



PIABC LEVEL 5 DIPLOMA IN PACKAGING TECHNOLOGY

Qualification Number: 610/0740/7

Qualification Specification

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INTRODUCTION

PIABC Level 5 Diploma in Packaging Technology (QN: 610/0740/7) is a nationally recognised packaging qualification. This third version of the PIABC Limited (PIABC) qualification was reviewed and updated in 2022 to ensure that it remained current and appropriate for the needs of those employed within the packaging industry and associated industries.

PURPOSE

Its main purpose is to provide learners with a broad knowledge of the principles, materials, processes and other elements of packaging production and use. Those achieving the Diploma will be able to apply this knowledge to solving problems and making decisions associated with the technical and aesthetic performance, cost, safety and legality of packaging materials and packed products.

Success in this qualification prepares students for progression in the packaging industry to a position where they can assume responsibility for packaging in a company at any point in the supply chain.

GENERAL OUTCOMES

The general objectives of the PIABC Level 5 Diploma in Packaging Technology (QN: 610/0740/7) are to:

1. Provide those employed, or who wish to be employed in the packaging and related industries with the skills, knowledge and understanding to underpin and enhance job experience.
2. Provide learners with a portable qualification to enable job movement throughout the industry.
3. Provide learners with a means of progression to higher level qualifications, e.g. MSc, MBA.
4. Provide employers throughout the packaging and related industries with a firm basis for judging suitability of candidates.
5. Raise the status of those employed in the packaging and related industries.

TARGET GROUP

This Level 5 qualification is appropriate for those wanting to enhance their employment and progression opportunities in the packaging and related industries.

There are thus two broad target groups:

1. People currently employed in parts of the industry who want to broaden their knowledge and understanding and take on greater levels of responsibility. Due to the diverse nature of the packaging and related industries, it is difficult to define this target group in terms of precise job functions. Typically, candidates are likely to be working at the practitioner or manager level in any of the following disciplines:

Discipline	Type of company
Technical	Packaging manufacturer Packer/filler Retail
Technical sales/marketing	Packaging manufacturer Packaging machinery manufacturer
Quality assurance	Packaging manufacturer Packer/filler
Purchasing	Packer/filler Retail
Engineering	Packer/filler Packaging machinery manufacturer
Design	Design Agency Packaging manufacturer Packer/filler Retail

2. People who are not currently employed in the industry, who may be following courses in associate subject areas such as packaging design, food science/technology, materials science/engineering, and logistics, will find that this programme broadens the scope of their studies.

ENTRY REQUIREMENTS

As a guide for entry onto programmes, candidates will normally be expected to have a minimum attainment of:

- 1 GCE A level and 5 GCSEs at grade A – C, including one science subject, plus the key skills of numeracy, communication and information technology
- PIABC Level 3 Certificate in Packaging.

Alternatively, candidates should be able to clearly demonstrate, for example through experience in the packaging industry, which they are likely to succeed in the programme of study.

For candidates where English is not the candidate's first language, PIABC requests that a candidate provides evidence of their command of English before commencing the PIABC Level 5 Diploma in Packaging Technology (QN: 610/0740/7). PIABC's experience has shown that Learners who are fully proficient in English are best placed to successfully complete their programme.

The most common qualification is the IELTS test. Other tests may be acceptable if a candidate has already taken them. Please note that test scores must be achieved from one sitting of the relevant qualification. PIABC will not accept individual component scores from multiple tests.

The following qualifications are acceptable to show PIABC's minimum English language requirements:

- GCSE English Language/IGCSE (first language): Grade C minimum
- International English Language Testing System (IELTS) Academic module (not General Training): overall score 6.0; no sub-test less than 5.5
- ibTOEFL: 92; no sub-test less than 20
- CAE (Cambridge Certificate of Advanced English): C minimum
- CPE (Cambridge Certificate of Proficiency in English): C minimum
- PTE Academic (Person Test of English, Academic test): 55; no sub-test less than 51

For English Language qualifications not listed here, then please email details of the qualification to PIABC (piabc@iom3.org) for approval.

PROGRESSION

Success in this qualification prepares students for progression in the packaging industry to a position where they can assume responsibility for packaging in a company at any point in the supply chain.

STAFFING

It is expected that staff involved with the delivery of the course will be appropriately qualified and/or experienced in packaging. The PIABC approval process requires prospective centres to provide details of the staff involved in delivery and assessment including their qualifications and relevant training/employment experience, plus staff development arrangements. Whilst these details are passed on to the external moderator appointed by PIABC, it is the Centre's responsibility to ensure tutors' qualifications are both bona fide and appropriate to the level of the qualification.

QUALITY ASSURANCE

PIABC requires that each centre has a quality assurance and enhancement procedure in respect of the programme, and a means of monitoring its implementation.

There should be a team that is responsible for preparing an annual self-assessment of the programme and for monitoring the improvement measures resulting from this.

This self-assessment process should use evidence from different sources including:

- Candidate self-evaluation
- The views of external individuals and organisations, for example those companies sending learners
- Staff working on the award

In addition, it is also expected that there will be an internal moderation procedure to ensure standardisation of unit delivery. This will include the following elements:

- Classroom observation
- Peer review of award materials
- Moderation of any internally assessed elements

There should be a named and appropriately qualified individual (Centre co-ordinator) who has the necessary authority, with whom PIABC can liaise directly on all matters of management, administration, and quality assurance.

EXTERNAL MODERATION

PIABC will appoint appropriately qualified external centre monitors to undertake external quality assurance activities with the centres in order to ensure the maintenance of standards of quality.

PROGRAMME ORGANISATION

It is anticipated that the qualification will require a minimum of 107 guided learning hours for satisfactory completion.

The organisation of the qualification is at the discretion of the Centre and will consider the aims, aspirations, and experience of the candidates.

Centres are encouraged to choose the most suitable curriculum model for their candidates. Whilst the sequential delivery of units is a possibility and may provide the most straightforward way of determining completion of individual units, it may be that some degree of integration of units will occur, or that other methods of delivery are more appropriate to meet the needs of candidates. It should be noted however that each unit will be individually assessed.

Centres must ensure that adequate arrangements are in place for supporting candidates. This could be either through separate tutorial sessions or through the use of time within structured study sessions. Centres using on-line or other forms of open learning must ensure that appropriate tutorial support is provided for candidates.

In relevant circumstances, centres are recommended to provide information and guidance to their candidates on the availability and type of employment the programme may lead to and on the progression routes available for further education and training in packaging.

GUIDANCE ON LEARNING AND TEACHING STRATEGY, METHODS AND ASSESSMENT

Packaging technology is a practical subject, based on theoretical principles. As far as possible, it is important that the course is taught by relating the underlying theory to practical examples and applications. Two factors which will help in this regard are:

1. The use of lecturers with direct experience in the packaging and related industries. Specifically, for “Packaging Materials and Components”, lecturers with experience in the relevant packaging manufacturing (converter) sector are likely to offer the most appropriate level of practical knowledge. This must, of course, be balanced against a sound understanding of the theoretical principles, as anecdotal experience alone is unlikely to meet the requirements of the course.
2. Factory visits should be undertaken, to packaging manufacturers and users where learners can see packaging processes and make the link between theoretical principles and practical applications. Familiarity with different packaging settings will be assumed in elements of the qualification’s assessment. DVD illustrations of processes should also be used as part of the teaching regime. A further and invaluable source of information is the Internet and there are many web sites which demonstrate important aspects of packaging manufacture and use. Lecturers should be encouraged to use this material, always making sure due acknowledgment is given to the source.

Whilst all units are designed to be “stand alone” some items for example sustainability, quality and legislation appear as common themes across more than one unit. This should be recognised by tutors and links made in those cases where candidates are working across more than a single unit.

Those learners employed in the packaging and related industries, will come to the course with varying levels of existing knowledge and/or practical experience of some parts of the syllabus. Lecturers should utilise this, through group work and other structured interactive activities, thus encouraging the sharing of knowledge which has the potential to lead to a high level of understanding.

The relation of theory and practice is a theme that will be reflected in the assessments for each unit and for the programme as a whole. Therefore, in structured learning and individual work, candidates should be aware of the requirement to develop a practical dimension to their understanding.

REASONABLE ADJUSTMENTS

Please refer to “*Access to Assessment – Arrangements for Candidates Needing Reasonable Adjustments, Special Consideration and/or Extenuating Circumstances in the Assessment Process*” document for more information. A copy is available from the PIABC team at piabc@iom3.org.

In carrying out assessments, PIABC’s policy is to give all candidates equal opportunity to demonstrate attainment and to provide candidates with disabilities, learning difficulties and other problems the same access to assessment as other candidates.

Assessment arrangements may be varied however, where the standards permit, for candidates with particular requirements. These requirements may take the form of special condition/extenuating circumstances for candidates whose needs are covered by the Equality Act 2010 or extenuating circumstances for those whose needs result from temporary disability or indisposition such as short-term illness.

In general, variation in assessment arrangements may be needed for physical disability, visual impairment, hearing impairment, specific learning difficulty, medical conditions, and use of English as a second language.

The nature of any special arrangements depends largely upon the qualification being followed and the assessment strategy employed. For scheduled fixed date examinations, then arrangements must be agreed directly with PIABC. For assessments at Level 3 and above, centres must write to

PIABC to request concessions at least two months before the assessment. Concessions will be limited by specification and assessment requirements and supporting evidence will be required.

QUALIFICATION LEVEL

PIABC Level 5 Diploma in Packaging Technology (QN: 610/0740/7) is a Level 5 qualification.

Candidates require the skills, knowledge and understanding to show competence in applying technical, aesthetic and commercial principles to a range of complex and varying tasks.

Candidates are required to analyse problems, determine root cause, and recommend and implement effective solutions, with a substantial degree of personal responsibility and accountability.

Candidates may have direct responsibility for others or may have responsibilities within a team.

This qualification requires the learner to understand complex elements from the packaging process, for example packaging design, materials and production methods, and how these combine in practical packaging operations. It will prepare the learner to operate as a professional packaging technologist and/or manager in companies in different parts of the packaging supply chain, where they will be expected to be able to deal with new and novel problems. The qualification also prepares students to advise others about alternative appropriate solutions to packaging problems, and to identify the critical factors associated with the advice that is given.

When work for this qualification is assessed, it is important to realise that evidence will be sought which demonstrates these features.

Level 5 Descriptor

Knowledge descriptor (the holder...)

- Can analyse, interpret and evaluate relevant information, concepts and ideas.
- Is aware of the nature and scope of the area of study or work.
- Understands different perspectives, approaches or schools of thought and the reasoning behind them

Skills descriptor (the holder can...)

- Determine, adapt and use appropriate methods, cognitive and practical skills to address broadly defined, complex problems.
- Use relevant research or development to inform actions.
Evaluate actions, methods and results.

Source: Ofqual Handbook: General Conditions of Recognition (Updated 12/05/2022)

QUALIFICATION STRUCTURE

In designing the diploma, the unit design that each unit has an informative title, a level, a credit value, learning outcomes and assessment criteria have been applied. The assessment process is based on those learning outcomes and assessment criteria. The learning and teaching strategy must be designed so that candidates have the opportunity to meet the learning outcomes in an effective manner by demonstrating that they can achieve the assessment criteria.

The PIABC Level 5 Diploma in Packaging Technology (QN: 610/0740/7) is divided into three units as shown below:

Ofqual Unit No.	Title	Unit Level	Unit Credit	Guided Learning Hours
J/650/2133	Unit 1 Understand the role and functions of packaging	5	14	28
K/650/2134	Unit 2 Understanding packaging materials and components	5	27	57
L/650/2135	Unit 3 Understand the management of packaging, production, and business processes	5	10	22

UNIT CONTENT

UNIT 1 - UNDERSTAND THE ROLE AND FUNCTIONS OF PACKAGING

Ofqual Unit No: J/650/2133

Guided Learning Hours: 28

Unit Level: 5

Unit Credits: 14

Grading Structure: Pass, Merit and Distinction

Learning Outcomes: what you need to know/understand		Assessment Criteria: what you need to do		Indicative Content
1.0	Understand the role, functions, and impact of packaging in the world today	1.1	Discuss the role of packaging throughout the supply chain and its interactions with society	<ul style="list-style-type: none"> • Definition of packaging including the levels of packaging. • The development of packaging related to developments in society – changing patterns of consumption and their impact on packaging and the growth of the modern retailer (e.g. supermarkets, e-commerce) • Overview of the packaging market (i.e., consumer, business to business). • Factor effecting packaging use (i.e., lifestyle, legislation, business changes, etc.).
		1.2	Identify and discuss the functions of packaging	<ul style="list-style-type: none"> • Functions of packaging: contain, protect, preserve, convenience, providing information and selling. Also consider environmental and commercial issues.
		1.3	Evaluate the ability of packs to meet the functions of packaging	<ul style="list-style-type: none"> • Major functions that packaging is required to fulfil and the ability to evaluate each function for a given use/application. • Using a range of examples, show how particular packs meet different packaging functions

Learning Outcomes: what you need to know/understand		Assessment Criteria: what you need to do		Indicative Content
2.0	Understand the structure and interactions of elements in the packaging supply chain from raw materials to end use and disposal	2.1	Describe in detail the whole packaging supply chain (from raw materials to end of use and disposal) for a given packed product	<ul style="list-style-type: none"> • Knowledge of the structure of the packaging supply chain from raw material to packer filler • Knowledge of the structure of the packaging supply chain from packer filler to end of use and disposal (including chilled and frozen goods, business to business and e-commerce packaging). • Understand the complexity of the journey map for multiple handling and extended distribution systems taking account of packaging manufacturing processes and the storage and distribution of packaging materials and components. • Identify the main hazards in the supply chain • Packaging as a means of delivering cost effective convenient solutions for moving goods from production to the final user
		2.2	Evaluate the role of packaging in mitigating the effects of hazards faced by packed products in the supply chain	<ul style="list-style-type: none"> • Describe the factors which cause product and packaging deterioration in the supply chain • Measuring and monitoring the main hazards, their causes and effects which may compromise the quality, hygiene, safety, and legality of the packed product • Defining product fragility and damage levels, e.g. breakage, scratching, scuffing, of both product and pack. Quantifying fragility and acceptable damage levels • Key properties of packaging (high level overview only) and the controls needed to minimise product damage and interference. • Simulating journey hazards in the laboratory and carrying out tests and transit trials.

Learning Outcomes: what you need to know/understand		Assessment Criteria: what you need to do		Indicative Content
3.0	Understand how active and intelligent packaging technologies can enhance traditional packaging methodologies	3.1	Discuss how active and intelligent technologies are being developed to reduce product wastage and extend shelf life	<ul style="list-style-type: none"> Define active and intelligent packaging An overview of: <ul style="list-style-type: none"> Emitters, absorbers (e.g. oxygen, ethylene) Nanotechnology (clay platelets, silver components for antimicrobial, etc.) Advantages & disadvantages of the technologies
		3.2	Discuss how active and intelligent technologies are being developed to provide convenience	<ul style="list-style-type: none"> An overview of: <ul style="list-style-type: none"> Self-heating and self-cooling Microwavable packaging Widget Temperature controlled packaging Resealable films Advantages & disadvantages of the technologies
		3.3	Discuss how active and intelligent technologies are being developed to interact and communicate with elements and users within the supply chain	<ul style="list-style-type: none"> An overview of: <ul style="list-style-type: none"> Time-Temperature indicators Auto replenish Condition monitoring (e.g. shock watch, ripeness indicators) Temperature indication (e.g. thermochromic inks) Advantages & disadvantages of the technologies
		3.4	Discuss how active and intelligent technologies are being developed to provide security in the supply chain	<ul style="list-style-type: none"> An overview of: <ul style="list-style-type: none"> Traceability including Radio-frequency identification (<i>RFID</i>), QR codes, barcoding Anti-Counterfeit measures/detection for anticounterfeit (e.g. consumer, in field, expert) Covert & overt Advantages & disadvantages of the technologies

Learning Outcomes: what you need to know/understand		Assessment Criteria: what you need to do		Indicative Content
4.0	Understand how packaging complies with regulatory practices	4.1	Explain how legislation and standards impact on packaging and the packaging industry	<ul style="list-style-type: none"> Principles and drivers of the key legislation and standards (globally) which applies to the packed product Differences between legislation, standards, and good practice Categories of legislation <ul style="list-style-type: none"> Product quality and health hazards (e.g. food safety act, materials, and articles in contact with product, product labelling requirements, dangerous goods, tamper evidence and child resistant packaging) Worker protection (e.g. health and safety, manual handling, noise, <i>Control of Substances Hazardous to Health</i> (COSHH), Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)) Honesty in trade (e.g. Weights and Measures, Trade Descriptions, Trademarks, Copyright, Sale of Goods) Environmental protection (e.g. Packaging Essential Requirements, packaging waste regulations) <p><i>These are UK examples and alternative legislation from different regions can be used.</i></p>
		4.2	Explain the consequences of failure to comply	<ul style="list-style-type: none"> Legal and commercial consequences of failure to comply with legislation for the pack itself and the company in general

Learning Outcomes: what you need to know/understand		Assessment Criteria: what you need to do		Indicative Content
5.0	Understand the factors that impact on environmental sustainability of packaging	5.1	Identify and describe key packaging sustainability issues	<ul style="list-style-type: none"> • Awareness of the pillars of sustainability (social, economic & environmental) • Factors which affect the impact of packaging on the environment. Resource usage (e.g. trees, oil), greenhouse gas emissions/global warming, waste (e.g. litter, landfill, nurdles/ microplastics). • Placing the environmental impact of packaging in context with its role in society and its economic role in conserving product resources and value (e.g. Packaging “optimisation”) • Material selection (e.g. biobased, biodegradable, compostable packaging, and plastic replacements).
		5.2	Discuss how packaging supports the development of a circular economy	<ul style="list-style-type: none"> • Packaging in the industrial, commercial, and domestic waste stream. Comparisons of methods of handling, reduce, reuse, recovery, composting, and recycling as applied different packaging materials. Issues with landfill. Energy and water consumption and carbon emissions. • The concept of “end of life” and “cradle to cradle” in relation to packaging. • Comparison of linear economy to a circular economy • Circular economy strategic responses of government and industry. PCR and legislative changes (e.g. mechanical polymerase chain reaction (PCR), chemical polymerase chain reaction (PCR). Different quality, variation batch to batch, methods to ensure it’s safe, certification, legislative requirements, etc.). • Design for circular economy in terms of packaging format and material cycles. Design for circularity principles. Consumer engagement with circular economy packaging. • Collaborative innovation for a circular economy. Recycling processes and issues (e.g. mono materials recovery, tethered caps, and recyclability).

Learning Outcomes: what you need to know/understand	Assessment Criteria: what you need to do		Indicative Content
	5.3	Discuss the different strategies for assessing the impact of packaging on the environment	<ul style="list-style-type: none"> • Tools for evaluating environmental impact through different measures (e.g. life cycle analysis for a total packed product, units of measurement such as CO²e, and system boundaries). • Systems level thinking • Linking life cycle analysis to circular economy
	5.4	For a given packed product, evaluate the environmental impact on the environment	<ul style="list-style-type: none"> • Understand product requirements to optimise packaging and reduce product wastage (fit for purpose)

Learning Outcomes: what you need to know/understand		Assessment Criteria: what you need to do		Indicative Content
6.0	Understand how packaging communicates and satisfies customer needs	6.1	Discuss the relationship between packaging and marketing	<ul style="list-style-type: none"> Define marketing and the marketing function as it relates to packaging Understand the roles and responsibilities of marketing (e.g. 7 P's including place, price, product, and promotion) Use of market research tools and techniques to identify customer needs (e.g. market segmentation, gap analysis, competitor analysis)
		6.2	Explain the impact of packaging on branding, product promotion and advertising	<ul style="list-style-type: none"> For a range of different packed products, discuss the inter-relation between the pack and the product's brand image Branding and the impact of packaging on product promotion and advertising Importance of consistency of communication across brand elements and the inter-relation between the pack, promotion, and advertising in different products
		6.3	Summarise how packaging design interacts with the supply chain and the end user	<ul style="list-style-type: none"> Structural (e.g. size, colour, shape, texture, shelf fit) Functional (e.g. dispensing, opening/closing, storing, smart and active) Graphical (e.g. colour, graphics, typographic, fonts) Inclusive packaging design for people with limitations (e.g. with use of hands or of their sight). <p>Above are awareness only for more detail see Unit 2 LO8</p> <ul style="list-style-type: none"> Use of technology to enhance user experience (e.g. experience/engagement through Augmented Reality (AR) and Virtual Reality (VR))

UNIT 2 – UNDERSTANDING PACKAGING MATERIALS AND COMPONENTS

Ofqual Unit No: K/650/2134

Guided Learning Hours: 57

Unit Level: 5

Unit Credits: 27

Grading Structure: Pass, Merit and Distinction

Learning Outcomes: what you need to know/understand		Assessment Criteria: what you need to do		Indicative Content
1.0	Understand the properties and manufacture of glass packaging	1.1	Describe in detail conversion processes from raw material to packaging item	<ul style="list-style-type: none"> The preparation and function of the main raw materials. Comparative properties and uses of glass (container glass and type I, II & III pharmaceutical glass). Use of recycled materials and impact on material performance. Main manufacturing processes of bottles and jars (e.g. press and blow, blow and blow, narrow neck press and blow) from raw materials to finished container. An overview of the decorative processes for glass (e.g. embossing, de-embossing, shape, colour, surface effects, frosting, ceramic decals, screen printing, labels, and sleeves). Awareness of forming and firing of ceramic bottles, jars, and ramekin. Awareness of tubular glass manufacture and use (e.g. ampoules and vials). Quality aspects and testing, typical defects, on-line and off-line inspection methods. Packing, labelling and traceability of batches.
		1.2	Describe how the processes can be controlled and modified to achieve the desired properties	<ul style="list-style-type: none"> Modification of material properties and performance (e.g. additives, colours, shape, annealing). Materials used for coating, glazing, coating processes and why coatings are used. Compare alternative conversion processes used to produce specific components.
		1.3	Evaluate the suitability of the material and format for the given application	<ul style="list-style-type: none"> Comparison of the use of different material types in terms of properties, performance with due consideration of environmental and commercial aspects as a basis for making an informed and justified selection of the most appropriate material for a range of uses.

Learning Outcomes: what you need to know/understand	Assessment Criteria: what you need to do		Indicative Content
			<ul style="list-style-type: none"> • The influence of product/pack compatibility. • Design considerations (e.g. colour, closures, filling lines, display and storage and use by the end user).
		1.4	<p>Produce a specification for a given component or material and describe methods of testing to evaluate performance</p> <ul style="list-style-type: none"> • The different parts of a packaging specification – specification checklist. • Qualitative and quantitative aspects of a specification. • Identify key performance properties and discuss how they are tested and assessed. • Product/pack compatibility requirements. • Pack testing techniques and applications. Advantages and disadvantages of various tests.

Learning Outcomes: what you need to know/understand		Assessment Criteria: what you need to do		Indicative Content
2.0	Understand the properties and manufacture of metal packaging	2.1	Describe in detail conversion processes from raw material to packaging item	<ul style="list-style-type: none"> • Rigid & flexible metal packaging. • The preparation and function of the main raw materials. Awareness only of the extraction and smelting processes with output to sheet or reel. Comparative properties and uses of metals: aluminium; steel (black plate, tin plate & tin free steel). Use of recycled materials and impact on material performance. • Main manufacturing processes for food, beverage and general line cans, aerosol, and toiletry applications from raw materials to finished container. • Two and three-piece cans and can ends, impact extrusion, foils and trays. (Vacuum metalisation see Unit 2 LO9). • An overview of the decorative processes for metals (e.g. embossing, de-embossing, shape, surface printing pre and post forming and labels). • Quality aspects and testing, typical defects, on-line and off-line inspection methods. Packing, labelling and traceability of batches.
		2.2	Describe how the processes can be controlled and modified to achieve the desired properties	<ul style="list-style-type: none"> • Modification of material properties and performance (e.g. alloys, tempering, annealing and shape). • Materials used for coating, coating processes and why coatings are used. • Combining aluminium with other materials, laminations and metalisation (refer to Unit 2 LO9). • Compare alternative conversion processes used to produce specific components.
		2.3	Evaluate the suitability of the material and format for the given application	<ul style="list-style-type: none"> • Comparison of the use of different material types in terms of properties, performance with due consideration of environmental and commercial aspects as a basis for making an informed and justified selection of the most appropriate material for a range of uses. • The influence of product/pack compatibility. • Design considerations (e.g. closures, filling lines, display and storage and use by the end user).

Learning Outcomes: what you need to know/understand	Assessment Criteria: what you need to do	Indicative Content	
		2.4 Produce a specification for a given component or material and describe methods of testing to evaluate performance	<ul style="list-style-type: none"> • The different parts of a packaging specification – specification checklist. • Qualitative and quantitative aspects of a specification. • Identify key performance properties and discuss how they are tested and assessed. • Product/pack compatibility requirements. • Pack testing techniques and applications. Advantages and disadvantages of various tests.

Learning Outcomes: what you need to know/understand		Assessment Criteria: what you need to do		Indicative Content
3.0	Understand the properties and manufacture of fibre-based packaging	3.1	Describe in detail conversion processes from raw material to packaging item	<ul style="list-style-type: none"> • The preparation and function of the main raw materials. Comparative properties and uses of paper & board including regenerated cellulose. Use of recycled materials and impact on material performance. • Main manufacturing processes of papers, boards, solid board and corrugated from raw materials to material ready for conversion. • Main conversion processes of papers, boards, solid board and corrugated from material ready for conversion to finished container (e.g. cartons, bags, sacks, sleeves, corrugated cases, spiral, linear and convolute wound containers, liquid package cartons, trays, moulded pulp). • Common shapes and terminology for converted components (e.g. carton, case, and bag styles). • Uses and properties of wood in packaging (e.g. pallets and crates, decorative wood boxes, wooden utensils (e.g. lollipops) and trays). • Other fibre-based packaging such as processing of natural cork, hessian sacks, jute bags and sacks and woven string. • An overview of the decorative processes used (e.g. embossing, de-embossing, printing, and labels). • Quality aspects and testing, typical defects, on-line and off-line inspection methods. Packing, labelling and traceability of batches.
		3.2	Describe how the processes can be controlled and modified to achieve the desired properties	<ul style="list-style-type: none"> • Modification of material properties and performance (e.g. use of both virgin and recycled materials and impact on performance, processing of pulp, dyes and additives, conversion of pulp, shape, environmental conditions). • Materials used for coating, coating processes and why coatings are used. • Compare alternative conversion processes used to produce specific components. • Combining paper/board with other materials, laminations and metalisation (refer to LO9) • Overview of chemical and thermal processes for wood (e.g. pallets).

Learning Outcomes: what you need to know/understand	Assessment Criteria: what you need to do		Indicative Content	
		3.3	Evaluate the suitability of the material and format for the given application	<ul style="list-style-type: none"> • Comparison of the use of different material types in terms of properties, performance with due consideration of environmental and commercial aspects as a basis for making an informed and justified selection of the most appropriate material for a range of uses. • The influence of product/pack compatibility. • Design considerations (e.g. closures, filling lines, display and storage and use by the end user).
		3.4	Produce a specification for a given component or material and describe methods of testing to evaluate performance	<ul style="list-style-type: none"> • The different parts of a packaging specification – specification checklist. • Qualitative and quantitative aspects of a specification. • Identify key performance properties and discuss how they are tested and assessed. • Product/pack compatibility requirements. • Pack testing techniques and applications. Advantages and disadvantages of various tests.

Learning Outcomes: what you need to know/understand		Assessment Criteria: what you need to do		Indicative Content
4.0	Understand the properties and manufacture of plastic packaging	4.1	Describe in detail conversion processes from raw material to packaging item	<ul style="list-style-type: none"> • An awareness of the different polymerisation processes for common packaging plastics including Low Density Polyethylene (LDPE), High Density Polyethylene (HDPE), Polypropylene (PP), Polystyrene (PS), Polyvinyl Chloride (PVC) and Polyethylene Terephthalate (PET). • Understand the factors which influence the way polymers perform (see below). • The preparation and function of the main raw materials and additives (see below). • Main manufacturing and conversion processes of cast and blown film, thermoforming, profile extrusion moulding (e.g. tubes, zips), injection moulding, compression moulding (thermoset and thermoplastic), extrusion blow moulding and injection blow moulding, stretch blow moulding, Expanded Polystyrene (EPS) moulding and rotational moulding from polymer to finished component. • Processes for mechanical and chemical recycling of polymers. • Design considerations for common manufacturing processes. • Combining flexible films with other materials, laminations and metalisation (refer to Unit 2 LO9) • An overview of the decorative and coating processes. • Quality aspects and testing, typical defects, on-line and off-line inspection methods. Packing, labelling and traceability of batches.
		4.2	Describe how the processes can be controlled and modified to achieve the desired properties	<ul style="list-style-type: none"> • Understand the factors which influence the way polymers perform: • thermoset v. thermoplastic v. thermoplastic elastomer • homopolymers v. copolymers • chain structure and molecular arrangement (e.g. chain branching and molecular orientation) • effect of crystallinity and polarity on polymer properties • polymerisation and the role of initiators/catalysts • additives (e.g. colour, heat stabilisers, antioxidants, UV stabilisers and inhibitors, slip agents, anti-static agents, anti-fogging agents and nucleating agents)

Learning Outcomes: what you need to know/understand	Assessment Criteria: what you need to do	Indicative Content
		<ul style="list-style-type: none"> • bio-polymers, bio-sourced conventional v. bio-based polymers • Use of recycled materials and impact on material performance • Overview of the properties of the main plastic packaging materials (LDPE, HDPE, PP, PS, PET, PVC and Polyamide (PA)) and other specialist plastics (for example polycarbonate (PC), Styrene acrylonitrile resin (SAN), Acrylonitrile butadiene styrene (ABS), <i>High Impact Polystyrene</i> (HIPS), Polyvinylidene chloride (PVdC), ethylene vinyl alcohol (EVOH), ionomer (e.g. surlyn), <i>Polyvinyl Alcohol</i> (PVOH), ethylene vinyl acetate (EVA), poly vinyl acetate fluoropolymers, thermoplastic elastomers, bio-based plastics, bio-degradable plastics, and compostable packaging). • Treatments and materials used for modifying plastic surfaces (e.g. vacuum metalisation, acrylic, Polyvinylidene chloride (PVdC), anti-fog coatings, corona treatment).
	4.3	<p>Evaluate the suitability of the material and format for the given application</p> <ul style="list-style-type: none"> • Compare alternative conversion processes used to produce specific components. • The uses of one or more of the main materials in combinations as packaging material. The functions and advantages of different materials in combination. • Comparison of the use of different material types in terms of properties, performance with due consideration of environmental and commercial aspects as a basis for making an informed and justified selection of the most appropriate material for a range of uses. • The influence of product/pack compatibility. • Design considerations for manufacture, filling, and end use.
	4.4	<p>Produce a specification for a given component or material and describe methods of testing to evaluate performance</p> <ul style="list-style-type: none"> • The different parts of a packaging specification – specification checklist. • Qualitative and quantitative aspects of a specification. • Identify key performance properties and discuss how they are tested and assessed. • Product/pack compatibility requirements. • Pack testing techniques and applications. Advantages and disadvantages of various tests.

Learning Outcomes: what you need to know/understand		Assessment Criteria: what you need to do		Indicative Content
5.0	Understand adhesives & adhesive properties	5.1	Describe how adhesives bond materials together	<ul style="list-style-type: none"> Theories of adhesion: mechanical, specific/chemical, diffusion.
		5.2	Identify and characterise the different types of adhesives	<ul style="list-style-type: none"> Raw materials, performance properties, uses. Basic definitions: tack, open time, setting time, viscosity, solids content. Major adhesive types: starch and derivatives, emulsions (e.g. PVA), casein, cold seal, acrylic, curing adhesives, pressure sensitive, hotmelts. Overview of adhesive application methods. Comparisons of performance and cost. Specifications for adhesives
		5.3	Justify the use of a particular type of adhesive for a given product	<ul style="list-style-type: none"> Market overview: development of adhesives and reason for use, threats, and opportunities. Draw up the requirements for a good bond and explain how to test for bond strength as part of a production line operation. Factors affecting bond strength, testing bond strength, troubleshooting adhesive problems. Applications of the common packaging adhesives and how to select appropriate adhesives for a range of uses.

Learning Outcomes: what you need to know/understand		Assessment Criteria: what you need to do		Indicative Content
6.0	Understand the manufacture and use of labels	6.1	Describe the construction, materials, manufacture, and use of a given type of label	<ul style="list-style-type: none"> • Major label types available and the common materials used (e.g. glue applied/wet glue, self-adhesive, shrink sleeve, stretch sleeve, in-mould, tags and neck collars, liner less, booklet labels). • Label machinery application (Refer to Unit 3 LO2) • Important material properties for each major label type. • Designing, developing, and specifying for labels. • Label troubleshooting issues (e.g. butterflying, grain direction on wet glue labels, Cobb values, wrinkles, open times, not in the right place, tears, etc.).
		6.2	Compare the advantages and disadvantages of different label types	<ul style="list-style-type: none"> • Advantages and disadvantages, common uses. • A comparison of the performance of different label and material type.
		6.3	Justify the use of a particular type of label for a given product	<ul style="list-style-type: none"> • Market overview: development of labels and reason for use, threats, and opportunities, sustainability considerations. • Appropriate adhesive used with a given label. • Applications of the common label types onto chosen surface.

Learning Outcomes: what you need to know/understand		Assessment Criteria: what you need to do		Indicative Content
7.0	Understand the application and use of closure systems	7.1	Describe the functionality of different types of pack closures and seals	<ul style="list-style-type: none"> • Major pack closure types (mechanical, adhesive & heat sealed) and the materials used. • Difference between a supplier (e.g. base of steel cans), filler (e.g. closed end of tubes) and consumer closures (e.g. reclosable lids). • Differentiation between closure systems and accessing product. • Decoration processes available. • Identification of important material properties for effective seal. • Designing, specifying, evaluating performance. • Special closure applications: child resistance, tamper evidence, measuring and dispensing features (e.g. pumps and aerosols).
		7.2	Assess the factors that affect closure efficiency and integrity, and how these are evaluated	<ul style="list-style-type: none"> • Closure efficiency and integrity and the functions of packaging, possible conflict with consumer convenience (e.g. easy opening). • Trouble shooting closure problems • Evaluating closure performance: different types of testing.
		7.3	Justify the use of a particular pack closure system	<ul style="list-style-type: none"> • Various ways in which packs are closed and, for each, the factors which influence seal efficiency and integrity. • Closure, pack, and product compatibility. • End use functionality and user interaction (e.g. openability & recloseability). • Sustainability considerations.

Learning Outcomes: what you need to know/understand		Assessment Criteria: what you need to do		Indicative Content
8.0	Understand printing and decoration processes used in packaging	8.1	Define colour and explain what affects the way we see colour and how colours are achieved in printing.	<ul style="list-style-type: none"> Basics of physics of colour and measurement. Colour printing: use of CMYK (cyan, magenta, yellow, and key (black)), juxtaposition of dots, dot size and print quality, screen angles, limitations of CMYK, use of special colours and bespoke colour palettes or enlarged colour gamut systems.
		8.2	Summarise the steps in the process by which initial graphic design concepts are transformed into printed packaging materials.	<ul style="list-style-type: none"> Graphic and structural design principles: <ul style="list-style-type: none"> Structural (e.g. size, colour, shape, texture, shelf fit) Functional (e.g. dispensing, opening/closing, storing, smart and active) Graphical (e.g. colour, graphics, typographic, fonts) Inclusive packaging design for people with limitations (e.g. with use of hands or of their sight). The process steps in design and reproduction: <ul style="list-style-type: none"> Idea (a new product, an update, a promotion...). Integrated graphical packaging design including mock-up and digital visualizations of the packaged product. Develop physical structure concepts and sample making. Prepress - Prepare design for volume production including scanning, image assembly and setting (sheet layout). Proofing, confirm correct colour reproduction, limitations of proofs, copy, setting approved standards and sign off procedures. Plate making.
		8.3	Describe the main printing and decorating processes used in packaging and justify their use in given applications.	<ul style="list-style-type: none"> Printing processes: letterpress, dry offset letterpress, flexographic, gravure, lithographic, screen, tampo, digital. For each process: control of substrate, plate type, ink type, ink transfer, drying, setting standards, maintaining colour consistency. Other major processes: varnishing, lacquering, hot and cold foil blocking, embossing, heat transfer printing, ceramic decals. Apply finishing to individual packages: embossing/foiling, cutting, creasing, folding, gluing. Advantages and disadvantages, applications, and pack types.

Learning Outcomes: what you need to know/understand	Assessment Criteria: what you need to do	Indicative Content		
				<ul style="list-style-type: none"> Specifying requirements, quality aspects and testing, typical defects, on-line and off-line inspection methods. Packing, labelling and traceability of batches.
		8.4	Describe the application and use of variable data	<ul style="list-style-type: none"> Techniques of application of variable data (e.g. thermo transfer, inkjet, laser, embossing/debossing, hot foil stamping, etc.)

Learning Outcomes: what you need to know/understand		Assessment Criteria: what you need to do		Indicative Content
9.0	Understand how materials are combined to achieve required properties	9.1	Describe how materials can be combined to improve performance	<ul style="list-style-type: none"> • Cast and blown plastic film coextrusion • Rigid and semi-rigid plastic coextrusion • Coatings/metalisation on plastic, metals, paper (and glass) • Laminations: <ul style="list-style-type: none"> • wet bonding • dry bonding • extrusion • wax bonding
		9.2	Justify material combinations for given applications	<ul style="list-style-type: none"> • Identify material combinations used in rigid and flexible packaging (e.g. liquid cartons, sachets, film laminates, retort pouches, tubes laminates, lidding materials, thermoformed trays, coextruded bottles, etc.). • Justification of material inclusion in multi-layer structure which include protection, aesthetics, machinability, and cost. • Justify packaging materials for given applications.

UNIT 3 - UNDERSTAND THE MANAGEMENT OF PACKAGING, PRODUCTION, AND BUSINESS PROCESSES

Ofqual Unit No: L/650/2135

Guided Learning Hours: 22

Unit Level: 5

Unit Credits: 10

Grading Structure: Pass, Merit and Distinction

Learning Outcomes: what you need to know/understand		Assessment Criteria: what you need to do		Indicative Content
1.0	Understand the packaging design and development process	1.1	Describe a typical packaging design and development process for new and existing products and identify the roles of different associated disciplines	<ul style="list-style-type: none"> Managing the packaging development process: defining requirements, agreeing levels of responsibility, decision-making, time scales, agreeing deadlines. Adaptation of process to meet the complexity of the change (e.g. minor print change, new packaging format, etc.). Typical major roles and their functions (e.g. designer; marketer; brand owner; public relations (PR) company). Awareness of different project management approaches (i.e., time, quality, cost, and risk assessment/methodologies). Awareness that some specific sectors have additional requirements such as pharmaceutical, hazardous goods, armed forces packaging, e-commerce packaging.
		1.2	Describe factors which must be considered when developing packaging for new and existing products	<ul style="list-style-type: none"> The processes of gathering information to develop a new pack, or change an existing pack, drawing up the packaging brief, designing for specific processes, materials, and equipment, agreeing standards. Economic considerations - income and expenditure, fixed and variable costs, break-even, profit and selling price. What makes up the cost of packaging (e.g. special colour more expensive than CMYK (cyan, magenta, yellow, and key (black)), same for <i>ultraviolet (UV)</i> varnish, foil blocking, metallised board etc). Environmental considerations – packaging optimisation, how the material is made, life cycle analysis (LCA) on material sustainability, end of life issues (refer to Unit 1) Graphic and functional design and the functions of packaging (refer to Unit 1)

Learning Outcomes: what you need to know/understand	Assessment Criteria: what you need to do		Indicative Content
			<ul style="list-style-type: none"> • Data capture from consumers/retailers to assist with design and material usage. Design for marketing and brand requirements, colour schemes and families of packaging. • Materials to be used - conventional and more recent alternatives, anti-counterfeiting, prevention of theft techniques, and RFID. • Communicating information. • Legislative requirements
		1.3 Explain how test programmes are developed, managed, and evaluated	<ul style="list-style-type: none"> • Developing and managing test programmes to evaluate how products perform on the packaging line and in the supply chain (shipping & abuse tests (i.e., will the product survive the handling expected in distribution (e.g. Drop, vibration, compression, and climatic testing))). • Time requirements for testing. • Product/packaging compatibility and shelf life. • Design fulfilment (e.g. does the pack meet the project objectives) • Testing for market appeal, end use performance and disposal (refer to Unit 1).

Learning Outcomes: what you need to know/understand		Assessment Criteria: what you need to do		Indicative Content
2.0	Understand packaging machinery and packing line operations	2.1	For a given operation describe a packing line from delivery of components to removal of the finished product	<ul style="list-style-type: none"> • Mapping out a packing line, showing each sequential station in the line. Basics of operation of: <ul style="list-style-type: none"> • Bring required materials to the line (e.g depallisation, orientation of components) • Initially quality/due diligence checks. • Fillers (solids, liquids, pastes). • Assembly and closing of initial packs <ul style="list-style-type: none"> • E.g. Form, fill and seal operations: vertical, horizontal flow wrappers, sachet forming. • E.g. threaded closures and friction fit, Roll-on-pilfer-proof (ROPP), induction seal, crown, can end, etc. • E.g. Cartoners (horizontal and vertical feed, glued end, tuck flap, auto-erect etc.). • Product processing (e.g. inline processes: pasteurisation and sterilisation, chilling and freezing, aseptic filling) • Labellers (wet glue, self-adhesive, sleeves, neck collars, tags). • Miscellaneous: twist wrapping, bunch wrapping, roll wrapping, adding inserts etc. • Collation and/or multi packing (e.g. corrugated outer, trays/shrink wrap, shrink wrap) • Tertiary packaging (e.g. pallets, layer pads, stretch wrap) • Coding and labelling at various stages of the process. • Location of accumulators • On and off-line quality/due diligence checks at various stages of the process.
		2.2	Describe in detail the principals and practical operations of individual filling and packaging assembly processes	<ul style="list-style-type: none"> • Manual, semi-automatic and fully automatic operations • For each operation, study the critical product and material performance requirements, product/material/machine interfaces and tolerances for a range of products and packaging materials. • Orientation of packaging to the line <ul style="list-style-type: none"> • Closures, films, trays and bottles

Learning Outcomes: what you need to know/understand	Assessment Criteria: what you need to do	Indicative Content	
		<ul style="list-style-type: none"> • Product metering and filling systems (i.e. getting the correct amount of item into the pack) <ul style="list-style-type: none"> • Wet filling - constant level and constant volume fillers • Dry filling - volumetric, count and weight filling • On-line package formation <ul style="list-style-type: none"> • Vertical and horizontal form fill seal, sachets, thermoformed and blister packs, preformed pouches, wrapping. • Carton machines and systems and leaflet insertation. • Closing <ul style="list-style-type: none"> • Mechanical, heat seal and adhesive closing technologies at different stages of the process • Labelling <ul style="list-style-type: none"> • Label application machinery (refer to Unit 2 LO6 for label types) • Collation <ul style="list-style-type: none"> • Secondary or multi packs (e.g. corrugated outer, trays/shrink wrap, shrink wrap) • Carton/case/tray machines and systems • Palletisation systems and removal of finished stock 	
		<p>2.3 Assess the factors that impact packing line efficiency and discuss how they are managed and improved</p>	<ul style="list-style-type: none"> • Packing lines: considerations for line design, capital investment, timescale, staffing levels and training, service, utilities and maintenance activities required, understanding of basic cost of machinery, relating machine specification, safety and hygiene and expected performance to material specification and performance. • Factors which need to be considered for line performance (e.g. line layout, pack shape/size, automated and manual processes/equipment) • Calculation of line efficiency from given data on individual equipment speeds and consideration of how line efficiency may be improved to maximise line speed (running speed, product

Learning Outcomes: what you need to know/understand	Assessment Criteria: what you need to do	Indicative Content	
			<p>quality and downtime). Measurement of performance using key performance indicators.</p> <ul style="list-style-type: none"> • Product and pack inspection factors (Product category – food versus pharmaceuticals, Severity of the failure – customer safety (<i>Hazard Analysis and Critical Control Point (HACCP)</i> plan), Level of risk in process – stability of process, Availability of proven systems, Good Manufacturing Practice (GMP) and Legal requirements/Due Diligence) • Problem solving on the packaging line. Fact based problem solving – evidence. Collect data – historical and present. Look for coincidences, timing, symptoms, people etc. Root Cause Analysis process. Six Sigma.

Learning Outcomes: what you need to know/understand		Assessment Criteria: what you need to do		Indicative Content
3.0	Understand quality and business management in packaging	3.1	Discuss the management processes which can be used to ensure the appropriate quality of a product	<ul style="list-style-type: none"> • Understand and define "quality" • Understand customer needs • Differentiation between quality control (QC) and quality assurance (QA) • Definition and elements of a quality management system (e.g. ISO 9000/BRCGS): <ul style="list-style-type: none"> • The organisational structure, responsibilities, procedures, processes and resources for implementing quality management. • Including product and packaging development, purchasing, recruitment and training and production processes. • Responsibility for each activity should be declared, along with procedures for the operation of each activity (sometimes known as Standard Operating Procedures or Work Instructions). • Testing and evaluation (e.g. certificates of analysis, vendor assurance, inspection regimes, agreeing standards and methods of testing)
		3.2	Evaluate the importance and content of a packaging component specification	<ul style="list-style-type: none"> • Purposes of specifications (e.g. communicate exact needs, legal contract, managing cost, provide basis for judging production, fair basis for quotations and benchmark for improvement) • Types of specifications (e.g. Purchasing, Manufacturing, Materials and Performance) • Generic information (e.g. what's the purpose, who is the company, who signs it off, etc.) • Specific component related information (e.g. dimensions, graphics, performance properties (e.g. strength, barriers, etc.), tolerances and on-line and supply chain performance) • Pack testing criteria • Acceptable quality limits (AQLs), critical, major, and minor defects, product manufacturing tolerances

Learning Outcomes: what you need to know/understand	Assessment Criteria: what you need to do		Indicative Content
	3.3	Discuss the factors to be taken into consideration when managing packaging related business processes and risks	<ul style="list-style-type: none"> • <u>Awareness</u> of different tools and industry standards only: <ul style="list-style-type: none"> • Project management tools (e.g. Program Evaluation Review Technique (PERT), critical path analysis) • Hazard and risk management (e.g. HARM, Hazard Analysis and Critical Control Point (HACCP)) • Product life cycle analysis • Statistical process control (SPC) • Supplier management: approval and risk management processes
	3.4	Describe the factors which contribute to the total packed cost of a product	<ul style="list-style-type: none"> • Factors affecting cost throughout the supply chain; consideration of each stage, from packaging manufacturer through to sale of finished packed product • Impact of fixed and variable costs (e.g. efficient use of materials and labour) <ul style="list-style-type: none"> • Economic order quantity (minimal order quantity, cost of stock holding, cost of stock, factors affecting stock holding, ways of reducing stock, how quality affects cost across all aspects of a business) • Quality costs (Producing consistent quality goods) • Depreciation of capital, return on investment • Budgetary control - importance of agreement at key stages to control expenditure, especially when custom tooling and/or packaging machinery is required (return on investment on capital goods), cashflow management.

ASSESSMENT

This qualification is assessed by four 2-hour examinations and one 5,000-word written project.

Unit	Examinations
1	One 2-hour written examination, combination of short-answer format and long-answer format.
2	Two 2-hour examinations (Paper A and Paper B) hour written examination, combination of short-answer format and long-answer format. Unit 2 (Paper A) examination will cover learning outcomes 1, 2, 3 and 4 and Unit 2 (Paper B) will cover learning outcomes 5, 6, 7, 8 and 9.
3	One 2-hour written examination, combination of short-answer format and long-answer format.

For the 5,000-word written project candidates can choose either to do a workplace packaging related research project or an annual topic published by PIABC. If candidate choose to undertake the annual topic, then candidate must submit the project for marking within that year.

Each examination and the project are graded *Pass*, *Merit* or *Distinction*. For a **Pass** the overall mark is 50 - 59%, for a **Merit** is 60 – 69% and over 70%+ for a **Distinction**.

The grading structure for each examination and the project is not subject to change.

QUALIFICATION CERTIFICATION

The full qualification is available at *Pass*, *Merit* or *Distinction* to candidates who successfully complete all the units.

The final qualification grade is worked out as follows:

- For all units and project achieved at a **Pass** level, 5 points are awarded towards the final Diploma grade.
- For all units and project achieved at the **Merit** level, 10 points are awarded towards the final Diploma grade.
- For all units and project achieved at the **Distinction** level, 15 points are awarded towards the final Diploma grade.

When all points are aggregated, the following will determine the overall qualification grade:

- Pass 20 – 34 points
- Merit 35 – 49 points
- Distinction 50+ points

Examples:

- **Candidate 1:** 3 passes and 1 merit. 3 x 5 points plus 1 x 10 points = 25 points, therefore overall **pass**
- **Candidate 2:** 2 passes, 1 merit and 1 distinction. 2 x 5 points, plus 1 x 10 points, plus 1 x 15 points = 35 points therefore overall **merit**
- **Candidate 3:** 1 pass, 2 merits and 1 distinction. 1 x 5 points plus 2 x 10 points plus 1 x 15 points = 40 points, therefore overall **merit**
- **Candidate 4:** 1 pass and 3 distinctions. 1 x 5 points, plus 3 x 15 points = 50 points therefore overall **distinction**

Unit Certification: Unit certification is available to candidates who successfully complete full individual units, but who do not wish to complete the full award.

The overall grading structure for the qualification is not subject to change.

GLOSSARY

Term	Definition
Learning outcome	This describes what a learner needs to know, understand or do as a result of the process of learning
Assessment criteria	These are the requirements learners are expected to meet to demonstrate that a learning outcome has been achieved.
Indicative content	Indicative content provides examples of the range of content learners are expected to cover in programmes preparing them for assessment.
Indicative approach	Indicative approach provides an example of the steps learners may take in developing and producing a project.
Primary Packaging	'Primary' or 'Sales' packaging is packaging which forms a sales unit for the user or final consumer, for example, a box containing soap powder.
Secondary Packaging	'Secondary' or 'Grouped' packaging is that which contains a number of sales units, for example, a cardboard outer containing a number of boxes of soap powder.
Tertiary Packaging	'Tertiary' or 'Transport' packaging is packaging that is used to group secondary packaging together to aid handling and transportation and prevent damage to the products, for example, the pallet and shrink wrap used to transport a number of cardboard outers containing boxes of soap powder.
Packaging	Packaging is defined as "all products made of any materials of any nature to be used for the containment, protection, handling, delivery and preservation of goods from the producer to the user or consumer."
Life Cycle Analysis	Life Cycle Analysis is a technique that quantifies the environmental burdens of a total pack in terms of its consumption of raw materials and energy, and the emissions to air, water and the solid waste stream, during its life.
Life Cycle Assessment	A Life Cycle Assessment is a qualitative interpretation of Life Cycle Analysis results that classifies and evaluates the effect of these results on environmental concerns such as global warming, ozone depletion and acid rain.
Marketing	Marketing is the management process responsible for identifying, anticipating and satisfying customer requirements profitably. (Source: Chartered Institute of Marketing)

FURTHER INFORMATION

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