

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – BIO TECHNOLOGY

FIRST SEMESTER – NOVEMBER 2009

BT 1820 - ADVANCED BIOCHEMISTRY

Date & Time: 06/11/2009 / 1:00 - 4:00

Dept. No.

Max. : 100 Marks

SECTION A

(20 Marks)

Answer all the questions

I. Choose the best answer

(5X1=5)

1. Hydrogen bonds are formed between electronegative atoms and:
a) Carbon
b) Hydrogen
c) Enzymes
d) Substrates
2. Which one of the following colored products is formed when amine groups of Alanine and Proline reacts with Ninhydrin that absorbs light at 540 nm
a) Blue and Yellow
b) Yellow and Blue
c) Green and Yellow
d) Yellow and Green
3. An electrophoresis technique which employs ampholytes with a defined range of pI values to establish a pH gradient is:
a) Native PAGE
b) SDS PAGE
c) Isoelectric focussing
d) Ion Exchange chromatography
4. Pick the odd one out with regard to mitochondria:
a) Glycolysis
b) Oxidative phosphorylation
c) Oxidative decarboxylation
d) TCA cycle
5. Identify the hormone derived from Phenylalanine and Tyrosine secreted from Adrenal medulla during stress
a) Epinephrine
b) Prolactin
c) Insulin
d) Glucagon

II. State whether the following is true or false; if false give reasons (5X1=5)

6. Water is a strong electrolyte.
7. Glucose, Galactose and Mannose are epimers.
8. Sedoheptulose 7 P is a Hexose.
9. Normal range of Cholesterol is between 400-500 mg/dL.
10. Osazone crystals are formed when nucleic acids react with Phenyl hydrazine and sulfuric acid.

III. Complete the following:

(5X1=5)

11. _____ is an inborn error of amino acid metabolism.
12. _____ is the pH at which the analyte is neither negative nor positively charged.
13. Transporter of free fatty acids is the serum _____.
14. _____ interactions are also referred as Salt linkages or ionic bonds.
15. Entropy is _____ at ultra low temperatures and also when the organism dies.

IV. Answer the following each within 50 words

(5X1=5)

16. What are the laws of thermodynamics?
17. Write about acid-base balance.
18. Explain the role of metals as cofactors of Enzymes.
19. Draw the structure of purines and pyrimidines.
20. List the phospholipids of membrane.

SECTION B

V. Answer any five questions, each in not more than 350 words

(5X8=40)

21. What are the ten steps of glycolysis, its regulation and energetics?
22. Write about Glucose-Alanine cycle and Glutamate cycle.
23. Explain the molecular models for structure elucidation with emphasis to ball and stick and space filling models.
24. Briefly write about prostaglandins.
25. What are the steps involved in oxidation of fatty acids?
26. List the different types of water soluble vitamins and its vital role in metabolism.
27. Give an outline about drug metabolism and detoxification.
28. Justify the statement with suitable evidence in metabolism:
"ATP is the energy currency of the cell"

SECTION C

VI. Answer the following each in not more than 1500 words

(2X20=40)

- 29 a) Elaborate upon the different steps in TCA cycle with suitable diagram and its regulation and energetics.

(Or)

- b) Discuss the various pancreatic hormones; its synthesis and regulation.

29. a) Detail the steps involved in the Electron Transport Chain with supporting structures.

(Or)

- b) Explain the amphibolic reactions of HMP shunt.
