Expert Whisky Quiz: Technical Distilling Science & Production Master

Team Name: _____ **Table No:** _____ **Score:** ____ / 15

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.

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%

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

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

[ ] A) Around 45°C to preserve yeast viability

[ ] B) Around 64°C to 65°C to gelatinise barley starch while keeping amylase enzymes active

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

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

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.

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.

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.

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

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

[ ] A) Cellulose

[ ] B) Lignin

[ ] C) Tannins

[ ] D) Hemicellulose

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)

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

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.

Q13. In prolonged Scottish washback fermentations lasting past 65 to 70 hours, what secondary microbiological event produces the complex lactic and tropical fruit notes prized by craft distillers?

[ ] A) Wild Brettanomyces yeast consumes copper residues on the tank walls.

[ ] B) Saccharomyces cerevisiae dies as sugar depletes, allowing wild lactic acid bacteria (LAB, such as Lactobacillus) to proliferate and generate organic acids that react with alcohol to form fragrant esters.

[ ] C) Acetic acid bacteria convert the entire wash into vinegar.

[ ] D) Yeast cells spontaneously generate nitrogen gas.

Q14. How does an upwardly inclined lyne arm (sloping upwards away from the pot still head) affect the chemical composition of the new-make spirit?

[ ] A) It forces heavy, high-boiling congeners, fusel oils, and sulfurous vapours to condense early and fall back into the pot as reflux, producing an exceptionally light, ester-driven spirit.

[ ] B) It speeds up distillation time by 50% through gravitational drainage.

[ ] C) It allows heavy oily compounds to spill directly into the condenser.

[ ] D) It converts ethanol into methanol.

Q15. During barrel charring and maturation, what major oak wood polymer degrades through thermal pyrolysis into coniferaldehyde, sinapaldehyde, and vanillin?

[ ] A) Cellulose

[ ] B) Hemicellulose

[ ] C) Lignin

[ ] D) Pectin