



Rewarding Learning

ADVANCED
General Certificate of Education

Professional Business Services

Assessment Unit A2 1

assessing

Technology in Business

[APB11]

Assessment

**MARK
SCHEME**

General Marking Instructions

Introduction

The main purpose of the mark scheme is to ensure that examinations are marked accurately, consistently and fairly. The mark scheme provides examiners with an indication of the nature and range of candidates' responses likely to be worthy of credit. It also sets out the criteria which they should apply in allocating marks to candidates' responses.

Assessment objectives

Below are the assessment objectives for **GCE Professional Business Services**.

Candidates should be able to:

- AO1** Demonstrate knowledge and understanding of terms, concepts, theories, methods and models used by professional business services firms and their client businesses.
- AO2** Apply knowledge and understanding of concepts, theories, methods and models used by professional business services firms and their client businesses.
- AO3** Investigate, analyse and evaluate concepts, theories, methods and models as used by professional business services firms and their client businesses.

Quality of candidates' responses

In marking the examination papers, examiners should be looking for a quality of response reflecting the level of maturity which may reasonably be expected of a 17- or 18-year-old which is the age at which the majority of candidates sit their GCE examinations.

Flexibility in marking

Mark schemes are not intended to be totally prescriptive. No mark scheme can cover all the responses which candidates may produce. In the event of unanticipated answers, examiners are expected to use their professional judgement to assess the validity of answers. If an answer is particularly problematic, then examiners should seek the guidance of the Supervising Examiner.

Positive marking

Examiners are encouraged to be positive in their marking, giving appropriate credit for what candidates know, understand and can do rather than penalising candidates for errors or omissions. Examiners should make use of the whole of the available mark range for any particular question and be prepared to award full marks for a response which is as good as might reasonably be expected of a 17- or 18-year-old GCE candidate.

Awarding zero marks

Marks should only be awarded for valid responses and no marks should be awarded for an answer which is completely incorrect or inappropriate.

Marking calculations

In marking answers involving calculations, examiners should apply the 'own figure rule' so that candidates are not penalised more than once for a computational error. To avoid a candidate being penalised, marks can be awarded where correct conclusions or inferences are made from their incorrect calculations.

Types of mark schemes

Mark schemes for tasks or questions which require candidates to respond in extended written form are marked on the basis of levels of response which take account of the quality of written communication. Other questions which require only short answers are marked on a point for point basis with marks awarded for each valid piece of information provided.

Levels of response

In deciding which level of response to award, examiners should look for the 'best fit' bearing in mind that weakness in one area may be compensated for by strength in another. In deciding which mark within a particular level to award to any response, examiners are expected to use their professional judgement.

The following guidance is provided to assist examiners.

- **Threshold performance:** Response which just merits inclusion in the level and should be awarded a mark at or near the bottom of the range.
- **Intermediate performance:** Response which clearly merits inclusion in the level and should be awarded a mark at or near the middle of the range.
- **High performance:** Response which fully satisfies the level description and should be awarded a mark at or near the top of the range.

Quality of written communication

Quality of written communication is taken into account in assessing candidates' responses to all tasks and questions that require them to respond in extended written form. These tasks and questions are marked on the basis of levels of response. The description for each level of response includes reference to the quality of written communication.

For conciseness, quality of written communication is distinguished within either three or four levels of response.

Where there are three levels of response, quality of written communication is distinguished as follows:

Level 1: Quality of written communication is basic.

Level 2: Quality of written communication is good.

Level 3: Quality of written communication is excellent.

In interpreting these level descriptions, examiners should refer to the more detailed guidance provided below:

Level 1 (Basic): The candidate makes only a limited selection and use of an appropriate form and style of writing. The organisation of material may lack clarity and coherence. There is little use of specialist vocabulary. Presentation, spelling, punctuation and grammar may be such that intended meaning is not clear.

Level 2 (Good): The candidate makes a reasonable selection and use of an appropriate form and style of writing. Relevant material is organised with some clarity and coherence. There is some use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are sufficiently competent to make meaning clear.

Level 3 (Excellent): The candidate successfully selects and uses the most appropriate form and style of writing. Relevant material is organised with a high degree of clarity and coherence. There is widespread and accurate use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are of a sufficiently high standard to make meaning clear.

Where there are four levels of response, quality of written communication is distinguished as follows:

Level 1: Quality of written communication is basic.

Level 2: Quality of written communication is satisfactory.

Level 3: Quality of written communication is good.

Level 4: Quality of written communication is excellent.

In interpreting these level descriptions, examiners should refer to the more detailed guidance provided below.

Level 1 (Basic): The candidate makes only a basic selection and use of an appropriate form and style of writing. The organisation of material may lack clarity and coherence. There is little use of specialist vocabulary. Presentation, spelling, punctuation and grammar may be such that intended meaning is not clear.

Level 2 (Satisfactory): The candidate makes a satisfactory selection and use of an appropriate form and style of writing. Relevant material is organised with some degree of clarity and coherence. There is some use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are of a satisfactory standard to make meaning evident.

Level 3 (Good): The candidate makes a good selection and use of an appropriate form and style of writing. Relevant material is organised with good clarity and coherence. There is good use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are of a good standard to make meaning clear.

Level 4 (Excellent): The candidate successfully selects and used the most appropriate form and style of writing. Relevant material is organised with a high degree of clarity and coherence. There is widespread and accurate use of appropriate specialist vocabulary. Presentation, spelling, punctuation and grammar are of the highest standard to make meaning absolutely clear.

1 AO1

**AVAILABLE
MARKS**

Responses may include:

Big data describes a large volume of structured, semi-structured and unstructured data that has the potential to be mined for information. It can be used in machine learning projects and other advanced analytics applications.

Big data can be characterised by volume, velocity, variety, value, veracity and variability.

Extremely large data sets may be analysed computationally to reveal patterns, trends and associations, especially relating to human behaviour and interactions. Sources of big data may include social media, loyalty cards and transaction data.

All valid responses will be given credit

[1] basic explanation of big data

[2] satisfactory explanation of big data

[3] good explanation of big data

[4] excellent explanation of big data

(1 × [4])

[4]

4

2 AO1, AO2

Responses may include:

Storage and integration – employee records and other relevant data can be stored and integrated in one central system by Northern Cover plc. Managers and employees will be able to access the relevant information to prepare and complete performance reviews, and to store information for ongoing use.

Monitoring performance – Northern Cover will be able to monitor employee performance more effectively as the PMS provides a facility for recording and tracking information related to performance, such as objectives or targets achieved.

Improved communication – a PMS may enable a more efficient flow of information for Northern Cover plc related to the outcomes of a performance review, for example communications to the Finance Department via an automatically generated report if a bonus is to be paid for meeting targets, or to the HR Department if further training is required.

All valid responses will be given credit

[1] benefit identified

[2] benefit identified with a basic description or application to Northern Cover plc

[3] benefit identified with a good description and application to Northern Cover plc

[4] benefit identified with an excellent description and application to Northern Cover plc

(2 × [4])

[8]

8

Responses may include:

Client needs – A Customer Relationship Management System (CRM) is useful to a business when trying to meet client needs. Technology assists in making processes more streamlined. This can lead to increased client satisfaction as well as aid efficiencies both in terms of time and money.

A CRM will enable Northern Cover plc, as a client to:

- Enhance relationships with clients. Needs can be quickly and efficiently attended to. This will put Northern Cover plc in a better position to sell more products to their customers. They can effectively cross-sell and up-sell at the right moments, with higher success rates.
- Automate tasks which may have been previously considered laborious. For example, having client details already populated in respect of new insurance policies, quotes or related products.
- Ensure there are no information gaps – greater consistency and certainty about their products or services. This will also enable Northern Cover plc customers to perceive that their expectations are being met and managed adequately.
- Enhance customer retention – this will give Northern Cover plc a well-rounded view of their clients.
- Empower employees – tasks can be completed effectively anywhere through mobile apps, web interface and offline access for their clients. This can be measured through the increase in repeat business as well as increased spending per customer.

Users – A CRM can assist in making processes easier for users, as it provides marketing intelligence on customer needs and facilitates target marketing. A CRM will enable Northern Cover plc as a user to:

- Be more customer focused – this will provide Northern Cover plc with more information, to enable them to better meet the needs of their customers.
- Achieve improved strategic planning thereby assisting the decision-making process of the business including any marketing activities required.
- Target potential customers – based on CRM queries and requests received.
- Marketing KPI – a CRM to measure performance against marketing targets through the use of metrics.

Time – A CRM can help reduce the time taken because it can help streamline various processes within the business leading to better business efficacy. A CRM will enable Northern Cover plc to:

- Automate marketing activities which saves time in terms of the customer and employees leading to a tangible increase in revenue.
- Increase customer satisfaction.
- Improve service through faster response time.
- Manage time – this means that Northern Cover plc can allocate time to other activities.

Cost – A CRM System can help reduce costs by using electronic methods for marketing activities. A CRM will enable Northern Cover plc to:

- Reduce costs due to the automation of tasks such as completing sales or retrieving customer information quickly.
- Information garnered – the system can indicate customer trends, repeat business and improve sales or indicate where potential savings can be made.
- Market more effectively – leading to increased revenues and reductions/savings on advertising.

Security – A CRM can help increase security both for the business and for its customers. A CRM requires having processes and procedures to protect business and customer data. A CRM will enable Northern Cover plc to:

- Provide greater protection – control access to their important customer and business information by securely storing data. With advanced protection and automatic back-up, this data is protected from unexpected events such as a virus or if the system crashes.
- Increase customer confidence – by securely storing customer data, Northern Cover plc can provide reassurance that customer information will remain confidential.

All valid responses will be given credit

[0] is awarded for a response not worthy of credit

Level 1 ([1]–[4]) Basic

- Basic knowledge and understanding of the effectiveness of a CRM System.
- Application to Northern Cover plc is basic.
- Basic analysis.
- The quality of candidate’s written communication is basic.

Level 2 ([5]–[8]) Satisfactory

- Satisfactory knowledge and understanding of the effectiveness of a CRM System.
- Application to Northern Cover plc is satisfactory.
- Satisfactory analysis.
- The quality of candidate’s written communication is satisfactory.

Level 3 ([9]–[12]) Good

- Good knowledge and understanding of the effectiveness of a CRM System.
- Application to Northern Cover plc is good.
- Good analysis.
- The quality of candidate’s written communication is good.

Level 4 ([13]–[16])

- Excellent knowledge and understanding of the effectiveness of a CRM System.
- Application to Northern Cover plc is excellent.
- Excellent analysis.
- The quality of candidate’s written communication is excellent.

[16]

16

4 (a) AO1, AO2

AVAILABLE
MARKS

Responses may include:

- Everyone at Northern Cover plc responsible for processing personal data is required to follow strict rules called 'data protection principles'. Northern Cover plc employees must ensure that information is: used fairly, lawfully and transparently; used for specified, explicit purposes; used in a way that is adequate, relevant and limited to only what is necessary; accurate and, where necessary, kept up-to-date; kept for no longer than is necessary; and is handled in a way that ensures appropriate security, including protection against unlawful or unauthorised processing, access, loss, destruction or damage.
- Personal data must be processed fairly and lawfully – Northern Cover plc must tell people the purposes the data is being collected, and if applicable, that the data may be sent outside the UK.
- Personal data shall only be used in accordance with the purposes for which it was collected – Northern Cover plc must ensure data collected is for one purpose and is not being used for a different purpose.
- Personal data must be adequate, relevant and not excessive – Northern Cover plc must not collect data just in case it might be useful. They can only collect the data they need.
- Personal data must be useful and where necessary kept up-to-date – Northern Cover plc must allow individuals the ability to update their data or to have it updated. This includes marketing communications. Northern Cover plc must provide an opt-in approach to marketing (tick here if you wish to be contacted for marketing purposes).
- Personal data must be kept for no longer than is necessary – Northern Cover plc must develop a retention policy for personal data and ensure it is enforced.
- Personal data must be processed in accordance with the rights of data subjects – Northern Cover plc must ensure any requests from individuals for a copy of their data are responded to promptly and the data is provided within 40 days.
- Appropriate technical and organisational measures must be established to protect the data – Northern Cover plc to protect their system from hackers, set up firewalls at their network perimeter, store data securely with only specific authorised individuals having access. They should consider data encryption.

All valid responses will be given credit

[1] feature identified

[2] feature identified with an explanation

(3 × [2])

[6]

(b) AO1, AO2, AO3

Responses may include:

Secure Socket Layer (SSL)

SSL is a standard security technology for establishing an encrypted link between Northern Cover plc's server and their client (customer) – typically a web server (website) and a browser, or a mail server and a mail client (e.g. Outlook). Secure socket layer allows sensitive information such as credit card numbers and login in credentials to be transmitted securely.

Advantages of SSL

- Security – SSL adds a layer of security to the online transactions. This security certificate helps protect personal payment information that customers enter on Northern Cover plc website. SSL encrypts information using a unique process that turns information into random letters, numbers and symbols to make data intercepted and look garbled and useless.
- Trust – Northern Cover plc can get an EV (Extended Validation) certificate, proof of which shows as a green address bar in the browser; this gives customers a sense of trust. Customers will appreciate any effort that demonstrates Northern Cover plc are taking their security seriously.
- Verification – SSL provides Northern Cover plc customers with the facility to verify their payments online.
- Integrity of data – Northern Cover plc is guaranteed the integrity of data. With an SSL certificate, Northern Cover plc will be able to intercept data going to and from the webserver, as well as change it.
- Prevent data breaches – Northern Cover plc will be able to defend the company's brand and status and adhere to the security regulations set. Programmes for encryption and traffic management can thwart attackers' threats of using encryption to hide malicious information.

Disadvantages of SSL

- Cost of certificate – the SSL providers need to set up a trusted infrastructure and validate Northern Cover plc identify. This involves high costs for Northern Cover plc.
- Performance – this leads to performance issues for Northern Cover plc as it takes more server resources than if the information was not encrypted.
- Expired certificate – Northern Cover plc will need to renew their SSL certificate periodically. When it expires, customers visiting their website get a pop-up message saying that the SSL certificate in their website has expired and it is no longer considered secure.

Hypertext Transfer Protocol Secure (https)

HTTPS is the secure version of HTTP. The 'S' at the end of HTTPS stands for 'Secure'. It means all communications between the customer's browser and Northern Cover plc website is encrypted. HTTPS is often used to protect highly confidential online transactions such as insurance policies, renewals etc.

Advantages of HTTPS

- Security and encryption – Northern Cover plc customers' information remains confidential and secure because only Northern Cover plc browser and the server can decrypt the information.
- No extra cost – HTTPS was previously expensive to implement but it is now available to businesses such as Northern Cover plc at no extra cost.
- Identity verification – a certificate guarantees the information Northern Cover plc's browser receives from the originator at the expected domain. This is a guarantee that when a customer sends sensitive data, it is being sent to Northern Cover plc and not to a malicious third party.
- Data integrity – if HTTPS is not used and data is sent in clear text it is possible for a third-party to intercept the communication between the server and Northern Cover plc's browser. If a third party intercepts the communication, they can read it and alter its contents. By hi-jacking a connection, a hacker can view the information that Northern Cover plc's browser is requesting and in turn the content which the site is transmitting.
- Search Engine Optimisation (SEO) – a search engine will display secure sites for its users. A site with HTTPS connections will rank high on Internet searches. If Northern Cover plc has HTTPS it is going to rank higher than a site without HTTPS.

- Trust – padlock symbol indicates that Northern Cover plc takes security seriously and helps give their customers confidence.

Disadvantages of HTTPS

- Speed – Northern Cover plc website speed can decrease because of the complexity involved encrypting and decrypting the data.
- Time consuming – Northern Cover plc must install intermediate certificates when certificate expires.
- Need to purchase an SSL Certificate – cost – SSL certificates are issued and rely on the trustworthiness of certificate authorities. Technically Northern Cover plc can produce their own, but others will not trust the site therefore it will be required to purchase an SSL certificate.

All valid responses will be given credit

[0] is awarded for a response not worthy of credit

Level 1 ([1]–[4]) Basic

- Basic knowledge and understanding of up to two security methods.
- Basic application to Northern Cover plc
- Analysis and evaluation are basic.
- Basic judgement made.
- The quality of candidate’s written communication is basic.

Level 2 ([5]–[8]) Satisfactory

- Satisfactory knowledge and understanding of the two security methods.
- Satisfactory application to Northern Cover plc.
- Analysis and evaluation are satisfactory.
- Satisfactory judgement made.
- The quality of candidate’s written communication is satisfactory.

Level 3 ([9]–[12]) Good

- Good knowledge and understanding of the two security methods.
- Good application to Northern Cover plc.
- Analysis and evaluation are good.
- Good judgement made.
- The quality of candidate’s written communication is good.

Level 4 ([13]–[16]) Excellent

- Excellent knowledge and understanding of the two security methods.
- Excellent application to Northern Cover plc.
- Analysis and evaluation are excellent.
- Excellent judgement made.
- The quality of candidate’s written communication is excellent.

[16]

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AVAILABLE
MARKS

Responses may include:

Client needs and users in the scenario are both Northern Cover plc.

Client needs and users

- Increased efficiency – daily tasks such as running reports and queries will lead to greater savings for the company.
- Improved data sharing – the database helps to create an environment in which Northern Cover plc employees have better access to more and better-managed data. This is effective because the employees can respond quickly to changes.
- Useful database features – databases are used to organise, store and retrieve information as efficiently and effectively as possible; databases store data or information in tables; tables allow Northern Cover plc to see all of the records stored in the database. Tables can store many records; a record is made up of lots of individual pieces of information; data can be shared between applications; primary and foreign key; drop down menus, attributes (field names, data types, field properties and validation rules), data types; relationship between 2 or more tables; insert, move or delete records; write macros to automate common procedures; create templates and reports and queries.
- Dashboard facility – will provide overview of financial decision making.
- Training – although considered to be a very user-friendly system, human errors unfortunately cause many unnecessary issues that may lead to Northern Cover plc making decisions using incorrect data reports which they have been provided with. It is therefore of the utmost importance that all employees at Northern Cover plc are given the proper tools and training which will enable them to produce accurate information gathered from the database.

Time

- Track, measure and monitor data – reminders being sent out to clients. They will also require other information to conduct their daily tasks facilitating efficiencies and contributing to effective financial decision making.
- Manipulate complex data – supporting decision making, e.g. analysis of data, goal seeking, scenarios, regression and data mining effectively.
- Efficiency – time will be saved through efficiency in their daily tasks running reports and queries, leading to greater savings for the company.

Cost

- Software – bespoke database software package to support their financial decision making more effectively. The bespoke database will be custom designed for the needs of Northern Cover plc.
- Resources and highly skilled personnel for this system to be effective there is a cost of maintaining the hardware, software and personnel. Northern Cover plc will have to source these resources which has an impact on financial decision making.

Security

- Passwords/security levels – to protect data from unauthorised staff.
- Protection – database provides a framework for better enforcement of data privacy and security policies for Northern Cover plc. The use of a database will assist Northern Cover plc to comply with regulatory requirements and avoiding costly penalties which could be imposed by a regulatory body, e.g. Financial Conduct Authority or the Information Commissioner.

All valid responses will be given credit

[0] is awarded for a response not worthy of credit

Level 1 ([1]–[5]) Basic

- Basic knowledge and understanding of the effectiveness of a database to support the financial decision making.
- Application is basic with limited reference to Northern Cover plc.
- Analysis of the effectiveness of databases to support the financial decision making is basic.
- Evaluation of the effectiveness of databases to support the financial decision making is basic.
- No judgement made or judgement is limited and may or may not be supported by the candidate's own knowledge.
- The quality of candidate's written communication is basic.

Level 2 ([6]–[10]) Satisfactory

- Satisfactory knowledge and understanding of the effectiveness of a database to support the financial decision making.
- Application is satisfactory with some reference to Northern Cover plc.
- Analysis of the effectiveness of databases to support the financial decision making is satisfactory.
- Evaluation of the effectiveness of databases to support the financial decision making is satisfactory.
- Judgement is partially reasoned and supported by the candidate's own knowledge and the analysis given.
- The quality of candidate's written communication is satisfactory.

Level 3 ([11]–[15]) Good

- Good knowledge and understanding of the effectiveness of a database to support the financial decision making.
- Application is good with reference to Northern Cover plc.
- Analysis of the effectiveness of databases to support the financial decision making is good.
- Evaluation of the effectiveness of databases to support the financial decision making is good.
- Judgement is reasoned and supported by the candidate's own knowledge and the analysis given.
- The quality of candidate's written communication is good.

Level 4 ([16]–[20]) Excellent

- Excellent knowledge and understanding of the effectiveness of a database to support the financial decision making.
- Application is excellent with clear reference to Northern Cover plc.
- Analysis of the effectiveness of databases to support the financial decision making is excellent.
- Evaluation of the effectiveness of databases to support the financial decision making is appropriate, clear and logically based on a thorough analysis of Northern Cover plc.
- Judgement is fully justified and informed by candidate's own knowledge and the analysis given.
- The quality of candidate's written communication is excellent. [20]

**AVAILABLE
MARKS**

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Benefits of Northern Cover plc using data analytics may include:

- Errors within Northern Cover plc are known instantly when using real time.
- New strategies of Northern Cover plc competition are noticed immediately.
- Service improves dramatically which could lead to higher conversion rate and additional revenue for Northern Cover plc.
- Fraud can be detected the moment it happens and proper measures can be taken to limit the damage to Northern Cover plc.
- Cost savings to Northern Cover plc.
- Improved sales insights which could lead to additional revenue for Northern Cover plc.
- Northern Cover plc can keep up with customer trends.

Drawbacks of Northern Cover plc using data analytics:

- Northern Cover plc will require more storage to manage the complex data.
- Use of real time insights a different way of working within Northern Cover plc.
- Data analytics can be prone to data breaches so increased security may be needed.
- Predictions and correlations are not always accurate and miscalculations can have very problematic consequences.

All valid responses will be given credit

[0] is awarded for a response not worthy of credit

Level 1 ([1]–[5]) Basic

- Basic knowledge and understanding of the use of data analytics to support decision making in Northern Cover plc.
- Application is basic with limited reference to Northern Cover plc.
- Analysis and evaluation are basic.
- Judgement is limited and may or may not be supported by the candidate's own knowledge.
- The quality of candidate's written communication is basic.

Level 2 ([6]–[10]) Satisfactory

- Satisfactory knowledge and understanding of data analytics to support decision making in Northern Cover plc.
- Application is satisfactory with reasonable reference to Northern Cover plc.
- Analysis and evaluation are satisfactory.
- Judgement is partially reasoned and supported by the candidate's own knowledge and the analysis and evaluation given.
- The quality of candidate's written communication is satisfactory.

Level 3 ([11]–[15]) Good

- Good knowledge and understanding of data analytics to support decision making in Northern Cover plc.
- Application is good with appropriate reference to Northern Cover plc.
- Analysis and evaluation are good.
- Judgement is partially reasoned and supported by the candidate's own knowledge and the analysis and evaluation given.
- The quality of candidate's written communication is good.

Level 4 ([16]–[20]) Excellent

- Excellent knowledge and understanding of data analytics to support decision making in Northern Cover plc.
- Application is excellent with clear reference to Northern Cover plc.
- Analysis and evaluation are appropriate, clear and logical.
- Judgement is fully justified and informed by candidate’s own knowledge and the analysis given.
- The quality of candidate’s written communication is excellent. [20]

Total

**AVAILABLE
MARKS**

20

90