**The Urinary System Lab**

**Urinalysis**

1. Read the purpose and Questions
2. Hypothesis: create an answer to the question with a reason
3. Read the [Background Information](https://drive.google.com/file/d/1S1Ryni47LAR4IVzWpnCXy2bwfAjSGYww/view?usp=share_link)
4. Complete the Background Chart using the reading (fill in blank cells only)

**Purpose:** The purpose of this lab is to complete a urinalysis to determine the health condition of mock patients.

**Question:** How can a urinalysis determine the health of a patient?

**Hypothesis** (5 points):

**Background Chart:**

*(complete using background information) (20 points)*

| **Test** | **Normal Range** | **Abnormal Range** | **Possible Condition** |
| --- | --- | --- | --- |
| **pH** | 4.5-7.5 | Below 4.5; above 7.5 |  |
| **Glucose** | None |  |  |
| **Protein** | None |  |  |
| **Blood** | None |  |  |
| **Ketones** | Little or None | Large amount (sweet smell) |  |
| **Calcium** |  |  |  |
| **Color** |  |  |  |
| **Clarity** |  |  |  |
| **Odor** |  |  |  |
| **Bilirubin** |  |  |  |
| **Nitrites** |  |  |  |

**Other Notes:**

**Data and Evidence**

**Table 1. Qualitative Observations (10 points)**

| **Sample** | **Color & Clarity** | **Smell** |
| --- | --- | --- |
| **A** |  |  |
| **B** |  |  |
| **C** |  |  |
| **D** |  |  |

**Table 2. Quantitative Observations**

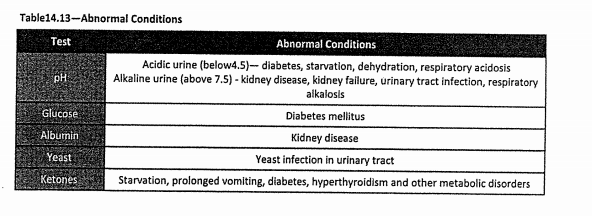
*-For pH- include the actual value*

*-For glucose, albumin, yeast, and calcium use negative or positive as data (30 points)*

| **Sample** | **pH** | **Glucose Test** | **ProteinTest** | **Calcium Test** |
| --- | --- | --- | --- | --- |
| **A** |  |  |  |  |
| **B** |  |  |  |  |
| **C** |  |  |  |  |
| **D** |  |  |  |  |

What is your diagnosis and why?\* Read biographical info on next page 15 points

| **Sample** | **Diagnosis** | **Reasons** |
| --- | --- | --- |
| **A** |  |  |
| **B** |  |  |
| **C** |  |  |
| **D** |  |  |

**Table 3. Biographical Information on Patients**

| **Patient A** | **Patient B** | **Patient C** | **Patient D** |
| --- | --- | --- | --- |
| 47-year old active female with a well-balanced diet. She enjoys sweets like chocolate and consumes 1-2 alcoholic beverages each week. Often tired, but this is job stress related. | Overweight 36-year old male. He has recently lost a significant amount of weight though he is constantly hungry and thirsty. He complains of feeling tired and run down frequently. | 21-year old female with fever and nausea. She is a vegetarian. She has been having trouble keeping both food and liquids down. She is not pregnant, but the doctor suspects a bacterial infection. | 65-year old female being examined as part of a routine check up. She is not complaining of any symptoms and generally feels fine. |

**Analysis and Conclusion**

**Form a paragraph using the following outline and rubric (70 points)**

**\*For the analysis, choose patient B, C or D. Compare to A as needed. ONLY write about 1 patient**

| Paragraph Components | Prompt | Rubric (grading criteria) |
| --- | --- | --- |
| **Claim or Topic Statement** | How can a urinalysis be used to diagnose metabolic disorders and/or other conditions?  -includes a topic statement (purpose or prediction) and background information (hypothesis) | *A statement or conclusion*  *that answers the original*  *question/ problem.*  *10 points* |
| **Body statements** | | |
| **Intro: normal urine** | What should be in normal urine? How is urine made (brief)?  5 points per part | * *Sentences support the claim with specific scientific information from notes, discussions, textbook or references* * *Relevant (Directly & clearly* * *responds to question)* * *Accurate (Consistent with* * *evidence and scientific principles)* * *Complete (Complete sentence* * *that stands alone as topic sentence.* * *Reasoning for hypothesis is supported with information from class that is relevant and accurate* |
| **Evidence: abnormal test results** | What tests did YOUR patient test "abnormal" for?  5 points |
| **Reasoning: explain data** | Explain how the evidence led to the diagnosis. What is happening to cause the test results?  20 points |
| **Extension: treatment & implications** | What is your treatment plan for the patient (non-prescription plan, no meds)? What will happen if the patient ignores your advice (implications)?  Helpful Websites:  [Try this website on kidney issues](https://www.niddk.nih.gov/health-information/kidney-disease/chronic-kidney-disease-ckd/eating-nutrition)  [Glucose in urine](https://www.medicalnewstoday.com/articles/326197#:~:text=Glycosuria%20is%20a%20condition%20in,diabetes%20and%20type%202%20diabetes.)  [Protein in urine](https://www.kidneyfund.org/all-about-kidneys/other-kidney-problems/protein-urine#:~:text=When%20your%20kidneys%20are%20not,that%20your%20kidneys%20are%20damaged.)  [Calcium in urine](https://www.mountsinai.org/health-library/tests/calcium-urine#:~:text=A%20high%20level%20of%20urine,may%20cause%20calcium%20kidney%20stones)  10 points per part |
| **Conclusion:** | *End with a conclusion related to the purpose of the lab (answer the question)*  *5 points* | ***Statement can stand alone as a claim without context and accurately answers the question stated at the start of the lab*** |

**\*For the analysis, choose patient B, C or D. Compare to A as needed.**