WHISKY QUIZ · PRODUCTION SCIENCE

Whisky Production Master Quiz

Test your mastery of the complete distillery cycle: cereals, malting, water chemistry, fermentation science, pot still physics, and maturation.

HOST GUIDE & COMPLETE ANSWER KEY: Designed for pub quiz masters, whisky tastings, and society trivia nights. Questions include full multiple-choice options, marked correct answers, and 'Behind the Glass' factual explanations.

Q1. Why is two-row spring barley the grain of choice for Scottish malt distilling over other cereals?

[A] It contains more gluten than wheat, creating a thick mash bed.

[B] It has a high starch-to-protein ratio and generates enough natural diastatic enzymes during malting to convert its own starches into fermentable sugars.

[C] It ferments spontaneously without requiring added yeast.

[D] It imparts high levels of natural smoke flavour without burning peat.

CORRECT ANSWER: [B] It has a high starch-to-protein ratio and generates enough natural diastatic enzymes during malting to convert its own starches into fermentable sugars.

Behind the Glass: Barley is ideal because its husk protects the growing acrospire during malting and acts as a natural filter bed in the mash tun. Crucially, it possesses high starch reserves and self-sufficient diastatic enzymes (alpha- and beta-amylase) capable of converting starch into fermentable sugars.

Q2. During the steeping stage of malting, what target moisture content must the barley grain reach to initiate germination?

[A] Around 12% to 14%

[B] Around 20% to 25%

[C] Around 42% to 45%

[D] Over 85%

CORRECT ANSWER: [C] Around 42% to 45%

Behind the Glass: Dry barley arrives at maltings around 12% moisture. Through alternating cycles of immersion in cool aerated water and air rests (draining), the moisture level is raised to roughly 42% to 45%, signalling the embryo to wake up and start germinating.

Q3. What is the classic grist ratio produced by a four-roller Porteus or Boby mill for a traditional mash tun?

[A] 50% husk, 30% grits, 20% flour

[B] 20% husk, 70% grits (middlings), 10% flour

[C] 10% husk, 40% grits, 50% flour

[D] 33% husk, 33% grits, 34% flour

CORRECT ANSWER: [B] 20% husk, 70% grits (middlings), 10% flour

Behind the Glass: The standard distilling grist profile is approximately 20% husks, 70% grits, and 10% flour. The husks form the permeable filter bed at the base of the mash tun, the grits expose the starch for enzymatic breakdown, and flour is kept low to prevent a stuck, gummy mash.

Q4. At about what temperature is the first mashing water typically mixed with the grist, and why?

[A] Around 45°C to preserve yeast viability

[B] Around 62°C to 65°C, which suits the malt's amylase enzymes once the barley starch has gelatinised

[C] Around 85°C to extract tannins from the husks

[D] At boiling point (100°C) to sterilise the mash

CORRECT ANSWER: [B] Around 62°C to 65°C, which suits the malt's amylase enzymes once the barley starch has gelatinised

Behind the Glass: Barley starch gelatinises at about 51°C to 60°C, below normal mashing temperatures, so by about 62°C to 65°C it is ready for the enzymes. Beta-amylase works best at about 55°C to 65°C and alpha-amylase at about 63°C to 74°C, and mashing at about 65°C or below, with no wort boil, lets limit dextrinase survive into the washback.

Q5. How does a prolonged fermentation (70 to 100+ hours) alter the flavour profile of the resulting wash compared to a short 48-hour fermentation?

[A] It eliminates all alcohol, producing vinegar.

[B] After yeast exhausts sugars, surviving lactic acid bacteria drop the pH and synthesize complex, light, fruity and floral esters.

[C] It creates heavy sulfur and burnt rubber off-notes.

[D] It doubles the alcoholic strength of the wash to over 20% ABV.

CORRECT ANSWER: [B] After yeast exhausts sugars, surviving lactic acid bacteria drop the pH and synthesize complex, light, fruity and floral esters.

Behind the Glass: In short ferments (48 to 55h), yeast activity dominates, yielding a malty, cereal, and nutty wash. In long ferments (70 to 100h+), the yeast autolyses and resident lactic acid bacteria flourish, producing organic acids that react with alcohol to create bright, fruity esters and lactones.

Q6. How does the angle of the lyne arm (the pipe connecting the still neck to the condenser) influence the character of the spirit?

[A] An upward-sloping lyne arm increases internal reflux, producing a lighter spirit; a downward slope carries heavy compounds over into a meatier spirit.

[B] An upward-sloping arm cools the spirit faster, increasing ABV.

[C] A downward-sloping arm strips all peat smoke from the vapor.

[D] The lyne arm angle has no physical effect on spirit character.

CORRECT ANSWER: [A] An upward-sloping lyne arm increases internal reflux, producing a lighter spirit; a downward slope carries heavy compounds over into a meatier spirit.

Behind the Glass: An upward-angled lyne arm forces heavier vapors to condense and fall back into the pot for redistillation (reflux), allowing only the lightest, most volatile vapors over to create a delicate, floral spirit. A downward-sloping arm sweeps heavier congeners forward, creating a weightier, meatier spirit.

Q7. Why is copper universally used in the construction of Scotch pot stills?

[A] Copper is the only metal that can withstand an open flame.

[B] Copper chemically reacts with foul-smelling volatile sulfur compounds (mercaptans and dimethyl trisulfide) to precipitate them out, purifying the spirit.

[C] Copper adds caramel color directly to the distillate.

[D] Copper is legally required to make the still magnetised.

CORRECT ANSWER: [B] Copper chemically reacts with foul-smelling volatile sulfur compounds (mercaptans and dimethyl trisulfide) to precipitate them out, purifying the spirit.

Behind the Glass: Beyond being an excellent heat conductor, copper acts as a chemical scavenger. It binds with volatile sulfur compounds created during yeast fermentation, converting harsh, rotten-egg off-notes into insoluble copper salts and leaving a clean, fruity, and sweet spirit.

Q8. In a continuous Coffey column still, what are the names of the two main functional columns?

[A] The boiler and the extractor

[B] The analyser (stripping column) and the rectifier (fractionating column)

[C] The compressor and the purifier

[D] The mash column and the charcoal chamber

CORRECT ANSWER: [B] The analyser (stripping column) and the rectifier (fractionating column)

Behind the Glass: A Coffey still consists of the analyser, where rising steam strips alcohol vapors from descending beer wash, and the rectifier, where vapors rise through perforated bubble plates, continuously condensing and refining up to around 94% ABV.

Q9. What primary oak component breaks down during barrel toasting and charring to yield vanillin?

[A] Cellulose

[B] Lignin

[C] Tannins

[D] Hemicellulose

CORRECT ANSWER: [B] Lignin

Behind the Glass: Lignin is the complex wood polymer that, when subjected to cooperage heat (toasting and charring), thermally degrades into aromatic aldehydes, predominantly vanillin (vanilla) and syringaldehyde (spiciness).

Q10. What is the standard filling strength (ABV) at which most Scottish distilleries cask their new-make spirit into oak?

[A] 40.0% ABV

[B] Around 63.5% ABV

[C] 75.0% ABV

[D] Undiluted still strength (around 70% to 72% ABV)

CORRECT ANSWER: [B] Around 63.5% ABV

Behind the Glass: Centuries of operational experience and research proved that roughly 63.5% ABV strikes an optimal balance: water-soluble compounds (wood sugars) and alcohol-soluble compounds (lignin, vanillin, lactones) extract simultaneously at comparable rates.

Q11. What are the two major liquid and solid co-products left behind after mashing and first pot distillation?

[A] Draff (spent grains) from the mash tun, and Pot Ale (spent wash) from the wash still

[B] Spent lees and green malt

[C] Activated charcoal and fusel oil

[D] Barley husks and sour mash liquid

CORRECT ANSWER: [A] Draff (spent grains) from the mash tun, and Pot Ale (spent wash) from the wash still

Behind the Glass: The solid grain residue left in the mash tun is called 'draff', high in protein and fibre. The de-alcoholised acidic liquid left at the bottom of the wash still after the first distillation is called 'pot ale' (spent wash). Both are dried or concentrated into high-value animal feeds.

Q12. How does shell-and-tube condensing differ from traditional serpentine worm tub condensing in its impact on spirit character?

[A] Worm tubs provide vastly more copper contact, resulting in a lighter spirit.

[B] Shell-and-tube condensers provide high copper contact, creating a cleaner, lighter spirit; cold worm tubs restrict copper interaction, leaving heavier, sulfurous, meaty notes.

[C] Shell-and-tube condensers require no cooling water.

[D] Worm tubs are only used for continuous grain distillation.

CORRECT ANSWER: [B] Shell-and-tube condensers provide high copper contact, creating a cleaner, lighter spirit; cold worm tubs restrict copper interaction, leaving heavier, sulfurous, meaty notes.

Behind the Glass: Shell-and-tube condensers circulate vapors through hundreds of narrow copper tubes, maximising copper exposure and stripping sulfur. Worm tubs (spirals in cold water tanks) quickly crash-cool vapors with minimal copper contact, leaving residual sulfides that give spirits like Mortlach and Craigellachie their distinctive meaty weight.