GCE INFORMATION TECHNOLOGY
IT05 MARK SCHEME – FINAL VERSION

S SEDDON

1. User password procedures/data access (1)
   Procedure for use of personal data (1)
   Health and Safety Regulations (1)
   Use of Software (1)
   Use of e-mail/Internet/intranet (1)
   Use of portable equipment (1)
   Use of facility for non-company oriented activity (1)
   Data Security (1)
   Use of hardware (1)
   Compliance with Data Protection Act/Computer Misuse Act (1)
   Etc.

   All three points must for IT specific areas, e.g. do not allow points about penalties.

   Max. 3 x 1 = **3 marks**

2. Advantages:
More robust system (1) No reliance on a single server (1)
Faster data processing (1) data is stored on the node where it is needed/processing power is at the local node (1)
Data is stored where it is needed (1) so less delays communicating with central server (1)
Etc.

Max. 1 x (2,1,0)

Limitations:
More complex system (1) means there is a larger management overhead (1)
Good backup strategy required (1) because each area is responsible for its own data (1)
Vulnerable to security breaches (1) due to multiple points of access (1)
Risk of virus (1) all nodes need to have up to date virus protection (1)
Reliance on telecomms. equipment (1)
Etc.

Max. 1 x (2,1,0)
4 marks

3. Adaptive maintenance (1) due to changes to original requirements (1) e.g. changes in tax legislation/Euro/Etc. (1)

   Max. 1 x (2,1,0)

   Perfective maintenance (1) adding extra features/functions to the system (1) to increase performance of the system (1) Etc.

   Max. 1 x (2,1,0)

   Corrective maintenance (1) to fix bugs/logic errors/coding errors (1) **not** problems, needs to be specific to get second mark.

   Max. 1 x (2,1,0)

   6 marks

4. **Allow carry forward and carry back marks in this question**

(a) Parallel – several bits sent at once (1), each bit down its own connection (1)
Serial – bits sent one after the other (1) down the same connection, idea of pulse train (1)
Accept unambiguous diagrams (2,1,0) per diagram.

Max. 2 x (2,1,0)

(b) Parallel has increased connection cost (1)
Risk of electrical interference between connections means only short distances are practical (1)
Existing telephone lines are serial in nature (1)
Large-scale networks would require more cable to be laid/the use of multiple telephone lines for one connection (1)
Etc.

Max. 2 x 1
6 marks

5. Allow 1 mark for the method, and 1 for a suitable explanation, to a maximum of 2 per method
e-mail (1) e.g. allowing internal and external communication regardless of physical location/time (1)
videoconferencing (1) e.g. so meeting can take place between multiple physical locations with reduced time and travel cost (1)
'chat rooms'/ICQ (1) e.g. allowing real time conversation which can be logged for later reference (1)
Websites (1) e.g. allowing customers to provide feedback/order products on-line rather than needing a physical location (1)
24-hour access (1) e.g. customers can contact the company at any time they want to (1)
Distributed database (1) with example e.g. car hire/airline booking (1)
Etc.

3 x (2,1,0)
6 marks

6.

(a) High specification processor (1) so the screen/graphics is produced at a reasonable speed/due to the number of windows required at one time (1)
Large hard disk (1) because GUI code takes up extra disk space (1)
Large memory (1) because the GUI needs to be loaded into memory to run smoothly (1)
High-resolution monitor (1) in order to display the graphics clearly/needed to satisfy the requirements of the GUI (1)
Pointing device e.g. mouse (1)
Graphics card (1) and explanation (1)

Max. 2 x (2,1,0)

(b) Ability to attach specialised input devices (1) so that he can play straight into the machine easily (1)
Output in MIDI format (1) so that compositions can be transferred to any electronic instrument (1)
Ability to print sheet music (1) using specialist fonts not normally available (1)
Availability of specialist notation (1) e.g. drum notation (1)
Automatic bar numbering (1) allowing playback from any point (1)
Ability to mimic instruments (1) that he cannot necessarily play (1)
Time stamping (1) so that tracks will be synchronised (1)
Ability to change key automatically(1) to suit different performers without the need to re-enter music (1)
Ability to mix several sources (1) allowing group compositions to be input directly at once (1)
Availability of sound effects libraries (1) so that sounds do not have to created from scratch (1)
Ability to edit audio (1) with qualification (1)
Etc.

Max. 3 x (2,1,0)
10 marks

7. **Do not allow carry forward or carry back marks in this question**

(a)

Backup is as vulnerable as the live data (1) in event of disaster both are lost (1)
Oldest backup is only a few days old (1) so recovery beyond this date is impossible (1)
Compliance with DPA (1) this data is not being held safely and securely (1)
Etc.

Max. 2 x (2,1,0)

(b)

One mark for factor and one for a suitable reason for that factor up to a maximum of 3 factors and 3 reasons.

Frequency of backup (1) e.g. so that there are weekly/monthly/yearly as well as daily backup (1)
Secure storage of tapes (1) e.g. to protect the integrity of the backup/separate the backup from the live system (1)
Maintenance of backup log (1) e.g. so it is easy to see if the backup has not been carried out/if it has been duplicated (1)
Planned periodic restoration from backup (1) e.g. to check the integrity of the backup (1)
Nominate personnel to take responsibility for the backup (1) e.g. to stop problems such as duplication or non-execution of backup (1)
Etc.

Credit any appropriate factor that could be considered in this situation. Give the second mark for an appropriate reason expanding on the factor being considered.

Max. 3 x (2,1,0)

(c)

Backup procedures should not affect provision of service (1)
Recovery from backup should be invisible to user (1)
System should not rely on a single backup method (1)
Incremental/Differential backup (1)
Provision of continuous power to system (1)
Etc.

Credit any appropriate factor in part (c) which has not been addressed in part (b).

Max 2 x 1

12 marks

8. (a)
   - Menu driven (1) due to a restricted number of operations available to the operator (1)
   - Unambiguous error messages (1) for safety reasons (1)
   - Character only display (1) operator does not need graphical output (1)
   - Use of restricted input device such as numeric keypad/touch screen/trackball (1) does not need extra functionality of a keyboard (1)
   - Safety features (1) with good example (1)
   - Etc.

   Max. 3 x (2,1,0)

   (b)
   - GUI display (1) due to the diverse nature of the task (1)
   - Ability to zoom (1) so that detail and overall image can be viewed (1)
   - Ability to use multiple windows (1) so that same object can be viewed in many ways (1)
   - Availability of many input and output devices (1) for inputting text and images, and producing them to the desired level of detail (1)
   - Ability to adjust screen resolution (1) with justification (1)
   - Etc.

   Max. 3 x (2,1,0)
   12 marks

9. **Do not accept one-word answers for this question**

(a) Lack of support for current system/it is expensive to maintain (1)
Lack of functionality/e.g. no multimedia facilities (1)
Demand from other departments/others want to purchase software which is not compatible with the current system (1)
Training - students are coming in and having to learn 'old' skills in order to use the network (1)
Increased productivity/it will take less time for users to log on, load software etc. (1)
Portability - students will be able to work at home and bring the work in (1)
To improve the image of/to attract more pupils to the school (1)
Etc.

Max. 5 x 1

(b)

(i) Reliability – OS will have proven track record (1)
Support – there will be an established line of support for the OS (1)
Skill – someone may be available within the school that already knows the OS (1)
Compatibility – may be the same OS as that used at home by other staff/students (1)
Etc.

Max. 2 x 1

(ii) Software will be tested on different configurations (platform/processor/etc.) (1) using live data (1) by independent/impartial users (1) generating lots of feedback (1)
Many hours of testing can be achieved easily (1)
Users may use the OS in a way that was not envisaged by the manufacturer (1) and may uncover bugs overlooked by in-house testing (1)
Marketing tool (1) – provides a free trial for customers (1)
Etc.

Max. 2 x (2,1,0)

11 marks

10. The solution for this question is intended to provide a framework of key concepts rather than a definitive solution. The aim is to establish an agreed standard that can be applied consistently, by all examiners, taking account of the many alternative answers to this type of question.

Mark allocation:

Max. 6 marks for describing what needs to be found out and how this will be done

Max. 6 marks for describing appropriate evaluation criteria (how the assessment would be carried out)

Max. 6 marks for discussing the evaluation report (function and content)

When the sixth mark is reached, underline the code letter.

Maximum mark for content is 16/20. Up to 4 marks are available for the assessment of Quality of Language.

What needs to be found out and why – code as N
Establishing end user requirements (1) in order to establish that the company has realistic aims that can be met/to find out what is important to the user(1)
The nature of the systems that are currently in place (1) in order to establish to starting position of the company (1)
Functionality available (1) so that this can be matched to the user requirements (1)
Available alternatives (1) so that these can be objectively compared (1)
Budget restraints (1) in order to ensure that the company stays within its own financial limits (1)
Will the company make use of an ISP or host the website themselves? (1) and how secure is this provision? (1)

Max. 6

Appropriate evaluation criteria – code as C

N.B. Identifying a relevant criterion (1) and giving a reason or other qualification (1) to a maximum of 3 criteria. This is a maximum of 6 marks, 3 x (2,1,0).

Criterion – 1 mark	Reason – 1 mark
Functionality	Will the software provide the functions required by the company
Performance	Does the company have access to the resources required to cope with the demands of the user/does the server have enough capacity to deal with the increased workload
Compatibility with existing software base	Can the software integrate with the already established database
Transferability of data	What extra will need to be purchased in order to allow data to be moved between systems
Robustness	If there is a sudden demand made upon the system, will it be able to handle it?
Resource requirements	Do the hardware and human resources necessary already exist in order to be able to use the software?
Accessibility	How will users be able to interact with the solution, e.g. through the use of interactive TVs, web 'phones?
Upgradability	How easy will it be to make changes to the solution when it is felt necessary
Support	How is the support supplied – online/manual.contract

Max. 6

Report produced – code as R

Purpose of report is to show how the proposed solution would measure up to the expectations of the company (1)

Description of methodology used to produce the report (1) detailing how information was gathered and a description of how the evaluation has been carried out (1)

Evaluation itself, detailing how well the system compares to the criteria decided upon (1)

Recommendation based on the evaluation (1) with justifications of how this was arrived at from this evidence (1)

Max. 6

Quality of Language – code as Q

4 marks The candidate has expressed complex ideas clearly and fluently. Sentences and paragraphs follow on one from another smoothly and logically. Arguments will be consistently relevant and well structured. There will be few, if any, errors of grammar, punctuation and spelling.

3 marks The candidate has expressed moderately complex ideas clearly and reasonably fluently through well-linked sentences and paragraphs. Arguments will be generally relevant and well structured. There may be occasional errors of grammar, punctuation and spelling.

2 marks The candidate has expressed straightforward ideas clearly, if not always fluently. Sentences and paragraphs may not always be well connected. Arguments may sometimes stray from the point or be weakly presented. There may be some errors of grammar, punctuation and spelling, but not such as to suggest a weakness in these areas.

1 mark The candidate has expressed simple ideas clearly, but may be imprecise and awkward in dealing with complex or subtle concepts. Arguments may be of doubtful relevance or obscurely presented. Errors in grammar, punctuation and spelling may be noticeable and intrusive, suggesting weaknesses in these areas.

With these type of criteria candidates are given a mark on the basis of a "best-fit" approach.

Max. 4
20 Marks

Total for the paper = 90 marks

Question Number	Syllabus Criteria
1	2.1.3 Understand what is meant by an Employee Code of Conduct
2	2.3.2 Distributed systems
3	2.9 Software reliability – Understand the need for maintenance releases.
4	2.5 Understand serial and parallel transmission, their advantages and disadvantages.
5	2.3.1 Describe the nature and significance of communication networks (local, wide area and public)
6 (a)	2.7 Discuss the resource implications of a sophisticated HCI
6 (b)	2.8 Understand the nature, features and purpose of music software
7	2.1.2 Understand the strategies for backup scheduling and storage of backups
8	2.7 Recall different approaches to the problem of communication with IT systems, including command/menu structures, screen design, nature of error messages, availability of help, user friendliness, ease of learning.
9 (a)	2.1.1 Discuss the reasons why organisations may wish to upgrade hardware/software provision
9 (b) (c)	2.9 Describe methods of ensuring that software is reliable
10	2.2.1, 2.2.2, 2.2.3 Evaluation of software, evaluation criteria, evaluation report.