



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

	<ul style="list-style-type: none"> • Procedures and controls <ul style="list-style-type: none"> ○ risk management ○ due diligence ○ contamination prevention • Hazard Analysis Critical Control Point (HACCP) <ul style="list-style-type: none"> ○ hazards in terms of food safety ○ key stages in a HACCP analysis ○ maintaining a HACCP system
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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"> • Operating practices <ul style="list-style-type: none"> ○ organisational structure, culture, roles and responsibilities ○ training needs and development ○ interface with other departments ○ maintenance • Measuring performance <ul style="list-style-type: none"> ○ performance measures and their impact on plant efficiency and losses ○ efficiency calculations ○ time calculations ○ changeovers
World class manufacturing	<ul style="list-style-type: none"> • High performance work environments and cultures <ul style="list-style-type: none"> ○ Kaizen, Crosby, Lean and Six Sigma ○ examples of world class standards • Continuous improvement <ul style="list-style-type: none"> ○ the principles of continuous improvement ○ techniques for problem solving
Finance	<ul style="list-style-type: none"> • Basic revenue budgeting <ul style="list-style-type: none"> ○ accounting principles and conventions ○ direct and indirect costs ○ fixed and variable costs ○ construction of departmental budgets • Management accounting <ul style="list-style-type: none"> ○ annual budgets and period operating statements ○ variance reporting • Project management <ul style="list-style-type: none"> ○ project life cycle ○ control of time and cost

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

Draught beer
dispense

- Design and operation of dispense equipment
- Hygiene
- Dissolved gas control
- Temperature control