



## **Qualifications**

### **Diploma in Packaging**

#### **Module 2**

### **Examination Syllabus 2019**

## Unit 1: Quality

Topic	Candidates should understand and be able to demonstrate using detailed examples:
Quality control	<ul style="list-style-type: none"> <li>• Keg and cask inspection</li> <li>• Analytical and on-line measurement techniques</li> </ul>
Laboratory analysis	<ul style="list-style-type: none"> <li>• The basic concepts applied to interpretation of analytical data</li> <li>• The relevance of inter-laboratory collaborative checks</li> </ul>
Hygiene	<ul style="list-style-type: none"> <li>• Microbial contamination               <ul style="list-style-type: none"> <li>○ definition of microbial contamination</li> <li>○ typical microorganisms</li> <li>○ methods of detecting and quantifying residual surface contaminations</li> </ul> </li> <li>• Preventing microbial contamination               <ul style="list-style-type: none"> <li>○ underlying principles</li> <li>○ plant design</li> </ul> </li> <li>• Cleaning in place (CIP)</li> <li>• CIP principles               <ul style="list-style-type: none"> <li>○ factors affecting cleaning system performance</li> <li>○ composition of soil, scale and biofilms</li> <li>○ microbiology of cleaning</li> <li>○ safety requirements</li> </ul> </li> <li>• Detergents and sanitising agents               <ul style="list-style-type: none"> <li>○ detergent and sanitiser chemistry</li> </ul> </li> <li>• Design and operation of CIP systems               <ul style="list-style-type: none"> <li>○ design principles</li> <li>○ CIP of vessels, pipework and hoses</li> <li>○ types of CIP systems and their optimisation</li> </ul> </li> <li>• Detection and quantification of residual surface contamination</li> </ul>
Quality assurance	<ul style="list-style-type: none"> <li>• Quality assurance principles and practices               <ul style="list-style-type: none"> <li>○ concept of right first time</li> <li>○ total quality management</li> <li>○ practical application of quality assurance principles</li> </ul> </li> <li>• International standards               <ul style="list-style-type: none"> <li>○ structure and content of relevant standards</li> </ul> </li> <li>• Food safety</li> <li>• Food legislation               <ul style="list-style-type: none"> <li>○ international and national regulations</li> <li>○ labelling regulations</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• Procedures and controls <ul style="list-style-type: none"> <li>○ risk management</li> <li>○ due diligence</li> <li>○ contamination prevention</li> </ul> </li> <li>• Hazard Analysis Critical Control Point (HACCP) <ul style="list-style-type: none"> <li>○ hazards in terms of food safety</li> <li>○ key stages in a HACCP analysis</li> <li>○ maintaining a HACCP system</li> </ul> </li> </ul>
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## Unit 2: Operations Management

Topic	Candidates should understand and be able to demonstrate using detailed examples:
Line operations	<ul style="list-style-type: none"> <li>• Operating practices <ul style="list-style-type: none"> <li>○ organisational structure, culture, roles and responsibilities</li> <li>○ training needs and development</li> <li>○ interface with other departments</li> <li>○ maintenance</li> </ul> </li> <li>• Measuring performance <ul style="list-style-type: none"> <li>○ performance measures and their impact on plant efficiency and losses</li> <li>○ efficiency calculations</li> <li>○ time calculations</li> <li>○ changeovers</li> </ul> </li> </ul>
World class manufacturing	<ul style="list-style-type: none"> <li>• High performance work environments and cultures <ul style="list-style-type: none"> <li>○ Kaizen, Crosby, Lean and Six Sigma</li> <li>○ examples of world class standards</li> </ul> </li> <li>• Continuous improvement <ul style="list-style-type: none"> <li>○ the principles of continuous improvement</li> <li>○ techniques for problem solving</li> </ul> </li> </ul>
Finance	<ul style="list-style-type: none"> <li>• Basic revenue budgeting <ul style="list-style-type: none"> <li>○ accounting principles and conventions</li> <li>○ direct and indirect costs</li> <li>○ fixed and variable costs</li> <li>○ construction of departmental budgets</li> </ul> </li> <li>• Management accounting <ul style="list-style-type: none"> <li>○ annual budgets and period operating statements</li> <li>○ variance reporting</li> </ul> </li> <li>• Project management <ul style="list-style-type: none"> <li>○ project life cycle</li> <li>○ control of time and cost</li> </ul> </li> </ul>

Purchasing	<ul style="list-style-type: none"> <li>• Markets and suppliers</li> <li>• Specifications and tenders</li> <li>• Contract management</li> </ul>
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### Unit 3: Large Pack Operations

Topic	Candidates should understand and be able to demonstrate using detailed examples:
Fundamental considerations	<ul style="list-style-type: none"> <li>• Role and importance of keg and cask beer</li> <li>• Typical keg and cask line layouts <ul style="list-style-type: none"> <li>○ schematic diagrams showing configuration of complete line with all key plant items and conveying</li> <li>○ simple flow diagrams showing key plant items and product flow</li> </ul> </li> </ul>
Pre-filling operations	<ul style="list-style-type: none"> <li>• Container collation methods</li> <li>• De-unitising</li> <li>• External keg and cask washing and label removal</li> <li>• Keg orientation and spear torque tightness</li> </ul>
Theory and practice of keg and cask filling	<ul style="list-style-type: none"> <li>• Filling theory and principles <ul style="list-style-type: none"> <li>○ specific issues for beer</li> <li>○ the cleaning cycle</li> <li>○ keg sterilisation</li> <li>○ the filling cycle</li> </ul> </li> <li>• Design and operation of cleaning / filling machines <ul style="list-style-type: none"> <li>○ lane cleaning/filling machine</li> <li>○ rotary cleaning/filling machines</li> </ul> </li> <li>• Gases as a top pressure</li> </ul>
Post-filling operations	<ul style="list-style-type: none"> <li>• Labelling, coding and capping <ul style="list-style-type: none"> <li>○ purpose of labels and caps</li> <li>○ design and operation of labelling machines</li> <li>○ design and operation of coding machines</li> <li>○ design and operation of capping machines</li> </ul> </li> <li>• Keg tracking <ul style="list-style-type: none"> <li>○ purposes of keg tracking</li> <li>○ keg security</li> <li>○ systems for tracking</li> </ul> </li> <li>• Unitising</li> <li>• Warehousing <ul style="list-style-type: none"> <li>○ storage conditions and stock rotation</li> </ul> </li> </ul>

Draught beer dispense	<ul style="list-style-type: none"><li>• Design and operation of dispense equipment</li><li>• Hygiene</li><li>• Dissolved gas control</li><li>• Temperature control</li></ul>
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