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[46] SEAT No._____ SARDAR PATEL UNIVERSITY No. of Printed Pages : 2

SIXTH SEMESTER EXAMINATION—2019

CLASS---TYBSC GENETICS-- 3 CREDIT COURSE

US06CGEN01: BIOLOGICAL CHEMISTRY AND METABOLISM

DATE:25/03/2019 Monday

TIME-10.00AM-1.00PM TOTAL MARKS---70

Q1. Multiple choice questions. Attempt all questions. [10]

i. Pellagra is the result of deficiency of

A. Vitamin B_1 C. Vitamin B_2

B. Vitamin B_3 D. Vitamin B_{12}

ii. Fatty acids yield more energy per mole than carbohydrates and proteins. This is because they

A Have larger molecular weight

B Are more non-polar

C Are more reduced

D Have more carbon atoms for CO_2 production

iii. Redox potential of oxygen is

A. negative, thus easily reduces other molecules

B. highly positive, thus easily reduces other molecules

C. highly positive, thus easily oxidizes other molecules

D. negative, thus easily oxidizes other molecules

iv. Which of the following complexes does not pump protons during electron transfer

A. Complex I

B. Complex II

C. Complex III

D. Complex IV

v. The Y axis on the Line weaver & Burke plot indicates

A. 1/S B. V/S C. 1/V D. S/V

vi. Lock and Key theory of enzyme action was proposed by

A. Kuhne B. Fischer C. Koshland D. Arhenius

vii. Net production of ATP molecules by complete biological oxidation of one molecule of palmitate yields

A. 106 ATP B. 129 ATP

C. 146 ATP D. 131 ATP

viii. What is the major fate of glucose-6-phosphate in the tissue in the fed state -

A. Isomerisation to Fructose-6-phosphate

B. Hydrolysis to glucose

C. Conversion to glycogen

D. Conversion to ribulose-6 phosphate

ix.Which one contributes nitrogen atoms to both purine and pyrimidine rings ?

A. Aspartate C. Carbamoyl phosphate

B. Carbon dioxide D. Glutamate

x. In Michaellis-Menten model of enzymatic catalysis, the reaction velocity is independent to substrate concentration when

A. the concentration of substrate is very small

B. the enzyme is fully saturated with substrate

C. the active sites are not occupied by substrate

D. a competitive inhibitor is present

Q2. Short questions. Attempt any TEN questions. [20]

a. Enlist the biochemical functions of pantothenic acid.

b. Give names and classification of all the vitamins.

(P.T.O.)

c. Derive the equation Km=S.
d. Draw Eadie- Hofstee plot.
e. Mention the enzymes involved in glycogenesis
f. List out the types of lipids.
g. Define and explain transamination.
h. What do you mean by uricotelic animals?
i. Enlist the enzymes of Fatty acid syntahse complex.
j. Define salvage pathway for purines and give its significance
k. Give the regulation of Acetyl CoA carboxylase.
l. Differentiate between glucokinase and hexokinase.

Q3a. Explain in detail about the functions, absorption metabolism and deficiency of Vitamin-D. [06]
Q3b. Discuss the sources and significance of Vitamin-E. [04]

OR

Q3. Enlist various vitamins in B complex. Give detailed information of Vitamin B-9 and B-12. [10]

Q4a. Derive the equation for LB and Hannes Woolf. Draw plots also. [06]
Q4b. Define and explain redox potential. [04]

OR

Q4a What makes an ATP molecule to hydrolyse and yield free energy? [06]
Q4b. How Competitive inhibitor affects the enzyme activity? [04]

Q5. Give all the steps involved in fatty acid synthesis. [10]

OR

Q5a. Discuss the structure and functioning of phospholipids. [06]
Q5b. Give the difference in synthesis and oxidation of fatty acid. [04]

Q6a. Discuss all the steps involved in breakdown of glucose to pyruvate. [06]
Q6b. What is chemiosmotic theory? [04]

OR

Q6a. Describe urea cycle and its importance. [06]
Q6b. Define and explain transamination and deamination [04]

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