
resolution ;
palette data ; **max 1**

Total 9

7 (a) computer programs/sequence of instructions which run on the hardware/perform some task ; **1**

(b) *Software types*

1 library program // operating system;
A. Dynamic link library files **R.** DLL
R. BIOS / bootstrap loader / drivers / OS

2 library program // operating system;

3 (language) translator;

4 interpreter // disassembler ;

Examples

5 route planner//payroll// accounting// tax calculator//web browser //games // anything reasonable;
A. graphics/image/sound editing software (if not given in 6)

6 spreadsheet / DTP / presentation software / graphics/image/sound editing software
/ CAD / CAM ;

7 (disc) formatter // (disc) defragmenter // scanning disc for bad sectors ;
// file recovery/management/search/ ;
(file) compression ;
Antivirus / spyware ;
Firewall ;
System restore ;
Backup software ;
A. encryption **7**

Total 8