KATHMANDU UNIVERSITY
End Semester Examination
August/September 2017

Mark Scored :

Level : B. Pharm.
Year : II

Course : BIOL 206
Semester : II

Exam. Roll No. :

Time: 30 mins.

F. M. : 20

Registration No.:

Date :

SECTION "A"
[20 Q. × 1 = 20 marks]

Tick [√] the correct answer.

1. Organisms that use water to reduce carbon dioxide are:
   a. Oxygenic photoautotrophs
   b. Anoxygenic photoautrophs
   c. Chemoheterotrophs with oxygen as the final electron acceptor
   d. Chemoheterotrophs that do not use oxygen as the final electron acceptor

2. ADH requires NAD+ for catalytic activity. In the reaction catalyzed by ADH, an alcohol is oxidized to an aldehyde as NAD+ is reduced to NADH and dissociates from the enzyme. The NAD+ is functioning as a (an):
   a. apoenzyme
   b. coenzyme-cosubstrate
   c. coenzyme-prosthetic group
   d. cofactor

3. Ethanol frequently is the inhibitor given to treat ethylene glycol poisoning; it works by competitively inhibiting ADH. As a competitive inhibitor, ethanol:
   a. increases apparent Km without affecting Vmax
   b. decreases apparent Km without affecting Vmax
   c. increases apparent Vmax without affecting Km
   d. decreases apparent Vmax without affecting Km

4. In a solution, glucose is predominantly found in:
   a. α form
   b. β form
   c. linear form
   d. 5-membered ring form

5. What kind of reaction is the conversion of 2-Phosphoglycerate to Phosphoenolpyruvate?
   a. Isomerization
   b. Oxidation
   c. Reduction
   d. Dehydration

6. A fatty acid with 14 carbon atoms will undergo how many cycles of beta oxidation
   a. 7
   b. 4
   c. 6
   d. 5

7. Dietary fats are transported as:
   a. Micelles
   b. Chylomicrons
   c. VLDLs
   d. LDLs

8. The following is the sum of three steps in the citric acid cycle.
   $A + B + FAD + H_2O \rightarrow C + FADH_2 + NADH$
   Choose the lettered answer that corresponds to the missing "A", "B", and "C".

	Reactant A	Reactant B	Reactant C
a.	Succinyl CoA	GDP	Succinate
b.	Succinate	NAD+	Oxaloacetate
c.	Fumarate	NAD+	Oxaloacetate
d.	Succinate	NAD+	Oxaloacetate

9. Which one of the following conditions decreases the oxidation of acetyl CoA by citric acid cycle?
   a. A low ATP/ADP ratio
   b. A low NADH concentration due to rapid oxidation of NAD+
   c. A low NAD+/NADH ratio
   d. A high concentration of AMP

10. Which of the following statements about mitochondria is correct?
   a. The outer mitochondrial membrane is extensively folded.
   b. The mitochondrial matrix is filled with a solution of the glycolytic enzymes.
   c. The inner mitochondrial membrane is permeable because it contains pores.
   d. The inner mitochondrial membrane is extensively folded.

11. Which of the following electron transport chain component accepts only one electron?
   a. CoQ b. FAD c. Cyt b d. FMN

12. The enzyme that accomplishes the unwinding of the original double stranded DNA molecule, by breaking the hydrogen bonds that hold the two strands together is
   a. DNA Polymerase II b. DNA Polymerase I
   c. DNA Primase d. DNA Helicase

13. A pentose with a 2' OH group and 1' pyrimidine group describes with of the following
   a. Cytosine b. Thymine c. Thymidine d. Cytidine

14. Which of the following compound is shared by the citric acid cycle and urea cycle?
   a. Alpha-ketoglutarate b. Succinyl CoA
   c. Oxaloacetate d. Fumarate

15. Which of the following amino acids is not converted to Succinyl CoA?
   a. Methionine b. Valine c. Isoleucine d. Histidine

16. Protein synthesis rates in prokaryotes are limited by the rate of mRNA synthesis. If RNA synthesis occurs at the rate of 50 nucleotides/sec, then rate of protein synthesis occurs at
   a. 10 amino acids/sec b. 17 amino acids/sec
   c. 25 amino acids/sec d. d. 50 amino acids/sec

17. Which of the following statements is correct?
   a. Termination codon has no tRNA
   b. Activated amino acid binds to the 5'end of the respective tRNA molecule
   c. CTP is required for amino acid activation
   d. There is only 1 amino acyl tRNA synthetase in the cell

18. Which of the following cofactors is correctly matched with the vitamins it is derived from
   a. NADH-Vitamin B2 b. FADH2-Vitamin B3
   c. Pyridoxal Phosphate-Vitamin B1 d. d. TPP-Vitamin B1

19. Which of the following forms of Vitamin A is required for vision
   a. All cis-retinal b. All trans-retinal c. 11-cis retinal d. 11-cis retinol

20. How does testosterone act on cells
   a. Through nuclear receptor b. Through cytosolic receptor
   c. Through plasma membrane receptor d. Through secondary messenger

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SECTION "B"

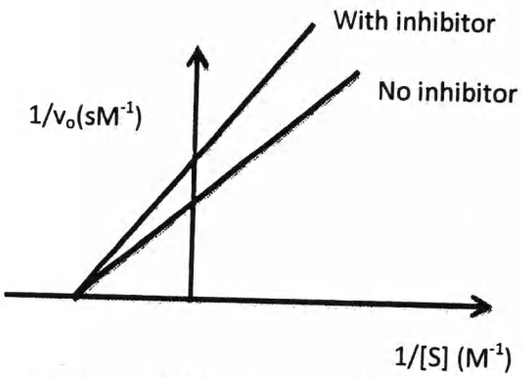
[5Q. × 3 = 15 marks]

Indicate by checking (√) of each question you have answered in the cover page of main answer book.

Answer *ANY FIVE* of the following questions:

1. What are some of the features living organism display?

2. What type of inhibitor does this lineweaver burk plot represent? Why? [1 + 2]



3. Sucrose is described as Fructose (2β→4) glucose. Draw the structure

4. What are two different strategies of forming phosphodiester bond of phospholipids?

5. In the citric acid cycle what is succinyl CoA and fumarate formed from and convert into? What is produced and taken up during their formation and consumption?

6. What does vitamin K deficiency cause? What are the sources of Vitamin K? [1 + 2]

7. Describe the three types of hormones based on the mode of reaching the target tissue.

SECTION "C"

[5Q. × 5 = 25 marks]

Answer *ANY FIVE* of the following questions

8. Write down differences between bacterial and eukaryotic electron transport chains. [5]

9. What is the difference between ketogenic and glucogenic amino acids? Draw the structure of tryptophan and describe its synthesis and breakdown. [1.5 + 3.5]

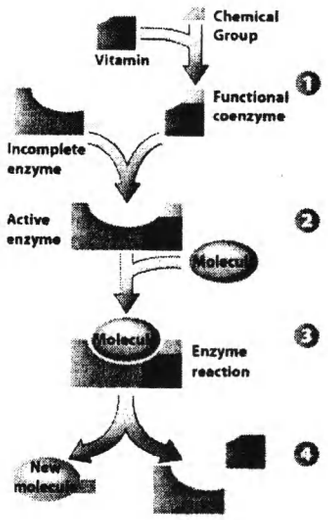
10. Describe the process of activation of an amino acid during protein synthesis.

11. Describe the structure of DNA.

12. Using all the assumptions derive the Michaelis Menten equation.

13. Describe complex 1 of the electron transport chain.

14. This is the general outline of how a vitamin functions. For vitamin B1 and PDH complex describe each of the four steps. Additionally what is the molecule and the new molecule?



SECTION "D"

[2Q. × 7.5 = 15 marks]

Answer *ANY TWO* of the following questions:

15. With relevant structures describe the synthesis of cholesterol from acetate. [7.5]

16. How is purine degraded and excreted from the body? Describe how bases are recycled using salvage pathway. [5+2.5]

17. Describe the role of glutamine and glutamate in amino acid metabolism. [7.5]