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## **MARK SCHEME for the May/June 2015 series**

# **9713 APPLIED INFORMATION & COMMUNICATION TECHNOLOGY**

**9713/32**

Paper 3 (Written B), maximum raw mark 80

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- 1 (a) **Three** from:  
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:

	(✓)
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:

	(✓)
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.:
  - 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:  
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.:
- 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.