EXPERIMENT 10: CELLULAR RESPIRATION

Course Learning Outcome:
Solve problems related to transport system processes, mechanisms for adaptations in living things, ecological and environmental issues in biology.
(C4, PLO 2, MQF LOC ii)

Learning Outcomes:
At the end of this lesson, students should be able to:
i. Explain the concept of redox reaction in cellular respiration.
ii. Predict the biochemical processes in yeast suspension during presence and absence of oxygen.

Student Learning Time:

Face-to-face	Non face-to-face
1 hour	1 hour

Direction: Read over the lab manual and then answer the following questions.

Check this out: 

CORONA-19 pandemic is caused by SARS-CoV-2 virus. It began towards the end of 2019 in China, and soon became a worldwide epidemic, more than more than 649 000 people died and 16 million cases were accounted by 26 July 2020.

COVID-19 disease causes an energy supply deficit in a Patient. How?

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For further details related to the above headline, do click the URL below:
Wiley Online Library: https://onlinelibrary.wiley.com/doi/10.1002/er.5883

Let's take a break and sing along
cellular respiration song

Introduction

1. Define cellular respiration.

_____

_____

2. What is redox reaction?

   _____

3. Define operationally:
   a. Reduction: _____
   b. Oxidation: _____

4. Write the equation for cellular respiration

   _____

5. Name **ONE** substance as major source for aerobic respiration.

   _____

Experiment

1. State the variables for this experiment.
   a. Manipulative : _____
   b. Responding : _____
   c. Constant : _____

2. What is the role of methylene blue in this experiment?

   _____

3. State **TWO** electron carriers in cellular respiration.

   _____

   _____

4. **FIGURE 1** demonstrates redox reactions by substituting NAD^+ with methylene blue. Complete the table below that shows the colour changes of methylene blue as a redox indicator.

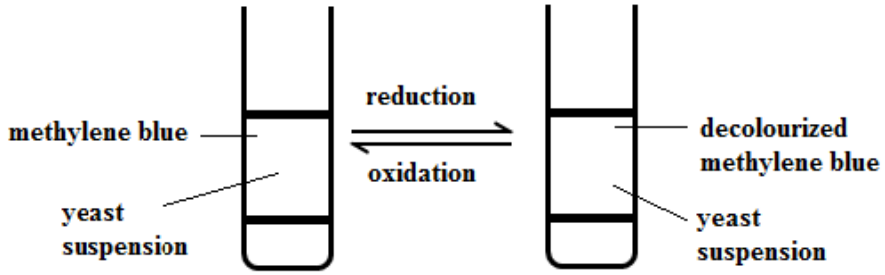

FIGURE 1

Redox reaction		
Methylene blue colour	Blue /greenish blue	white /light blue

Predict the colour changes of methylene blue and yeast suspension when the boiling tube:

a. Plugged with a cork and shaken vigorously:

_____

b. Cork is removed :

_____

5. What is the effect of heat to the yeast suspension and the enzymatic reaction?

_____

_____

6. Can the yeast undergo cellular respiration if the enzyme denatures? State the colour of the methylene blue.

_____

_____

7. List **TWO** precautions of the experiment:

i. _____

ii. _____