

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
GCE Ordinary Level

MARK SCHEME for the May/June 2010 question paper
for the guidance of teachers

7010 COMPUTER STUDIES

7010/12

Paper 12, maximum raw mark 100

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1 (a) buffer

Any **two** points from:

- temporary ...
- ... storage/memory
- compensates for the difference in speed of peripherals and CPU
- e.g. printer (buffer)

[2]

(b) batch processing

Any **two** points from:

- processing doesn't start until **all** data is collected
- JCL (any *reference to Job Control Language*)
- no need for user interaction
- processed all in one go
- done at "quiet" times
- e.g. billing, payroll, cheque processing

[2]

(c) e-commerce

Any **two** points from:

- electronic commerce
- buying and selling products/services
- using the internet/computer networks
- reference to B2B (business to business) or B2C (business to consumer/customer)
- e.g. on-line shopping, commodity exchanges, Internet/online banking

[2]

(d) simulation

Any **two** points from:

- studying the behaviour of a system
- by using a model/mathematical representation
- results can be predicted
- e.g. flight (or other) simulator, modelling hazardous chemical processes
- e.g. 10-pin bowling computer game

[2]

(e) email

Any **two** points from:

- electronic mail
- sending messages from one device to another using computer networks/Internet
- world wide form of electronic communication
- can send file attachments
- e.g. sending a letter without use of traditional mail service

[2]

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- 2 (a)** Any **three** points from:
- loss of jobs/unemployment
 - deskilling
 - need to re-train
 - different jobs available/re-skilling
 - no longer need to do hazardous/tedious jobs
- [3]
- (b)** Any **two** points from:
- lower work force costs (no salaries to pay)
 - lower environmental costs (less electricity for heating/lighting)
 - higher throughput
 - more consistent product
 - robots don't need breaks, holidays/work 24/7 etc.
 - robots don't take industrial action
- [2]
- (c)** Any **one** point from:
- tasks repeated by skilled worker and how each task is done is memorised
 - tasks programmed directly into the computer/robot memory
- [1]
- (d)** Any **one** point from:
- if parts missing for a sequence, then a warning should be given and the assembly stopped
 - several quality control stages to spot an error early on
 - program in checks at each stage of assembly so robots can detect a fault immediately
- [1]
- 3** Any **four** points from:
- understand the current system
 - produce data flow diagrams/system flowchart
 - identify user/client requirements/objectives
 - interpret user/client requirements/objectives
 - agree requirements/objectives with the user/client
 - collect data from the current system
 - fact finding (e.g. questionnaires, interviewing, etc.)
 - problem identification
- [4]
- 4** Any **four** features from:
- data must be up to date
 - data can only be read/used for the purpose for which it was collected
 - data must be adequate, relevant and not excessive
 - data must be accurate
 - data must be destroyed when no longer needed/don't keep longer than necessary
 - data user must register what data stored
 - data must be used/collected fairly and lawfully
 - data must be held securely
 - data must be protected from accidental damage
 - only authorised personnel can have access to the data
 - fines are imposed for data mis-use
 - data should not be passed on to a third party without permission
 - a person can view data and have it changed/removed if incorrect
 - safe harbour (countries with DPA at least as good)
- [4]

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- 5 (a) 1 mark each for 2 concerns
OR 1 mark for concern + 1 mark for expansion:
- customer goes online in a public place
 - and is overlooked as they enter id/password/PIN
 - customer receives emails taking them to a false site
 - where they are asked to confirm details by entering them
 - customer downloads virus, spyware,
 - which logs all key presses including id/password/PIN [2]
- (b) Any **two** points from:
- don't need card number for online transaction/card number already
 - online user is anonymous/not visible
 - online the customer does not need the card and signature/PIN [2]
- (c) Any **two** points from:
- secure sites using encryption
 - use of passwords/PINs/biometrics/advice to change PIN regularly
 - no communications with customer requiring personal details
 - use of home card readers that generate codes known only to bank and customer
 - check with customer at each log on when they were **last** logged on to the website
 - contact customer if unusual transaction/random check
 - customer asked to inform bank if intending to use card in another country
 - customer asked to inform bank if card lost/stolen
 - ensure firewall is in place [2]
- 6 (a) Any **four** points from e.g.:
- gather information from experts/questionnaires
 - create the knowledge base
 - type/put information into computer
 - create rules/rules base
 - create/design inference engine
 - create/design input–output interface
 - fully test the system
 - expert system learns [4]
- (b) (i) Any **one** point from:
- 3D visual world
 - uses computer simulation
 - uses special interface devices (e.g. data gloves and goggles) [1]
- (ii) Any **one** point from:
- data gloves/goggles (if not given credit in part (i))
 - hardware/motors to provide movement
 - special suits fitted with sensors [1]

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7 (a) Any **four** improvements from:

- use (text) boxes for
 - *names*
 - *addresses*
 - *sex*
 - *date of birth*
 - *subjects*
 - *grades*
- separate fields into separate entry items
 - *name* into *first name* and *last name*
 - *address* into *street*, *city* etc
- drop down list/combo box for
 - *date of birth*
 - *sex*
 - *subjects*
 - *grades*
- calendar object for
 - *date of birth*
- radio buttons for
 - *sex*
- hyperlinks for
 - *NEXT*
 - *BACK*

[4]

(b) (i) **any one** point from:

- check on input for errors by double entry
- on screen checking
- check input is same as source

- (ii) – *name*
– *address*

[3]

8 (a) Any **two** points from:

- barcode is scanned/keyed in
- barcode is validated (by check digit)
- system looks up barcode in computer files/database
- retrieves (and returns) price

[2]

(b)

<i>if stock level $\leq$ minimum stock level</i>	3
<i>report printed out for manager</i>	5
<i>stock level reduced by 1</i>	1
<i>new stock value written back to file</i>	2
<i>more items are ordered automatically</i>	4

1 mark for each correct answer up to max of 4.

4 marks for **all** 5 correct

3 marks for **any** 3 or 4 correct

2 marks for **any** 2 correct

1 mark for **any** 1 correct

[4]

Page 6	Mark Scheme: Teachers' version	Syllabus	Paper
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- 9 (a) Any **two** correct input devices
OR input device + correct type of screen

- mouse/trackerball + CRT screen/TFT screen
- touch screen + CRT screen/TFT screen
- light pen + CRT screen

[2]

(b) Dot matrix printer:

Accept a max of 2 advantages **and** a max of 2 disadvantages:

Advantages:

- suitable for dirty/dusty/damp atmospheres
- cheap to maintain
- cheap to run
- can operate with continuous/multipart stationery

Disadvantages:

- poor print quality
- very noisy
- very limited colours

[3]

Inkjet printer:

Accept a max of 2 advantages **and** a max of 2 disadvantages:

Advantages:

- inexpensive to purchase
- high quality printouts
- can use colours
- supported by most operating systems
- quiet

Disadvantages:

- run out of printing ink quickly/cartridges run out quickly
- price per page/inks are expensive
- not suitable for dirty/dusty/damp atmospheres

[3]

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10 (a) Award marks as shown (each block = 1 mark):

	D	E
1	Total cost (\$)	Average cost per month (\$)
2	= B2 * C2	= D2 / 5
3	= B3 * C3	= D3 / 5
4	= B4 * C4	= D4 / 5
5	= B5 * C5	= D5 / 5
6	= B6 * C6	= D6 / 5
7	= B7 * C7	= D7 / 5
8	= AVERAGE (D2 : D7) Alternative answers: = SUM(D2:D7)/6 = (D2+D3+D4+D5+D6+D7)/6	= AVERAGE (E2 : E7) Alternative answers: = SUM(E2:E7)/6 = (E2+E3+E4+E5+E6+E7)/6 = D8/5

[4]

(b) (i) (A1 : A7) and (C1 : C7)
(1 mark) (1 mark)

[2]

(ii) Any **one** point from:

- add an extra column and set all values to 2.08
- draw a line at value 2.08 on the graph
- add a trend/average line using spreadsheet software

[1]

(c) D6, E6, C8, D8, E8 (-1 mark for each error or omission)

[2]

11 (a) E, H

[2]

(b) (Engine (litres) > 1.8) OR (CO₂ (g/km) > 150)

← (1 mark) → ← (1 mark) →

Or

(CO₂ (g/km) > 150) OR (Engine (litres) > 1.8)

← (1 mark) → ← (1 mark) →

[2]

(c) G, C, D, B, F, A, E, H
(1 mark for correct order (fuel used)
1 mark for *ascending* order)

[2]

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12 (a) Any **two** items from:

- webcams/digital video camera
- microphones
- broadband modem
- networking hardware e.g. cabling/router
- loud speakers/headphones

[2]

(b) Any **two** items from:

- communications software
- CODEC/compression software
- Internet access software
- driver software (for the hardware in part (a))
- echo cancellation software

[2]

(c) Any **two** problems from:

- poor reception (poor sound, jerky screen images)/network failure
- if more than 2 conference locations, can be difficult controlling meeting
- time zones
- language difficulties
- power failure

[2]

13 Expected output:

1

2

Error

[3]

14 (a) Any **one** from:

- infra-red
- light
- radar
- ultrasonic / proximity

[1]

(b) Any **four** points from:

- signal sent out from vehicle **A**
- sensors pick up reflected beam
- signal converted to digital by ADC
- computer uses data to calculate how close vehicle **B** is
- computer uses speed of vehicle **A**
- to determine the **safe distance**
- if the **safe distance** > distance between the two vehicles
- then the driver is warned
- sends signal to (actuators) apply brakes
- *reference to need for DAC*
- monitoring continues endlessly unless system deactivated
- * *no marks for computer applies the brakes*
- * *no marks for computer senses*
- * *no marks for sensor taking any actions*

[4]

- [2]

**FORWARD 10
RIGHT 90
FORWARD**

[5]

[3]

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(b) total = 0 (1 mark) *initialise total*

for x = 1 to 100 (1 mark) *correct loop*

input number (1 mark) *correct input **and** output*

total = total + number (1 mark) *finding sum of numbers*

next x

average = total/100 (1 mark) *calculate average*

output average

(1 mark for initialising total)

(1 mark for correct loop – accept **repeat** loop or a **while** loop)

(1 mark for correct input (inside the loop) **and** output (after the loop))

(1 mark for calculating total)

(1 mark for calculating the average outside the loop)

[3]