Introducțion:

You are currently employed as a mailroom clerk with aspirations of being a fully credentialed laboratory technician at the Center for Bacteriological Discovery, located in the tropical island paradise of Tahiti. The Center handles many different species of bacteria on a daily basis, and it is very important that you know, without a doubt, what bacterium you are handling at any given time. Even mail clerks should know this, as anthrax though the mail has resulted in the deaths of postal workers. Failure to know this could result in danger to your health, which could lead to public health catastrophe, or even death. Recent budget cuts have resulted in lay-offs in the laboratory, so the time may be right for you to move up the ladder of success if you can prove your abilities.

Tâsk:

You will learn about the different types of media used by microbiologists to identify unknown organisms. This knowledge is the first step to your becoming a laboratory technician. Good luck!

1. Your first task is to visit the websites identified by your mentor (who is the Director of the CBD, Dr. Ineeda Moore-Help) so that you may learn how the media is used, what inoculation techniques are used, what a positive and negative result looks like, what kind of pH indicator might be used in certain media, and what color that indicator turns under certain acid or basic conditions.

2. Your second task is to create notecards summarizing the information required for the various types of media you encounter on the different websites you visit.

3. Your third task is to submit your notecards to Dr. Moore-Help for verification of information, who will then distribute your cards amongst others seeking the lab technician position for review using a rubric provided by Dr. Moore-Help.

Proces:

First...

Go to the web pages linked below and read the overviews of the different types of media you will be using to identify your unknown bacterium. Also, feel free to use your Laboratory
Manual. (The websites are a good beginning for finding the information, but you may have to do some additional research to find all of the answers.) Make notes on each type of media using a separate 4 x 6 notecard for each type. DO NOT concern yourself with which species of bacterium does what; you are to determine only how to recognize a positive versus a negative result in each type of media.

Catalase Test: http://www.austincc.edu/microbugz/catalase_test.php

Triple Sugar Iron Agar: http://www.austincc.edu/microbugz/triple_sugar_iron_agar.php

Carbohydrate Fermentation using Phenol Red Broth:
http://www.austincc.edu/microbugz/phenol_red_broth.php

Starch Agar: http://www.austincc.edu/microbugz/starch_hydrolysis.php


Eosin Methylene Blue (EMB) Agar:
http://www.austincc.edu/microbugz/eosin_methylene_blue_agar.php

Sulfide, Indole, Motility (SIM) Agar: http://www.austincc.edu/microbugz/sim_medium.php

Phenylalanine Agar: http://www.austincc.edu/microbugz/phenylalanine_deaminase_test.php

Methyl Red – Vogues Proskuer (MR-VP) Broth:
http://www.austincc.edu/microbugz/mrvp_test.php

Citrate Agar: http://www.austincc.edu/microbugz/citrate_test.php

Urea Broth: http://www.austincc.edu/microbugz/urease_test.php

Motility Agar: http://www.austincc.edu/microbugz/motility_test.php

Now...

Read over your notes and, on the back of your 4 x 6 notecard for each medium, answer the following questions:

1. What is this medium used to determine?

2. What enzyme, if mentioned, is the test used to detect? What is the enzyme’s substrate, if applicable?
3. What is the specific inoculation technique used for this medium? Note whether it is a broth or agar. If an agar, is it used as a slant or plate?

4. Is there a pH indicator used in this particular medium? If so, what? What color will the indicator turn under acid or alkaline conditions?

5. What indicates positive or negative reaction for this particular medium?

**Evaluation:**

Submit your cards to Dr. Ineeda Moore-Help (aka Dr. Smith) for verification of information, and each set of cards will be redistributed for evaluation, using the following rubric:

<table>
<thead>
<tr>
<th></th>
<th>Yes (12 points)</th>
<th>No (0 points)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Is each type of media included?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are all questions answered for each type of media?</td>
<td>Yes (5 points)</td>
<td>No (0 points)</td>
</tr>
<tr>
<td>How many of the answers are correct?</td>
<td>60 points</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>77 points (maximum)</td>
<td></td>
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</table>

**Conclusion:**

Congratulations! You have completed your entry-level tasks and are now eligible for promotion from the mailroom to the laboratory, pending the successful identification of an unknown organism that was received by Dr. Ineeda Moore-Help at her home through the Pineapple Express Delivery Service. She is very nervous about what this organism may be; if you can correctly identify it and put her mind at ease, the job is yours and you can name your salary in $ and Dollars.

Credits:

Dr. Molly Smith, Professor of Biology (aka Dr. Ineeda Moore-Help)
Sara Selby, Professor of English (aka Chief of the Grammar Police and Ineeda’s bff)