

KATHMANDU UNIVERSITY
End Semester Examination [C]
January, 2019

Marks scored:

Level : B.E.
Year : II

Course : CHEG 213
Semester: II

Exam Roll No.:

Time: 30 mins.

F. M. : 10

Registration No.:

Date JAN 03 2019

SECTION "A"

[20 Q.×0.5=10 marks]

Choose the most appropriate answer from the given choices

- The most important role of the prokaryotic cell wall is to
 maintain the shape of the cell.
 protect the cell from osmotic pressures.
 prevent ions from diffusing away from the cell.
 block the effects of antibiotics like penicillin.
- Which of the following is not a reducing sugar?
 glucose fructose galactose sucrose
- Glycogen contains:
 alpha 1,4 and alpha 1,6 glycosidic linkages
 beta 1,6 glycosidic linkage
 alpha 1,4 and beta 1,6 glycosidic linkages
 beta 1,4 and beta 1,6 glycosidic linkage
- Lactate dehydrogenase belongs to which main class of enzymes?
 ligases lyases oxidoreductase isomerases
- Malonate is a competitive inhibitor of :
 succinate dehydrogenase pyruvate dehydrogenase
 malate dehydrogenase carbonic anhydrase
- The -----of a double reciprocal plot equals ----- and the ----- equals -----.
 slope, V_{max} , y-intercept, K_M . slope, K_M , y-intercept, $1/V_{max}$.
 slope, K_M/V_{max} , y-intercept, $1/V_{max}$ slope, K_M/V_{max} , y-intercept, V_{max}
- The Embden Meyerhof pathway deals with:
 HMP shunt glycolysis Urea cycle citric acid cycle
- Substrate level phosphorylation in citric acid cycle is :
 Succinyl CoA → Succinate Malate → Oxaloacetate
 Acetyl CoA → Citrate Succinate → Fumarate
- Which of the following is a cofactor in the reaction catalyzed by glyceraldehyde 3-phosphate dehydrogenase?
 ATP Cu^{2+} NAD^+ $NADP^+$
- The Michaelis-Menton equation relates the rate of an enzyme-catalysed reaction to which of the following?
 substrate concentration product concentration
 activation energy inhibitor concentration

Fill in the blanks by most appropriate *VALUE* or *WORD*

11. -----media is used to distinguish among different kinds of bacteria.
12. Nucleotides in a single strand are linked to one another in nucleic acid by-----.
13. Micelles of fatty acids in water are organized such that the ----- face the solvent and the -----are directed toward the interior.
14. Thymine (T) is found only in -----, while Uracil (U) , a closely related pyrimidine base is unique to -----.
15. ----- use ATP to combine smaller molecules such as glucose into larger compounds such as glycogen and release small amounts of heat, whereas, ----- break down larger molecules into smaller compounds and release energy in the form of ATP and heat.
16. The role of the promoter is to attract ----- to the correct start site so transcription can be initiated.
17. IPTG, the artificial inducer of the -----, is an example of a inducer.
18. In -----, separation of DNA fragments by electrophoresis followed by transfer to a membrane and then hybridization with a labelled probe sequence.
19. -----best describe the relationship between specific growth rate (μ) and residual growth limiting substrate.
20. The function of a coenzyme in an enzymatic reaction is to-----.

KATHMANDU UNIVERSITY
End Semester Examination [C]
January, 2019

JAN 03 2019

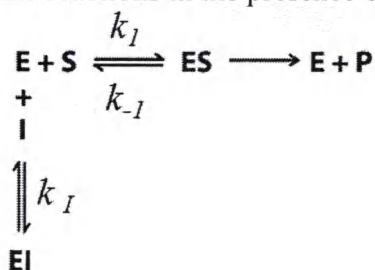
Level : B.E.
Year : II
Time : 2 hrs. 30 mins.

Course : CHEG 213
Semester: II
F.M. : 40

SECTION "B"
[8Q.×5=40 marks]

Attempt **ANY EIGHT** questions. (Q.N. 1 is compulsory)

1. Consider the following enzyme reactions in the presence of inhibitor I [5]



- i. Derive the rate of reaction for the above enzymatic reactions.
 - ii. How rate of reaction differ in the presence of inhibitors.
- 2.a. Briefly explain the enzyme immobilization methods and its application. [3.5]
 - b. What are the basic features of prokaryotic and eukaryotic cells? [1.5]
 - 3.a. Describe the different culture medium used for microbial growth. [1.5]
 - b. Give any four examples of fat soluble vitamins. Describe the mechanism of formation of monolayer and bilayer by lipids. [3.5]
 - 4.a. Write short notes on cellulose and hemicellulose. [3]
 - b. What are the characteristics features of CSTR reactor? [2]
 - 5.a. How amino acid form Zwitterion? Draw the structure of polar and non-polar amino acid. [0.5+3]
 - b. Why irreversible enzyme inhibitors are called inactivators? Explain with suitable example. [1.5]
 - 6.a. Differentiate between primary, secondary and tertiary structure of protein. [3]
 - b. Explain the various enzymes, coenzymes and electron carrier involved in biological oxidation. [2]
 - 7.a. Describes the reactions involve in pentose phosphate pathway also calculate the number of mole of NADPH generated in this pathway. [3.5]
 - b. Differentiate between anabolic and catabolic reaction. What are the major electron donors in anabolic reaction? Explain with suitable example. [1.5]
 - 8.a. Briefly explain the process of gene expression in bacteria. How the protein synthesis is controlled? [2+1]
 - b. What are vectors? Describe the basic steps involve in gene cloning. [0.5+1.5]
 9. Write short notes on [2.5 × 2=5]
 - a. Genetic code
 - b. DNA replication and mutation

