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QUESTION: As a microbiologist employed in Nigerian Breweries PLC, explain how you will employ your knowledge of this course in the quality control and quality assurance of products developed for consumers.

 QUALITY ASSURANCE

Quality assurance (QA) is a process to avoid mistakes/blunders and defects in a product and prevent obstacles when it is delivered to the customers. ISO 9000 defines quality assurance as “part of [quality management](https://www.educba.com/quality-management-planning/) focused on providing confidence that quality requirements will be fulfilled”. Quality assurance (QA) is a set of activities for ensuring quality in the processes by which products are developed. It’s a proactive process and aims to prevent defects by concentrating on the process used to make the product. The goal of QA is to improve development and test processes so that defects don’t arise when the product’s being developed.QA can be achieved by establishing a good quality management system and assessing its adequacy. What’s more, everyone on the team involved in developing a product is responsible for quality assurance.One good definition for a quality beer is therefore simply “a beer that consistently meets specification.” These words are of course quite a mouthful. The idea of a specification immediately requires that someone, at sometime and some place, has decided what the beer’s defining character(s) should be and how it should be measured. The idea of consistency immediately requires a system of people, plant, and process who are able to repeat exactly what they do time and again. Therefore, these ideas about quality are complicated and expensive but most useful.

## Reduces Cost and Waste

Having quality assurance in place is especially helpful to small businesses. It allows them to reduce extra costs that come with retesting, replacing and reselling faulty goods. When customers aren’t satisfied with a company’s products, the backlash can damage the company’s reputation, and negatively affect future products and even the entire company. Quality assurance might also save a company money in legal expenses, especially if its product isn’t up to industry standards.

## Creating and Managing a Team

If you choose a specific employee to do quality assurance, look for someone with the ability to handle repetitive tasks, be perfection-driven and willing to look deep into the root of an issue. The effort should be well-organized, with requirements for each case specified clearly. Track progress regularly and provide the tools needed to do the job well.

 QUALITY CONTROL

 Quality control is a product-based approach that concerns the activities and techniques that are used to fulfill the quality requirements.Quality control functions start right at the beginning of the project work; it is a reactive approach, which helps find defects in deliverables. The primary objective of the quality control process is to make sure that the deliverables are defect free and acceptable and based on the quality requirements.

****Specifications****

Setting up specifications is done all the time. Brewers decide on the basic properties of original gravity, color, and flavor and from this develop a formulation of raw materials and a process to extract what is wanted from them. Brewers should know how to read and use the specifications of the raw materials they buy. These specified items, however, become of singular importance when brewers must make the same beer many times and perhaps over many years, because specifications are nothing more or less than a list of beer properties that define the product.Beer specifications and the analyses that go with them are of two general kinds: (1) those that can be perceived by the human senses and (2) those that require instrumental analysis.

**Sensory methods:** Sensory methods are not necessarily easy to apply (and often ill used) but are useful and quite cheap to do. They include an analysis of beer flavor (undoubtedly beer’s most important attribute), beer clarity, color, and foam. Brewers who do not regularly and critically taste and visually examine their beers in a formal setting deny themselves much critical information.

**Instrumental Analysis**: The second kind of specification and analysis is not amenable to sensory testing. To decide whether these sorts of specifications have been met requires analysis by chemical tests or instruments. High on this list of “invisible” specifications has to be the original gravity (OG) and the degree of fermentability (hence alcohol content) of beers. These are most easily determined on wort but require an investment in some simple apparatus – a hydrometer and measuring cylinder.The degree of fermentability can be determined by a rapid fermentation test in which a high population of yeast cells, with frequent agitation, rapidly ferments out the wort. The difference between the starting and ending gravity in this test tells the degree of attenuation to be expected in the brewery fermentation and is a good predictor of the alcohol content of the beer. Consistent values for these specifications bespeak consistent mashing and so consistent products and give much information for little investment of time and money.

****Consistency****

The other aspect of the original definition of quality is “consistency” as in consistency of process, people, and product. Brewers generally behave in consistent ways when making beer. For example they repeat quite exactly the weights of malts and hops used, and the times and temperatures at which they are brewed (although temperature can be hit or miss, especially in some infusion systems, brewers should learn how to calculate.Generally, brewers are well aware of the need for specification and consistency (quality) in the brewhouse operations. That might be said with less confidence in cellar management — in wort aeration, fermentation temperature, and so on , and there is one glaring shortcoming in many breweries that is worth mentioning: control of the yeast pitching rate.The rate and extent of yeast growth intimately affects beer flavor, and yeast growth (all else being equal) arises from pitching rate. Ideally, the amount of yeast pitched should be a consistent number of living yeast cells (commonly 106 cells per milliliter per degree Plato) that can be determined directly by haemocytometer count under the microscope. This requires a decent laboratory and appropriate skills to go with it.

**Excellent Quality of Results**

Finding contaminants in beverages directly impacts product safety and potentially consumer health. It is essential for you to be able to rely on the quality of your results. That‘s why it is our priority to supply products that will ensure reliability – test after test.

**Outstanding Cost-Effectiveness**

When handling highly repetitive processes and heavy workloads, your time and financial resources are limited. We optimize your process and focus on your specific needs.

**Beverage Testing Expertise**

QIMA ofers beverage brands and retailers comprehensive solutions to guarantee the quality and safety of their products. Our on-site product inspectors check your merchandise at every step of the production process to ensure that it complies with your specification, and

provide you with detailed reports. You know everything about your production lot before it ships, so you can manage your supply chain effectively and never have to pay for defective product.

A separate issue from that dealt with here is quality assurance. Quality assurance (QA) has the same relationship to quality control (QC) as good financial records have to preparing one’s tax return. Thus QA has to do with the general status of the plant, process, and people as well as the product. QC deals with specific issues of specification and analysis focusing on the product only.

For example an excellent program of plant sanitation, or the decision to hire educated brewers, is a QA program with the objective of assuring low counts of foreign organisms in the beer. The QC analysis determines that low counts have been achieved. QA programs are essential to success in a brewery enterprise. The three pillars of QA are (1) specified raw materials, (2) consistent processing, and (3) rigorous sanitation.