Authorised by Academic Support

NCC EDUCATION

INTERNATIONAL DIPLOMA IN COMPUTER STUDIES

COMPUTER TECHNOLOGY

7th SEPTEMBER 2008

MARKING SCHEME

Markers are advised that many answers in Marking Schemes are **examples only** of what we might expect from candidates. Unless a question **specifically states** that an answer is demanded in a particular form, then an answer that is correct, factually or in practical terms, must be given the available marks.

If there is doubt as to the correctness of an answer the relevant NCC textbook should be the first authority.

This Marking Scheme has been prepared as a guide only to markers. This is **ABSOLUTELY NOT** a set of model answers; **NOR** is the Marking Scheme exclusive, for there will frequently be alternative responses which will provide a valid answer.

Notice to Markers

Where markers award half marks in any part of a question they should ensure that the total mark recorded for a question is a whole mark.

SECTION A - 1

ANSWER ALL QUESTIONS FROM THIS SECTION
EACH QUESTION REQUIRES ONE RESPONSE ONLY

For each question enter ONE capital letter ONLY in your answer booklet.

Marks

QUESTION 1 **1**

Which of the following is a transaction processing system?

A) hotel reservation system
B) flight navigation system
C) washing machine control
D) management information system

Answer A

QUESTION 2 **1**

Which activity is suitable for batch processing?

A) producing electricity bills
B) word processing letters
C) recording sales
D) operating an ATM (cash machine)

Answer A

QUESTION 3 **1**

Which of the following is a connectionless method of communication?

A) making a telephone call
B) sending an email
C) sending a print job to a printer in a LAN
D) uploading a picture to a phone using Bluetooth

Answer B

QUESTION 4 **1**

Which of the following works at level 3 (network layer) of the OSI network model?

A) a bridge
B) a router
C) a network interface card
D) a network cable

Answer B

QUESTION 5 **1**

A web based resource is given as http://www.nccedu.com/Qualifications/index.asp. What is the file name of this resource?

A) http
B) nccedu.com
C) Qualifications
D) index.asp

Answer D

QUESTION 6 **1**

Which of the following is a suitable use for a multimedia system?

A) playing a song on an audio MP3 player
B) producing a newsletter
C) a flight simulator
D) graph plotting

Answer C

QUESTION 7 **1**

Which of the following is a multi-platform, object oriented programming language?

A) Visual Basic
B) Java
C) Perl
D) Pascal

Answer B

QUESTION 8 **1**

Which one of the following statements about a relational database is true?

A) all the fields in each table must be of the same data type

B) all the records in a table must be the same size

C) all rows in a table are stored in key field order

D) the values of foreign keys are not duplicated in a table

Answer B

QUESTION 9 **1**

A cell phone which incorporates an organiser normally

A) runs Windows software

B) has similar functionality to a PDA

C) cannot support email

D) does not allow the installation of third party software

Answer B

QUESTION 10 **1**

Battery life can be prolonged on a mobile computing device by

A) using alkaline batteries instead of rechargeable ones

B) using multimedia software as far as possible

C) using an external screen

D) avoiding the use of WiFi functionality

Answer D

Total 10 Marks

SECTION A – 2

ANSWER ALL QUESTIONS FROM THIS SECTION
EACH QUESTION REQUIRES MORE THAN ONE RESPONSE

QUESTION 11 **3**

Which THREE (3) of the following can be regarded as quality assurance activities in a business?

A) advertising
B) inspection
C) reviewing
D) vendor record keeping
E) assembly
F) testing

Answer b), c), f)
3 points, 1 mark each

QUESTION 12 **3**

Which THREE (3) of the following are examples of systems software?

A) linker
B) editor
C) spreadsheet
D) traffic light control
E) interpreter
F) payroll processing

Answer a), b), e)
3 points, 1 mark each

QUESTION 13 **3**

Which THREE (3) of the following may be components of a data packet?

A) the number of packets being sent
B) the operating system being used by the sender
C) the date
D) the destination address
E) the packet sequence number
F) a checksum

Answer d), e), f)
1 mark each max 3

QUESTION 14 **3**

Which THREE (3) of the following are protocols used by the Internet?

A) PDF
B) TCP
C) UDP
D) XML
E) DNS
F) HTML

Answer b), c), e)
1 mark each max 3

QUESTION 15 **3**

Which THREE (3) of the following are standards for creating still image files?

A) jpeg
B) avi
C) mov
D) mp3
E) bmp
F) gif

Answer ***a), e), f)***
1 mark each, max 3

QUESTION 16 **3**

Which THREE (3) of the following are finite resources that may be needed in a software development project?

A) people
B) space
C) program code
D) materials
E) user documentation
F) test plans

Answer ***a), b), d)***
1 mark each, max 3

QUESTION 17 **3**

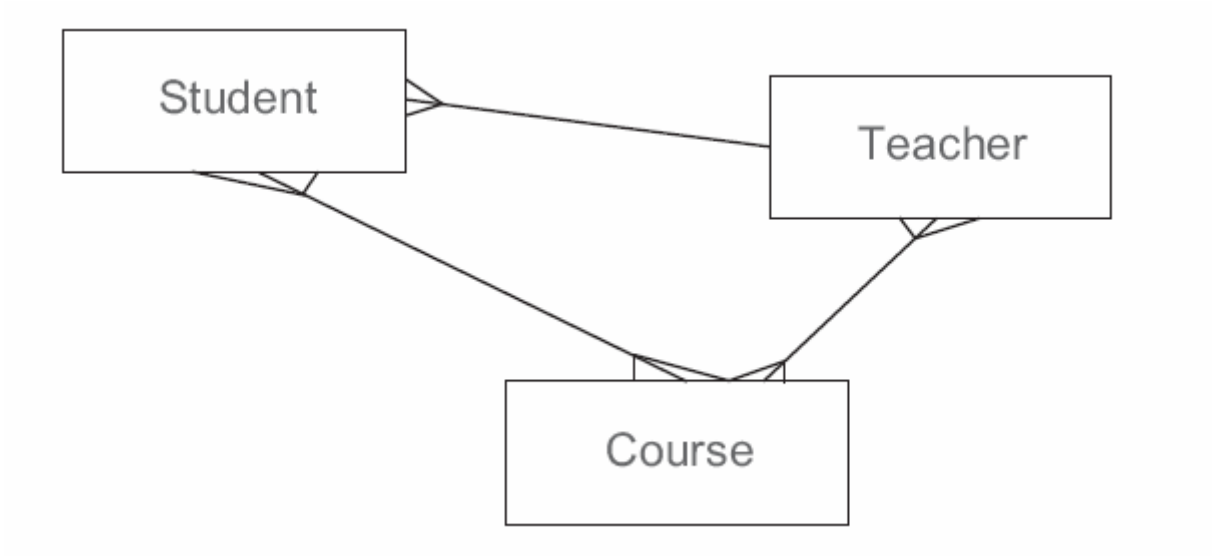
Which THREE (3) of the following are benefits of using a computer database to store company information?

A) it ensures that data is accurate
B) it ensures that data is easily accessible by many users
C) it helps avoid data redundancy
D) it allows many programs to access the same data
E) it ensures that the data held is useful for business purposes
F) it prevents two users accessing the same data at the same time

Answer ***b), c), d)***
1 mark each max 3

QUESTION 18 **3**

The following diagram shows the relationships in a database system.



Which THREE (3) of the following statements are true?

A) the database is fully normalised
B) a student may take many courses
C) a student may have many teachers for one course
D) a course may be taught by more than one teacher
E) each course has many students
F) the database design prevents redundancy

Answer ***b), d), e)***
1 mark each, max 3

QUESTION 19 **3**

Which THREE (3) of the following are features of a data mining system?

A) data merging
B) table creation
C) data classification
D) regression analysis
E) cluster analysis
F) an inference engine

Answer ***c),d), e)***
1 mark each max 3

QUESTION 20 **3**

Which THREE (3) of the following are likely to be features of a sub notebook computer?

A) no floppy drive
B) a DVD writer
C) a full size keyboard
D) a mouse
E) flash memory permanent storage
F) USB ports

Answer ***a), e), f)***
1 mark each max 3

Total 30 Marks

SECTION B
ANSWER ANY THREE QUESTIONS

QUESTION 21 **Marks**

Throughout the question, please credit any valid alternative point.

A) i) State FOUR (4) features of a system **4**

- ***input***
- ***process***
- ***output***
- ***has an objective***
- ***has a boundary***
- ***has components working together***

Any 4 points, 1 mark each, max 4

ii) Distinguish between data and information. **2**

- ***data is encoded information***
- ***information is the meaning that is assigned to data***

2 points, 1 mark each, max 2

iii) Define the term *information system*. **1**

- ***any system that makes use of IT***

1 mark

iv) Explain what is meant by a *mission critical* information system. **2**

- ***an information system that is crucial to the performance of a business/operation***
- ***the IT is central to the work of the business***

2 points, 1 mark each, max 2

B) i) Explain how a search engine makes money for its owners. **4**

- ***carries advertising***
- ***charges advertisers for increased ranking***
- ***supplies advertising targeted to the current search***
- ***charges advertisers per click***

4 points, 1 mark each, max 4

ii) Explain what VoIP is. **2**

- ***voice over internet protocol***
- ***use of the internet to carry telephone conversations***

2 points, 1 mark each, max 2

iii) State TWO (2) limitations associated with VoIP. **2**

- ***recipient of call must be online when called (in some systems)***
- ***recipient must have internet connection***
- ***recipient must have a computer***
- ***need broadband at each end***

Any 2 points, 1 mark each, max 2

iv) State THREE (3) business activities associated with inbound logistics. **3**

- ***receiving inputs to the product***
- ***storing inputs to the product / warehousing***
- ***distributing inputs to the product***
- ***inventory control***
- ***vehicle scheduling***
- ***returns to suppliers***

Any 3 points, 1 mark each, max 3

Total 20 Marks

QUESTION 22 **Marks**

Throughout the question, please credit any valid alternative point.

A) i) State the TWO (2) fundamental purposes of an operating system. **2**

- ***to hide the complexities of the hardware from the user***
- ***to manage the hardware***

2 points, 1 mark each, max 2

ii) Describe the purpose of a compiler. **4**

- ***to translate***
- ***high level / source code***
- ***into low level / machine code***
- ***the processor can only understand / run machine code***

4 points, 1 mark each max 4

B) i) Explain what is meant by *virtual memory*. **3**

- ***disk space used as extra memory***
- ***processes swapped in and out of main memory from disk***
- ***allows the running of bigger programs***

3 points, 1 mark each, max 3

ii) Explain how partitioning allows virtual memory to be maintained. **3**

- ***main memory divided into segments***
- ***processes loaded into partition when needed***
- ***partition re-used for other processes when required***

3 points, 1 mark each, max 3

iii) Explain how the use of fixed partitions may lead to inefficient memory use. **4**

- ***partitions may be of different sizes***
- ***unlikely to be the exact size for a required process***
- ***partition will be partly filled***
- ***wasted space***

4 points, 1 mark each, max 4

iv) With reference to a partitioned system, state FOUR (4) items of information that the memory manager needs to keep track of. **4**

- ***what processes are swapped in***
- ***what processes are swapped out***
- ***which memory is free***
- ***which memory is used***

4 points, 1 mark each, max 4

Total 20 Marks

QUESTION 23 **Marks**

Throughout the question, please credit any valid alternative point.

A) i) State the purpose of testing software. **2**

- ***to ensure that it is fit for purpose***
- ***to ensure it performs according to specification***

1 mark each point, max 2

ii) With reference to software engineering, explain what is meant by *unit testing*. **1**

- ***testing a single module***

1 mark

iii) Explain what is meant by *integration testing*. **1**

- ***testing the interaction between modules***

1 mark

B) i) State FOUR (4) reasons for carrying out software maintenance. **4**

Examples: reward other correct responses

- ***to fix errors***
- ***to correct design flaws***
- ***improve design***
- ***make enhancements***
- ***interface with other systems***
- ***convert to other hardware***
- ***migrate legacy systems***
- ***retire systems***

Any 4 points, 1 mark each, max 4

ii) State FOUR (4) of the objectives of a development methodology such as SSADM. **4**

- ***improve project management (and control)***
- ***make effective use of staff***
- ***develop better quality systems***
- ***guard against the effects of loss of staff***
- ***enable the support of projects by software development tools***
- ***establish a framework for communication within a project***

Any 4 points, 1 mark each, max 4

C) i) Describe the purpose of quality management in a project. **2**

- ***ensure that all the activities necessary to a project are effective***
- ***to improve the quality of an organisation***

2 points, 1 mark each, max 2

ii) Describe what is meant by the *usability* of a software product. **1**

- ***the efficiency with which a user can perform the tasks required with the product***

1 mark

iii) State THREE (3) methods by which usability can be measured. **3**

- ***monitor errors***
- ***monitor productivity rates***
- ***obtain user feedback***
- ***monitor users' preferences***

Any 3 points, 1 mark each, max 3

iv) State TWO (2) software features that affect usability. **2**

- ***screen layout***
- ***screen content***
- ***colour scheme***
- ***font considerations***
- ***error handling***
- ***error messages***
- ***navigation***

Any 2 points, 1 mark each, max 2

Total 20 Marks

QUESTION 24 **Marks**

Throughout the question, please credit any valid alternative point.

A) i) State THREE (3) different technologies that can support computer communication without the need for cables. **3**

- ***WiFi***
- ***Bluetooth***
- ***WLAN***
- ***WiFi max***
- ***cellular communications***

Any 3 points, 1 mark each, max 3

ii) State FOUR (4) services provided by mobile data communications technology. **4**

examples

- ***paging***
- ***SMS/short message service/texting***
- ***mobile email***
- ***picture messaging***
- ***web browsing***
- ***mobile video***
- ***GPS/ Global Positioning System***
- ***video on demand***

Any 4 points, 1 mark each, max 4

B) i) Describe TWO (2) considerations that must be addressed when deciding to implement a mobile data communications system in a business. **4**

- ***security***
- ***is it possible for outsiders to gain access?***

- ***available bandwidth***
- ***is it fast enough?***

- ***cost***
- ***is the network charged by time or data volume?***
- ***restriction of download time***

Any 4 points, max 1 mark each, max 4

ii) Explain how the USB port has helped manufacturers reduce the size of notebook computers. **3**

Examples:

- ***can connect external devices***
- ***e.g. disk drives/memory sticks***
- ***allows drives to be dispensed with***
- ***can reduce keyboard size***
- ***external keyboard can be attached if needed***

Any 3 points, 1 mark each, max 3

iii) Describe THREE (3) features of a tablet PC that make it different from a notebook PC. **3**

- ***much smaller size***
- ***no keyboard***
- ***no mouse***
- ***may use a stylus***
- ***may recognise handwriting***

Any 3 points, 1 mark each, max 3

iv) Explain what a docking station is. **3**

- ***a frame for connecting to a portable computer***
- ***allows electrical power and data signals to pass between computer and station***
- ***can attach peripherals to docking station***
- ***can have expansion slots***
- ***can attach modems***
- ***can attach LAN connections***

Any 3 points, 1 mark each, max 3

Total 20 Marks

Learning Objectives

Section A1	LO1 Hardware, software, peripherals, performance, operation and application to real-life problems	LO2 Data and information needs of organisations, types and flows of data, storage and organisation	LO3 Ways in which computers are used to support business processes in organisations	LO4 Networking and its use in organisations	LO5 Internet and multimedia and their use in business and organisations	Page ref Computer technology 2007
Q1			1			15
Q2			1			91
Q3				1		118
Q4				1		137
Q5					1	149
Q6			1			180
Q7	1					194
Q8		1				221
Q9				1		235
Q10			1			238
Total A1	**1**	**1**	**4**	**3**	**1**	

Section A2	LO1 Hardware, software, peripherals, performance, operation and application to real-life problems	LO2 Data and information needs of organisations, types and flows of data, storage and organisation	LO3 Ways in which computers are used to support business processes in organisations	LO4 Networking and its use in organisations	LO5 Internet and multimedia and their use in business and organisations	Page ref Computer technology 2007
Q11		3	X			12
Q12	3					40
Q13				3		121
Q14					3	149
Q15					3	150
Q16	3					202
Q17		3	X			221
Q18		3				218
Q19	3					225
Q20				3		239
Total A2	**9**	**9**	**X**	**6**	**6**	
Total Section A	**10**	**10**	**4**	**9**	**7**	

Section A2	LO1 Hardware, software, peripherals, performance, operation and application to real-life problems	LO2 Data and information needs of organisations, types and flows of data, storage and organisation	LO3 Ways in which computers are used to support business processes in organisations	LO4 Networking and its use in organisations	LO5 Internet and multimedia and their use in business and organisations	Page ref Computer technology 2007
Q21a) i)		4				3
Q21a) ii)		2				4
Q21a) iii)		1				4
Q21a) iv)		2				4
Q21b) i)		4				6
Q21b) ii)					2	7
Q21b) iii)					2	7
Q21b) iv)		3				9
Q22a)i)	2					39
Q22a)ii)	4					39
Q22b)i)	3					55
Q22b)ii)	3					55
Q22b)iii)	4					55
Q22b)iv)	4					56
Q23a)i)	2					195
Q23a)ii)	1					196
Q23a)ii)	1					196
Q23b)i)			4			197
Q23b)ii)			4			201
Q23c)i)	2					203
Q23c)ii)	1					205
Q23c)iii)	3					205
Q23c)ii)	2					205
Q24a)iv)				3		233
Q24a)ii)				4		235
Q24b)i)				4		237
Q24b)ii)				3		237
Q24b)iii)				3		241
Q24b)iv)				3		244
Total B	**32**	**16**	**8**	**20**	**4**	

