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

LIFE SCIENCE AND BIOINFORMATICS

(3rd Semester)

Course No. : LSBCC–301

Botany students will answer from LSBCC–301 (B) and Zoology students will answer from LSBCC–301 (Z)

Full Marks : 70
Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

OPTION—A

Course No. : LSBCC–301 (B)

(Plant Physiology)

1. Discuss stomatal physiology with special reference to guard cell signal transduction. 14

OR

2. Write short notes on the following : 7×2=14

(a) Aquaporins

(b) Phloem loading and unloading

3. Elaborate the photochemical phase of photosynthesis with emphasis on cyclic and non-cyclic electron transport in chloroplast. 14

OR

4. Write short notes on the following : 7×2=14

(a) C4 pathway

(b) Photorespiration

5. Discuss the process of nodulation and nitrogen fixation in legumes with emphasis on signaling events. 14

OR

6. Write short notes on the following : 7×2=14

(a) Ammonia assimilation

(b) Water stress

7. Discuss the chemical nature, biological role, biosynthesis and signal transduction pathway of Jasmonic acid or Brassinosteroid group of plant hormones. 14

OR

8. Explain the signal transduction pathway operational in plants for Gibberellic acid hormone actions. 14

9. Explain the phytochrome-mediated signal transduction in plants. 14

OR

10. Write short notes on the following : 7×2=14

(a) Seed germination physiology

(b) Photoperiodism

OPTION—B

Course No. : LSBCC–301 (Z)

(Molecular Endocrinology)

1. Explain four distinct characteristics of hormone. Give details of schematic representation and classification of hormone with special reference to their chemical nature. 4+10=14

OR

2. Write notes on the following : 7×2=14

(a) Regulation of hormone synthesis

(b) Difference between endocrine and neuroendocrine system

3. Explain how the level of calcium (Ca^{2}) maintained in blood. Describe the role of major hormone in calcium homeostasis. 7+7=14

OR

4. Write detailed notes on the following : 7×2=14

(a) Mineralocorticoide action in renal cells of distal tubules

(b) Hypothalamic hypophysial system and its significance in endocrinology

5. Write notes on the following : 7×2=14

(a) Second messenger and non-G protein-mediated pathway for signal transduction

(b) Phospholipase C-mediated pathway for signal transduction

OR

6. What are the primary pathways of cells signaling? Write a note on adenylyl cyclase-mediated pathways with protein kinase A (PKA). 14

7. What do you mean by micro-manipulation? Discuss the handling of sperm and oocytes in the context of assisted reproductive techniques. 5+5+4=14

OR

8. Differentiate between the following : 7×2=14

(a) IVF and ART

(b) Embryo culture and embryo transfer

9. What are endocrine disruptors? How do they bring about hormonal disorders? Add a note on phytoestrogen. 5+5+4=14

OR

10. *(a)* What is clinical management and how can it be useful in case of hormonal disorders? 7

(b) How does genetic engineering impacted hormone production? 7

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