

MARK SCHEME for the May/June 2015 series

**9713 APPLIED INFORMATION & COMMUNICATION
TECHNOLOGY**

9713/32

Paper 3 (Written B), maximum raw mark 80

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2015 series for most Cambridge IGCSE[®], Cambridge International A and AS Level components and some Cambridge O Level components.

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- 1 (a) Three** from: **[3]**
 database of UserIDs stored on system
 system checks entered User ID against database (of user IDs on server)
 when it finds a match it retrieves details such as passwords
 (when password entered), system allows access based on UserID
 ...and allocates privileges
 ...if server cannot find User ID, login is rejected
- (b) Three** from: **[3]**
 database of passwords linked to UserIDs stored on system
 system checks the password against database of passwords/stored passwords
 ...to check that the password is associated with the entered User ID
 if password found, login is completed
 if password is incorrect, user is asked to retype password
 if e.g. three failed attempts are made, then login is rejected for that User ID
- 2 (a) Two** benefits from e.g.: **[4]**
 can access WLAN from anywhere within range/building
 ...can be mobile/move around
 ...can use same device anywhere in building
 can access same peripherals e.g. printers while mobile
 can use own devices
 ...at home and at school
 health/safety issue e.g. reduced trip hazard from trailing cables
 can have extended network coverage beyond the wired LAN
- (b) Two** drawbacks from e.g.: **[4]**
 security concerns
 ...WLANs must use security keys
 ...security key will be known to many
 ...less secure than a wired connection
 interference from other devices
 ...reduces data transfer rates leading to apparent slower speeds of e.g. web access
 increased distance from connection/access point
 ...low signal strength
 ...can lead to loss of connectivity
 bandwidth is lower than cabled networks
 ...reduces data transfer rates leading to apparent slower speeds of e.g. download
 ...large number of users can lead to slower rate of data transfer

3 (a) Tick as shown: [1]

	(✓)
FTP	✓
https	
SSH	
Telnet	
UDP	

(b) Tick as shown: [1]

	(✓)
FTP	
https	✓
SSH	
Telnet	
UDP	

(c) Tick as shown: [1]

	(✓)
FTP	
https	
SSH	
Telnet	✓
UDP	

(d) Tick as shown:

[1]

	(✓)
FTP	
https	
SSH	
Telnet	
UDP	✓

4 **Eight** from:

[8]

CAD

design accurate drawings of bridge components
 ...using database/library of pre-prepared components to speed up design process
 component tested before produced
 ...under variety of conditions
 3D views to allow walk-around/view final product
 total cost of a product can be calculated
 ...using a database of parts held by program

CAM

Computer Aided Manufacture linked to computer system
 CAD generates a list of instructions
 ..for the manufacturing device/lathe/3D printer
 to cut components to designed dimensions
 using LOGO type commands
 to set the dimensions of the prototype

5 **Two** from:

[2]

mainframes have high processing power/fast processing speed
 vast amount of data to be processed
 ...which would take too long if done by human/non-mainframe computer
 large number of rules/parameters to be processed

6 (a) **Two** from e.g.:

[2]

parameters can be changed
 model can be tested to destruction
 tests can be repeated
 extreme conditions can be modelled
 no danger of hurting people
 no materials wasted
 can investigate the financial implications of different designs

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- (b) **Two** from e.g.: [2]
- not all parameters can be modelled/tested so test is incomplete
 - the assumptions/rules of the model may be faulty/not accurate so test results may not be accurate
 - custom software is needed for large/complex models which maybe expensive/take too long to produce
 - need access to fast/mainframe for large/complex models which may be expensive

7 Two from: [4]

Gantt charts:

- ...show clearly the stages /tasks in project
- ...can be used as a communication device between team members
- ...permits time management of project
- ...allows flexibility in project management
- ...parallel and sequential tasks with appropriate examples can be represented
- ...progress of each task with appropriate example can be shown

Pert (Project Evaluation and Review Technique) Charts:

facilitates decision making

...number events sequentially to allow the later insertion of additional events

two consecutive events in a PERT chart are linked by activities

...represented as arrows

events shown in a logical sequence

...no activity can commence until its immediately preceding event is completed

milestones should be PERT events and decides their “proper” sequence

may have multiple pages with many sub-tasks

Critical path analysis

...to determine the most cost-effective/time-effective order of tasks

Event chain diagrams

events are shown as arrows

...names and/or IDs of events are shown next to the arrow

events with negative impacts (risks) are represented by down arrows

events with positive impacts (opportunities) are represented by up arrows

individual events are connected by lines showing the event chain

PRINCE

divides project into number of processes

uses common language so all can understand

Max 3 per feature

8 Three from e.g: [3]

hiring (construction) workers

preparing the ground

building foundations

construct main supports

constructing bridge sections

delivery of bridge sections

testing of construction

project completion

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- 9 Four** from: **[4]**
 disparities/gap
 ...between developed and developing countries/regions
 regarding access to computing/ICT
 regarding skills in computing/ICT
 regarding opportunities related to computing/ICT

One mark for valid example e.g. access to internet

- 10 Eight** from e.g.: **[8]**
 ICT skills enhance employment prospects
 people in some countries/regions may not have access to computers/IT facilities
 infrastructure, people in some countries/regions may not support computers/IT facilities
 people lacking ICT skills will not be employed so easily
 people lacking ICT skills will not be able to use ICT to search for jobs
 people lacking ICT skills will not be able to use ICT to apply for jobs
 people lacking ICT skills will not be able to use ICT to create CVs
 areas lacking ICT infrastructure will not be able to access advertising for jobs/job searches
 schools and colleges without ICT access cannot teach ICT skills
 richer schools have ICT facilities to teach their students so increasing the digital divide/providing employable skills for their students

- 11 Eight** from e.g.: **[8]**
- Benefits:
- access to legal information from e.g. home
 - no need to book an appointment with lawyer
 - ...some people may be intimidated by lawyers
 - ...reduced costs e.g. travel costs
 - access to legal information without having to pay law firms
 - can access the information whenever it is convenient
 - access to information on family matters e.g. divorce, child care without visiting a lawyer
 - access to advice on e.g. house purchases without paying estate agents fees
 - access to changes in regulations and laws/updated regulations and laws
 - online consultations with lawyers to get personalised advice

Drawbacks:

- legal advice may be misinterpreted/not understood
- online data may be deliberately altered to mislead
- unqualified people may use advice and mislead others
- individuals may not be able to find/make of all the relevant information

Max 6 for all benefits or all drawbacks

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- 12 Five** from e.g.: **[5]**
 areas with good access to ICT have better access to (online) health services
 areas with poor access have reduced/no access to (online) health services
 online consultations possible in areas with ICT access
 ...not possible in areas without access to ICT
 disabled people/valid example with ICT skills have increased access to health services
 ...those without the skills cannot get access health services without e.g. travelling
 updated/general health information is available on the internet for those with ICT access
 ...those without ICT access are denied the health information updates
- 13 Four** sensors from e.g.: **[4]**
 humidity to measure water in air
 anemometer speed of wind
 angle sensor direction of wind
 tipping sensor rainfall
 light sensor sunshine/light
- 14 Four** from: **[4]**
 sensors to measure the variable when connected to patient
 data from physical variables sent to computer system
 .. via ADC
 example of physical variable e.g. breathing rate
 computer analyses data/compares with pre-set data
 displays results on monitor for viewing by nurses/doctors
 computer produces alert/warning if physical variables go outside set parameters
- 15 Eight** from e.g: **[8]**
 Benefits:
 automatic recording of data from patient for review
 automatic chart production for reports/analysis by medical staff
 remote monitoring of patient
 ...nurses can be alerted quickly
 computers can monitor more than one variable per patient simultaneously
 computers can monitor many patients at once
 ...nurses can supervise/watch over many patients at once
 ...nurses are freed up to other tasks
 patients monitored 24/7
 patients monitored continuously
- Drawbacks:
 patient does not get personal care
 not all parameters may be monitored (e.g. blood sugar level)
 alarm may be overlooked/ignored
 cost of equipment purchase/maintenance
 power failure/computer failure can cause loss of data/monitoring/affect patient safety
- Max six for all benefits or all drawbacks.