



Examiners' Report/
Lead Examiner Feedback

Spring 2015

BTEC Level 1/Level 2 Firsts in
Information and Creative Technology

Unit 2: Technology Systems
(20562_E05)

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Introduction

This report has been written by the Lead Examiner of Unit 2: Technology Systems. It is designed to help you understand how learners performed on this test. The report provides an analysis of learner responses for each question. You will also find example learner responses, with commentary.

The external assessment for this unit is an onscreen, on-demand test. A number of tests are live within the 'test bank' at any one time and learners are allocated tests randomly. It should be noted that this report refers to the Second test retired from the live 'test bank'. Whilst not all learners will have sat this particular test, the Lead Examiner's comments provide valuable feedback, relevant across different tests for this unit.

We hope this will help you to prepare learners for the external assessment for this unit.

Grade Boundaries

Introducing external assessment

The new suite of 'next generation' NQF BTECs now include an element of external assessment. This external assessment may be a timetabled paper-based examination, an onscreen, on-demand test or a set task conducted under controlled conditions.

What is a grade boundary?

A grade boundary is where we 'set' the level of achievement required to obtain a certain grade for the externally assessed unit. We set grade boundaries for each grade (Distinction, Merit, Pass and Level 1 fallback).

Setting grade boundaries

When we set grade boundaries, we look at the performance of every learner who took the assessment. When we can see the full picture of performance, our experts are then able to decide where best to place the grade boundaries – this means that they decide what the lowest possible mark should be for a particular grade.

When our experts set the grade boundaries, they make sure that learners receive grades which reflect their ability. We have awarded grade boundaries for the first time for our new next generation BTECs, so this means that a learner who receives a 'Distinction' grade on a particular test will have similar ability to a learner who has received a 'Distinction' grade on another onscreen test. Awarding grade boundaries is conducted to ensure learners achieve the grade they deserve to achieve, irrespective of variation in the external assessment.

Variations in externally assessments

Each test we set asks different questions and may assess different parts of the unit content outlined in the specification. It would be unfair to learners if we set the same grade boundaries for each test, because then it wouldn't take into account that a test might be slightly easier or more difficult than any other.

The grade boundaries for the second onscreen, on-demand test to be retired from the test bank are shown below.

Grade	Unclassified	Level 1 Pass	Level 2		
			Pass	Merit	Distinction
Boundary Mark	0	12	22	32	42

General comments

This test is the second external assessment to be retired from the live 'test bank'. Onscreen assessment for this unit has been available on-demand since June 2013.

The test uses a variety of mechanisms to test learner understanding and is designed to become gradually more difficult throughout. The early part of the test is aimed at Level 1 and level 2 Pass, and at this level learners are typically required to recall facts, perform basic procedures and apply basic understanding to familiar topics and scenarios. As the test progresses learners are expected to apply more in depth understanding; questions at this level may require a learner to 'describe' or 'explain' their understanding which should prompt linked, in depth responses that show broader, deeper knowledge of the subject matter. Where appropriate learners should apply their response to a given vocational scenario. The final question of the test requires an extended response and is designed to differentiate at Pass, Merit and Distinction levels.

Overall, most learners were able to respond well to questions earlier in the test, especially where questions related to more common, everyday computer use. Where learners' performance were less successful, across the whole of the test, two main characteristics were evident:

- i) Learners often did not respond in a way that was expected by the command verb. For example, responses to 'explain' questions often did not provide suitable linked expansions and demonstrated only a superficial understanding of the subject matter
- ii) Many learners did not demonstrate sufficient breadth and depth of knowledge across the whole specification, particularly in relation to more 'technical' subjects.

Generally learners coped well with the onscreen testing mechanisms and were able to complete the test in the allotted time. However performance in some areas could be improved, particularly in questions where more open responses are required.

Centres should seek to support learners and improve performance by considering the following three areas:

- i) Develop understanding of the requirements of particular command verbs including how to structure appropriate linked responses
- ii) Application of knowledge within a given/factual context
- iii) Construction of responses for the final extended writing questions including selecting knowledge areas appropriate for the given scenario and linking chains of reasoning to provide evidence of deeper understanding.

Question 1

**Targeted Specification Area: Learning Aim B1
Internal components of a computer**

The majority of learners were able to correctly identify the correct way to prolong battery life when using a tablet computer.

Question 2

**Targeted Specification Area: Learning Aim A.2
Applications and issues of technology systems**

Most learners were able to identify at least one of the two correct answers relating to the use of professional CAD systems. Most commonly the answer "They enable designs to be viewed in detail" was correctly identified. A common mistake here was "They create designs automatically", while some processes or tasks may be automated, such as rescaling etc., the creation of the design itself would still be performed by the user. Centres should work with learners to identify and challenge this form of misconception.

Question 3

**Targeted Specification Area: Learning Aim B1
Internal components of a computer**

Most learners were able to identify 'fan' as a component part of a heat dispersal system. While many students also correctly identified 'Heat sink' as the second component the number that did gain credit here was lower than would have been expected. The general performance of learners on this question highlights a common issue that occurs throughout the test; namely that many learners do not demonstrate sound understanding of some of the core technical knowledge of the specification. It is important that learners are provided with knowledge of core technologies that pervade all areas of the specification, including how and why understanding hardware and software used in a range of systems.

Question 4

**Targeted Specification Area: Learning Aim B1
internal components of a computer**

4a

Most learners were able to correctly identify the register as the missing component from the diagram.

4b

While not as successfully answered as part a, the majority of students were able to identify one function of the ALU

Question 5

**Targeted Specification Area: Learning Aim A3
Computer hardware devices**

Most learners correctly identified projector and speaker as output devices.

Question 6

**Targeted Specification Area: Learning Aim C3
Operating systems and applications**

6a

Most learners were able to correctly identify disk defragmentation programs and a type of utility software.

6b

Performance on this question was poor by the majority of students. Only a small number of students were able to identify one of the processes that occurs during defragmentation. Where students gained credit this was typically for identifying that related data is grouped together during the defragmentation process.

6c

This question was generally not answered well. Where student performance was not at the expected level there were typically two main characteristics to the learner responses:

Firstly, generic answers that do not demonstrate an understanding of the processes involved e.g. "faster". It is important to note that answers relating to speed (or similar) should provide enough information to show that the learner has an understanding of the subject matter.

For example this response does not gain credit:

The hard disk runs faster

Although there may be a perceived performance improvement following a defragmentation, the HDD would still perform at the same speed however the data can be accessed/loaded more quickly as all related data is blocked together reducing seek time.

Secondly, many learners did not clearly understand the process of defragmentation. A common misconception was that more free space would be created. This is incorrect as defragmentation does not change the amount of data on the drive it merely rearranges it for more efficient processing

Question 7

**Targeted Specification Area: Learning Aim A3
Computer hardware devices**

7a

Most learners were able to identify that the system would use a sensor as an input device, many of which were able to demonstrate understanding that it would be a heat sensor/thermistor that would be used. Where learners did not gain credit this was often due to either confusion of input and output or often identification of a the input as a thermometer instead of a thermistor/heat sensor

7b

Most learners were able to identify that the actuators were the systems output device in that they controlled/activated the movement of the blinds. Many learners did not access the second mark, typically due to not providing an expansion that was part of its 'role' within the whole system e.g. that it opens/closes based on instructions from the processor/system software.

Question 8

**Targeted Specification Area: Learning Aim .2
Analogue and digital data**

Most learners were able to correctly identify the whole number equivalent of the provided 8-bit binary number.

Question 9

**Targeted Specification Area: Learning Aim A3
computer hardware devices**

9a

This was typically answered well with the majority of learners able to identify Product ID as the information retrieved by the barcode. Where learners did not access the mark it was typically due to a common misconception that the barcode provides the item price. Learners would benefit from centres addressing this type of misconception. Identifying the way in which the product ID is used to identify the product which then in turn finds price within the database would allow learners to explore the deeper understanding of this and related topics.

9b

Most students were able to correctly identify the way in which RFID systems would be used by retailers.

Question 10

Targeted Specification Area: Learning Aim C3 Operating systems and applications

This question was generally not answered well with only a relatively small number of learners accessing both marks. Many learners were able to identify that the patches were designed to “fix” a problem but understanding was often superficial and the quality of answers restricted most learners to 1 mark. Typical misconceptions here were related to viruses or and these answers typically provided responses that were more about the role of anti-virus software.

Here we see a 2 mark response:

because bugs in the OS security are regularly found by developers and hacker which pose a thret to the users. if these patches were not regluarly realeased hackers could exploit these bugs and get in to peoples and businesses computer syems and cause all kinds of problems.

The response gains 1 mark for identifying that bugs are detected that pose a threat and gains the second mark for explaining that the patch is designed to fix these bugs so that they are not exploited

Question 11

Targeted Specification Area: Learning Aim A5 Data transfer

11a

Most learners were able to identify fibre optic as the cabled method of data transfer suitable for long distance communication.

11b

Learners were typically able to identify at least one copper cabled method type, with the majority of earners able to identify two.

Question 12

Targeted Specification Area: Learning Aim C3 Operating systems and applications

Learners generally gained at least two of the available three marks. Where learners did not achieve all three marks this was often due to mis-identification of the task that could be carried out by DTP software

Question 13

**Targeted Specification Area: Learning Aim C3
Operating systems and applications**

13a

The majority of students were able to access one mark here. Responses typically gained credit for identifying that the computer “responded to verbal commands” or that it provided access for “users who had some form of disability”. Learners often did not demonstrate deeper understanding and often did not provide appropriate linked responses as expected from an explain question.

Here we see a two mark response:

speech recognition can understand spoken commands and control the computer accordingly. this would be good if a user has trouble operating a mouse as they can just tell there computer what to do, for example "close window" to close what ever they had open.

13b

This question was not answer well with most studnets unable to demonstrate an understanding of the output provided by a screen reader interface. Common errors here related to changing the size/colour of the on screen display rather than how it provides audio output.

Question 14

**Targeted Specification Area: Learning Aim B1
internal components of a computer**

Learners did not perform well on this question with many unable to provide answers that gained credit. Where learners did gain credit they were often restricted to one of the two marks available for providing a use of the disk cache (e.g. used as a buffer) but were restricted from gaining two marks by not providing a suitable, linked expansion.

Question 15

**Targeted Specification Area: Learning Aim A3
Computer hardware devices**

This question was generally well answered with the majority of learners able to identify at least one benefit of using a solid state drive, with most able to identify two. Performance here could be improved, as with other more open questions, by improved exam technique. Many responses did not provide suitable linked explanations that expanded on the identified benefits.

Question 16

Targeted Specification Area: Learning Aim B5 Data storage

16a

Typically this was answered well with most students able to identify a suitable example of a use of digital to analogue conversion.

16b

Many students were able to identify a reason that binary is used (i.e. that it is made up of 1's and 0's) but often responses did not provide an expansion that would have gained the second mark (i.e. that this is equivalent to the on/off state of digital data)

Question 17

Targeted Specification Area: Learning Aim B1 Internal components of a computer

This question required the learners to apply understanding of the features/characteristics of ROM to a given scenario, in this case its use to hold bios information.

This question was often not answered well, with many learners not understanding the features of ROM. Typical errors here confused ROM and RAM, while many stated that BIOS is held in ROM as it will never be changed.

Learners should explore the uses of different memory type and their features, e.g. volatile/non-volatile which makes them suitable for certain roles. Learners should be able to apply this knowledge to a range of scenarios.

Question 18

Targeted Specification Area: Learning Aim C3 operating systems and applications

The extended writing questions provide learners with an opportunity to demonstrate depth and breadth of knowledge on a given area by deconstructing a given scenario/subject and providing numerous factual points and linked chains of reasoning.

Most learners made a good number of individual points but did not provide appropriate expansion, explanation or reasoning and as such were restricted to mark band 1. While many learners did provide some context and explanation of some of their identified point and as such moved to mark band 2 very few learners were able to provide sufficient evidence at performance at mark band 3.

While quality of written communication, in terms of spelling, punctuation and grammar does not affect the mark awarded to responses (marks are allocated based solely on quality of content), the quality of the structure of the answers could

be improved in order to access higher marks. Responses are often not logically linked and reasoning, explanations and expansions are often superficial or not appropriately linked to the given scenario.

At the lower mark band levels, there are often errors in the use and application technical vocabulary and basic technical knowledge, which often hamper demonstration of understanding.

Here we see a response that is placed in mark band 3.

As we can see the response focuses on four main points, which in this case, is enough to demonstrate a broad enough understanding of the topic area. Within each section the learners demonstrates depth of understanding by identifying reasons and linking examples and explanations.

Ferhana is an architect.
She manages the office computer systems.
She wants to install a new operating system on every office computer.

Discuss the factors Ferhana should consider before installing a new operating system.

Type your answer in the box.

Structure response:

OS = Operating System

1) Is the new Operating System Compatible?

Ferhana will have to look if the OS is compatible with their Hardware because some Operating Systems will not run on certain Hardware. Eg when she launches the new system perhaps it will not display correctly on the monitors. She also will have to preform checks and read the Documentation. She will also have to look at the Software her Office uses new and decide if the new Operating System will be able to run this software. Because there would be no point in upgrading if none of the software worked.

2) Will it require User Training?

Ferhana may find when she installs this new OS will her End Users (Office Staff) be able to use the Operating System efficiently? She may have to pay for additional support for people or technicians to train the End Users to utilize the OS correctly. So she may have to pay more.

3) Is it Stable?

Ferhana would also have to look at is this new OS Secure and Stable? This is very important because if the OS is not stable for example it crashes and has bugs all the time this may cause a problem for technicians to fix all the time and I imagine will also cause a lot of down time for the company. And in fact the End Users could even lose work. Also if the Operating System is not secure her Office may come under attack from Hackers and they may even have confidential data stolen and or computers damaged. This could have major consequences for the company for example Data Protection Act. They may receive a fine from the ICO.

4) Does it cost or is it Free?

It's a good idea to know if it costs and how much? Is it worth spending a certain amount of money on something that may not even do the job and will cause down time? Ferhana will also need to consider if it does cost what is included in the price and what am I getting for my money she would want to check she gets Support and a Licence for all her computers. But also can her Company afford to buy this new Operating System?

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