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Register Number:

DATE: 24-04-2018 (9AM)

**ST. JOSEPH’S COLLEGE (AUTONOMOUS), BENGALURU-27**

**B.Sc. CHEMISTRY – VI SEMESTER**

**SEMESTER EXAMINATION – APRIL 2018**

**CH 6215: Biochemistry**

**Time :2.5 hrsMax Marks : 70**

*Instructions: The question paper has 2 printed pages and 3 parts. Wherever reactions are required structures must be given.*

**Part A**

Answer ***6 out of 8***questions . Each question carries ***2 marks***. (6×2=12)

1. Name the enzyme that (i) produces succinyl CoA in the TCA cycle (ii) helps convert alanine to glutamate?
2. Draw the structure of phosphotidyl inositol? What is its biological function?
3. Distinguish between an apoenzyme and a holoenzyme?
4. What is an endergonic reaction, give an example?
5. Name two amino acids that are not seen in proteins?
6. Draw the structure of glycine at pH 8.2 given that the pI of glycine is 6.5?
7. What is the role of (a) helicases (b) primases in DNA replication?
8. What are liposomes?What is their significance?

**Part B**

Answer ***8 out of 10*** questions. Each question carries ***6 marks***. (8×6=48)

1. Name and draw the products obtained by the partial hydrolysis of (a) amylopectin (b) cellulose
2. How are lipids classified? What is their role in the biological system?
3. What is the significance of KM and Vmax? How are they affected by the presence of a (a) un competitive inhibitor (b) competitive inhibitor?
4. Draw and compare the structures of the different types of regular ordered secondary structures seen in proteins
5. Distinguish between oxidative phosphorylation and substrate level phosphorylation. Give a reaction that illustrates substrate level phosphorylation?
6. Give the reactions catalysed by (a) Aldolase (b) Fattyacyl dehydrogenase (c) Arginase
7. What are the salient features of the Watson and Crick model of the B-DNA?
8. Describe the role of mRNA, tRNA and rRNA in protein translation?
9. What are the functions of the following hormones (a) Testosterone (b) Glucagon (c) Oxytocin?
10. How are enzymes classified, give an example for each class?

**Part C**

Answer ***2 out of 3***questions. Each question carries ***5 marks***. (2×5=10)

1. The six amino acid differences between the sequences of human and duck insulin are shown below. Which insulin has a higher isoelectric point? Why?

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| AA position | |  | A8 | A9 | A10 | B1 | B2 | B27 |
| Human | |  | Thr | Ser | Ile | Phe | Val | Thr |
| Duck | |  | Glu | Asn | Pro | Ala | Ala | Ser |
|  |  |  |  |  |  |  |  | |
|  |  |  |  |  |  |  |  | |

1. Classify the following as catabolic or anabolic processes:

a) Starch is broken down into glucose monomers

b) Amino acids are linked by peptide bonds to form proteins.

c) Proteins in foods are broken down into amino acids.

d) DNA is synthesised from free nucleotides

e) Respiration

1. Biomolecules interact with one another through molecular surfaces that are structurally complementary. What type of interaction do proteins have with molecules as different as simple ions, hydrophobic lipids, polar but uncharged carbohydrates and even nucleic acids?

----------------End of questions------------