OCR
Oxford Cambridge and RSA

GCE

ICT

Unit **G063:** Systems, Applications and Implications

Advanced GCE

Mark Scheme for June 2017

Annotations

Stamp	Ref No.	Annotation Name	Description
	151	Highlight	Highlight (mandatory for all units)
	181	Off Page Comment	Off page comment (mandatory for all units)
BP	1681	BP	Blank page (mandatory for all units)
^	261	^	Omission mark
0	1741	ZERO	Zero (big)
✔	11	Tick	Tick
TV	201	TV	Too vague
REP	271	REP	Repeat
P	211	P	Point being made (Removed for later additions)
NBOD	191	NBOD	Benefit of doubt not given
NAQ	501	NAQ	Not answered question
FT	41	FT	Follow through
✖	21	Cross	Cross
BOD	31	BOD	Benefit of doubt
L3	331	L3	Level 3 (Added later)
L2	321	L2	Level 2 (Added later)
L1	311	L1	Level 1 (Added later)

SEEN	811	SEEN	Noted but no credit given (Added later)

Question	Answer	Marks	Guidance
1	Two from e.g. End users are fully involved throughout development / Joint Application Development (JAD) workshops (1) so they can make sure that the final system meets their requirements (1) End users do not have to define all the requirements initially(1) iterative process used to refine requirements (1) so there is flexibility to add to or to change requirements as the system develops (1) Prototypes (used)/pre-built modules (1) in place of design specification (1)	[4]	Max 2 marks per characteristic Ignore reference to time frame (6 months)
2	Two from e.g. A batch processing operating system can be set to process data as periods of low load on the system (1) whereas a real time operating system must process data as soon as it is received by the processor (1) A batch processing operating system processes batches of similar transactions that have been grouped together (1) whilst a real time operating system responds to inputs from different sensors (1) Batch processing collates the data before processing / delayed (1) while real time processes as soon as data arrives /immediate (1)	[4]	Must be differences and not similarities.
3	One mark for characteristic, one mark for expansion e.g. Available globally (1) interconnected computers/network of networks (1) Common protocols (1) e.g. IP address (1) Range of services(1) e.g. email/web hosting/ chat/file sharing (1) Quality of service (1) based on packet type (1) Identification of network hardware (router/switch) (1) to transmit <u>data between locations</u> (1) Uses cables (1) to connect locations together (1) Device/os independent (1) as long as running standard protocols (1)	[4]	Max 1 for identification of services available on the internet Do not accept answers about file types

Question			Answer	Marks	Guidance
4			One mark for identifying device/technology (1) second mark for identifying method of connection. e.g. Mobile phone (1) using radio waves to a mobile mast/3g/4g (1) Satellite phone (1) <u>in line of sight</u> to a satellite (1) Wireless network (1) to a wireless access point (1)	[6]	No marks to be awarded if a type of network has not been identified – the only three valid types being cellular mobile, satellite mobile and wireless.
5	a		One mark for identifying method, one mark for giving example of how used e.g. Summary data can be tabulated (1) e.g. by month / category of shopper (1) Graph/chart produced (1) (to visually indicate any trends in the figures) to see sales figures (1) Reports can be generated (1) to summarise loyalty scheme sign up (1) Query produced (1) to see monthly sales figures (1) Algorithm interprets data (1) to judge if loyalty scheme successful (1)	[4]	Exemplification can be awarded if no identification given
5	b		Limitations are bad/incomplete data and bad/incomplete algorithm, programmatic restrictions One from e.g. The validity of the output is dependent upon the reliability of the inputs / Garbage In Garbage Out (GIGO) (1) so will not be dependable if information is incomplete e.g. customers don't always use their loyalty card (1) The complexity of the model and the assumptions underlying the programming of it (1) have to be accurate for meaningful results to be generated (1) System will only report on what it's been programmed to do (1) e.g. it may not break down loyalty card sign ups by location (1)	[2]	Accept example without identification of limitation for one mark.

| 6 | | | One mark for identifying limitation, one mark for sensible method of overcoming.
Two from e.g.

Battery (1) e.g. and new advances in battery technology or recharging are required to extend system usage time (1)
Screen size (1) e.g. so may need in-built projection / ability to transmit to an alternative screen/bigger screen/foldable screen (1)
Size of controls (1) e.g. but this could be overcome with a natural language interface (1)
Limited storage (1)e.g. integration with off device storage/external storage (1)
Signal/connectivity(1) e.g. increase masts/allow cross network roaming (1) | [4] | No marks to be awarded if there is no identification. |

Question			Answer	Marks	Guidance
7			One mark for identification and one mark for why it's an advantage Two from e.g. If system fails at one hotel (1) old system continues to run <u>at rest of chain</u>/costs saved on chain wide roll out (1) Can be evaluated/staff feedback gathered (1) so that the system can be refined/improved (1) If bugs are found (1) they can be corrected (1) Staff from other hotels can see/use the system (1) so can go back to hotel and train other staff (1) Old system still available (1) so can roll back if needed (1)	[4]	
8	a		One mark for the measure, one mark for how it meets the DPA Two from e.g.. Keep personal data secure (1) so a password policy must be followed (1) Processed in accordance with the data subjects rights (1) access to data must be given/data should not be given to a third party without permission (1) Data should be kept accurate/up to date (1) so data should be updated when told(1) Data shouldn't be kept for longer than necessary (1) so should be deleted when no longer needed (1)	[4]	Max 2 if the measures of the DPA given are not different Accept spirit of principle rather than exact words

| 8 | b | | One mark for advantage, one mark for why advantage
Two from e.g.

A company will have a good image/reputation (1) will enhance reputation/lead to more business (1)
The workplace will be a friendlier place (1) so employees will have better wellbeing/will be more productive (1)
Legal right to remove employee (1) if they don't follow ethical practices (1)
Know what they can and can't do (1) so clearly defines responsibility (1) | [4] | |

Question			Answer	Marks	Guidance
9			One mark for a factor, one mark for description Two from e.g. Functionality (1) to see if it is still fit for purpose (1) Current hardware / software is obsolete (1) and needs to be upgraded (1) Data compatibility / migration (1) ability to export from current system(1) Benefits (1) additional features required (1) Time to implement (1) to assess when in the school year it can be performed (1) Seeing what others are doing (1) so not disadvantaged in the market (1)	[4]	No marks for answers related to costs or staff capability (including training) Answers to do with the new system are not relevant as we don't know what the new system is
10			One mark for method of communication, one mark for what is passed, or how it is used Max two per answer e.g. Analysis • Have a meeting with analysis (1) give information on current system/so analyst can create requirements specification (1) Design • Will look over designs (1) and feedback/designer makes changes (1) Testing Will run (end user) testing (1) to make sure it works/fix it (1)	[6]	

Question			Answer	Marks	Guidance
11	a		One mark per point plus expansion if given Four from e.g. the project will be split into separate tasks that are assigned times (1) the order of the tasks to be completed will be determined (1) identification of dependencies between tasks (1) allow total development time to be calculated (1) resources can be allocated to tasks (1) staff can be allocated to tasks (1) milestones can be identified (1) Gantt chart can be used to find critical path (1)	[4]	Answer is NOT about how to create a Gantt chart. Question is about planning (i.e. before the task has started) so ignore references to monitoring
11	b		For each team member, two individual points or one point plus expansion e.g. Systems Analyst investigate how the current system functions (1) use of observation/meeting/questionnaires/interviews (1) identify problems (1) create requirements specification (1) Tester run tests in the test plan (1) document the results of testing (1) submit results (1)	[4]	Max 2 marks for description of each team member Use of different methods is too vague.
11	c		One mark for identification, one mark for description of the factor Two from e.g. The complexity of language(1) should be tailored to the audience (1) The type of controls used (1) validate the input/e.g. radio button(1) The quantity of information on the screen (1) don't confuse the user (1) Symbols/buttons (1) should utilise previous experience (1)	[4]	No marks for layout, font size or font type or colours. Do not accept answer relating to house style.

Question			Answer	Marks	Guidance
11	d		one mark for example, one mark for link to MHP (stimulus [audio, visual], memory, action) Two from e.g. • users memory will contain standard icons (1) such as the print icon (1) • red / low tone beeps (1) user remembers/knows it's an error (1) • warning message on screen (1) that the user knows how to respond (1) • the interface should be consistent where a stimulus will be generated (1) error messages appear in centre of screen (1) • buttons in the same position (1) so the user knows the physical response (1)	[4]	
11	e	i	One from duplicated/copied/replicated (at each location) (1) central database with (remote) local indexes (1)	[1]	No marks for partitioning (vertical or horizontal)

| 11 | e | ii | | | | | [6] | Note the conclusion can be for an individual point that has been weighed by looking at the relative advantage/disadvantage |

High	5-6	Candidate has explained a positive **and** a negative impact of using horizontal partitioning. There is a reasoned conclusion.
Medium	3-4	Candidate has described positive **and/or** negative point(s) of using horizontal partitioning.
Low	1-2	Candidate has identified positive or negative points

Answers may include e.g.

Positives
Less storage space is required at a central location
Local queries can be run on local data within the schools producing a faster response time
Local data at the schools is immediately available at the site
if one site goes down it will not affect the other sites
More secure, as pupil data for each school is only available at that school
Negatives
The database design to create a partitioned system will be far more complex than a duplicated database
Back-ups have to be run locally, so reliance is placed upon the policies being implemented at each location
requires local servers to be present at each school, implications on cost and maintenance
if data is required from a different school (e.g. pupil transfer) this will take longer to process

5 marks can be awarded without a conclusion

4 can be awarded for a positive or negative explanation on its own

3 can be awarded for a positive or negative description on its own

2 more than one point

1 identify single point

Question			Answer	Marks	Guidance
12			One mark for identifying reason, one mark for explaining why reason is important (may be an example) Two from e.g. • Users will be asked for their views (1) to identify future improvements (1) • To identify/report bugs in the system/corrective maintenance (1) so they can be corrected (1) • External changes such as legislation may necessitate change (1) and a review will enable these issues to be raised and addressed (1) • To improve the usability of the software/perfective maintenance (1) e.g. to make searches perform quicker (1)	[4]	Allow use of perfective, corrective and adaptive maintenance Must be post evaluation

Question			Answer	Marks	Guidance
13			<table><tr><td>High</td><td>5-6</td><td>The candidate has explained why staff capability should be considered.</td></tr><tr><td>Medium</td><td>3-4</td><td>The candidate has described why staff capability should be considered.</td></tr><tr><td>Low</td><td>1-2</td><td>The candidate has identified points regarding why staff capability should be considered.</td></tr></table> Answers may include e.g. The skill set of the current staff needs to be utilised, and key staff can be identified who have good IT skills. Staff will require training in the use of new systems, and different types of staff may require different levels of training. Specific needs must be identified so training can be targeted effectively and costs minimised. Training will mean that staff may be unavailable for their normal jobs, so timings and transition arrangements must be decided upon. An audit will help to assess the scale of the problem. Staff will be less resistant to change if they are given appropriate reassurance that training will be given to them.	[6]	Should be all positive reasons why. Single point described/explained in medium or high can be awarded full marks in that band.

			Staff training before the changeover to the new system will lead to a smoother changeover.		
14			One mark for identification, one mark for impact **Technical** • increased technical support (1) due to increase in number of devices (1) • Greater technical demands may be made to support different communication methods (1) There will be increased costs with operating additional servers (1) **Software** Text messaging can be sent/received instantly (1) increases speed of decision making (1) Emails can have attachments (1) which pushes data to teachers so management know it is received (1) **Operational Impact** • Decrease in productivity (1) due to distraction checking the communication services (1) • The Brains Trust will have to consider staff wellbeing and the expectations that are placed on staff with regard to working remotely (1) They may have to issue guidance on hours worked or expectations with regard to responding to work matters from home (1)	[4]	Candidate approach to answers can be from a technical, software or operational impact point of view. Answer can come from any group.

Question			Answer	Marks	Guidance
15	a		One mark for reason, one mark for expansion Two from Because they have a legal duty (1) to comply with the Data Protection Act (1) Competitive advantage (1) could be lost if their resources were obtained by other companies (1) Negative publicity (1) that could lead to loss of business/ for not following the DPA (1)	[4]	
15	b		One mark for point, one mark for explanation Max two for each e.g. **Authorisation:** Access rights/permissions are given to users (1) to restrict access to the data / resources they can access (1) based on their user ID (1) **Authentication:** A <u>User ID</u> and <u>password / biometric</u> will be required (1) so that a user is who they say they are (1)	[4]	User ID and password needed for mark. Biometric on its own is sufficient.
16	a		Two from e.g. Servers and network operating systems are required (1) which increases the cost of setting up a client-server network (1) There is a reliance on the central server working (1) so if it crashes the machines on the network cannot be used (1) Complex to set up/maintain (1) and requires specialist knowledge / time (1) Increase in network traffic centrally (1) which increases collisions in network (1)	[4]	Must be disadvantages. No marks for cost of employing a network manager.

16	b					[6]	Should be all positive reasons why.
			High	5-6	The candidate has explained why an applications server should be run in the schools		
			Medium	3-4	The candidate has described why an applications server should be run in the schools		Single point described/explained in medium or high can be awarded full marks in that band.
			Low	1-2	The candidate has identified points regarding an applications server should be run in the schools		

Points may include e.g.

Using an applications server means that client computers can run the software stored on the server so it doesn't have to be installed on every client computer.

An applications server can hold installation files to be deployed to client computers meaning that software installation can be centralised.

If the software is run on the central applications server a thin client set-up can be delivered which means the local clients require less processing and storage. This in turn leads to cost savings.

Prevents licensing issues by enforcing concurrent limits in software use.

Updates installed on the applications server so saves time because they are only ran once and application is consistently up to date.

Question			Answer	Marks	Guidance
17				[4]	If the point is the same / different for both then the candidate must explain why it is for both to gain marks for both.

4	**Two complete** comparisons
3	**One complete** comparison and **one individual** point
2	**One complete** comparison
1	**One individual** points about either side

Points may include e.g.

A bulletin board allows for groups to be created for common topics and is therefore more organised, whereas instant messaging would require teachers to contact each other directly.
Bulletin boards allow a thread for previous parts of a conversation to be viewed more easily whereas instant messaging only allows the current conversation to be viewed.
Instant messaging facilitates real time conversations whereas the use of a bulletin board will not guarantee an immediate response since it relies on somebody else logging in and responding.
Access to groups within a bulletin board can be regulated by logins and content can be moderated whereas instant message does not have these controls between the individuals engaged in chat.

Question			Answer	Marks	Guidance
18				[11]	Identification of hardware/software could be in the body of the answer.

Band	Mark	Criteria
3	8-11	The candidate has explained a number of relevant impacts. Subject specific terminology will be used accurately and appropriately.
2	4-7	The candidate has described a number of relevant impacts. Subject specific knowledge will be evident and some subject specific terminology will be used.
1	1-3	The candidate has identified a number of relevant impacts. Subject specific terminology may be limited or missing.

Points may include e.g.

Use of VLE to allow access to materials from a variety of mobile devices allowing work to be started at school and completed anywhere, for example on journey home.
Use of voting systems/identification systems to show if a pupil is struggling to understand a concept without telling the rest of the class
Interactive whiteboard from remote devices allowing students to show their work and give answers without moving around the room and share ideas

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