PG Odd Semester (CBCS) Exam., December—2016

LIFE SCIENCE AND BIOINFORMATICS

(1st Semester)

Course No. : LSBCC–103

(Biochemistry)

Full Marks : 70
Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer **five** questions, taking **one** from each Unit

UNIT—I

1. *(a)* With suitable illustration, describe different types of stabilizing interaction available in biomolecules with special emphasis on protein structures. 11

(b) Add a note on biological buffer. 3

2. *(a)* What is free energy? Differentiate between free energy change and standard free energy change. 2+2=4

(b) Derive equation for free energy change for a unisubstrate reaction and a multisubstrate reaction. 10

UNIT—II

3. What are K_m and V_{max} in enzyme catalysis? Give a mathematical derivation of Michaelis-Menten equation. 2+12=14

4. Write notes on the following : 8+6=14

(a) Mechanism of enzyme action

(b) Classification of enzyme

UNIT—III

5. *(a)* In mitochondria, where oxidative phosphorylation takes place? What are the components of mitochondria ETS? 1+7=8

(b) Write the structure and function of ATP synthase. 6

6. *(a)* Write the structure, enzymes involved and reaction mechanism of the following reactions : 2½×4=10

(i) F, 1, 6, BP to 2 mol. G3P

(ii) 2 phosphoglycerate to 2 phosphoenolpyruvate

(iii) -ketoglutarate to succinyl CoA

(iv) Malate to oxaloacetate

(b) Add a note on stoichiometry of energy generation during Krebs cycle. 4

UNIT—IV

7. *(a)* Discuss different components of light-harvesting complexes. Add a note on functions of LHC. 6+2=8

(b) What is photorespiration? Discuss why photorespiration is considered as wasteful process for plants. 1+5=6

8. Write notes on any *two* of the following : 7×2=14

(a) GA signalling pathways in plants

(b) Biosynthesis of flavonoids

(c) Nitrogenase

UNIT—V

9. Write notes on the following : 7+7=14

(a) Molecular events in regulation of biological clock in plants

(b) Development of floral parts

10 *(a)* What are the different types of photosignalling receptors available in plants? Add a note on light reception by phytochrome. 2+5=7

(b) Describe in brief how plant responds in different abiotic stresses. 7

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