PG Even Semester (CBCS) Exam., May—2019

LIFE SCIENCE AND BIOINFORMATICS

(4th Semester)

Course No. : LSBCC–403 (B/Z)

Full Marks : 70
Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

Botany Students will answer from LSBCC–403 (B) and Zoology Students will answer from LSBCC–403 (Z)

(For Botany Students)

Course No. : LSBCC–403 (B)

(ADVANCED PLANT BIOLOGY)

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

UNIT—I

1. *(a)* Discuss the salient features of bacterial ribosomal DNA operon.

(b) Briefly discuss how this locus is used for bacterial identification. 7+7=14

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

(a) Ribotyping and PCR-RFLP

(b) Genome shuffling and its uses

(c) IPR related to microorganisms and their products

UNIT—II

3. Discuss various techniques involved in sequencing of plant genome. 14

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

(a) Proteomics

(b) Plant system biology

UNIT—III

5. What do you mean by comparative and functional genomics? Illustrate with examples in plants. 14

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

(a) miRNA

(b) Eukaryotic genome analysis

UNIT—IV

7. Write a detailed account on the application of DNA markers in angiosperm taxonomy. 14

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

(a) Relevance of cytology in taxonomy

(b) Monophyly, paraphyly and polyphyly

UNIT—V

9. Discuss the role of phytochemicals in drug discovery. 14

10. Write notes on the following (any *two*) : 7×2=14

(a) QSAR

(b) Molecular docking

(c) Drug-likeness study

(For Zoology Students)

Course No. : LSBCC–403 (Z)

(DEVELOPMENTAL BIOLOGY)

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

UNIT—I

1. Write short notes on the following : 7+7=14

(a) Potency

(b) Competence

2. What are stem cells? Enumerate their unique properties. Differentiate between embryonic and adult stem cells. 2+4+8=14

UNIT—II

3. Write short notes on the following : 7+7=14

(a) Sperm-activating peptide

(b) Fast and slow block to polyspermy

4. Define cleavage. How does the process of cleavage differ in different organisms? Write a note on cleavage in centrolecithal eggs. 2+8+4=14

UNIT—III

5. What do you mean by gastrulation? Add a comparative account of gastrulation in amphibians and mammals. 4+10=14

6. What are the three germ layers and how are they formed? Add a note on mechanism of cell movement during gastrulation. 7+7=14

UNIT—IV

7. Give an account on the role of maternal gene products in early embryonic development of *Drosophila*. 14

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

(a) Developmental cycle of Dictyostelium

(b) Hox genes

UNIT—V

9. Write a note on the mechanism of apoptosis. 14

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

(a) Ageing

(b) Insulin pathway control of ageing

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