PG Even Semester (CBCS) Exam., May—2017

LIFE SCIENCE AND BIOINFORMATICS

(4th Semester)

Course No. : LSBCC–403

Full Marks : 70
Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

Candidates are to answer *either* LSBCC–403 (B) *or* LSBCC–403 (Z)

Course No. : LSBCC–403 (B)

(ADVANCED PLANT BIOLOGY)

1. Discuss the principle, method, advantages and disadvantages of the following microbial genotypic methods : 14

(a) PCR-Ribotyping and PCR-RFLP

(b) Amplified Fragment Length Polymorphism (AFLP)

OR

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

(a) Ribosomal RNA operon and function

(b) Patenting microbes

(c) Types of intellectual properties

3. Discuss the current tools available for plant functional genomics. 14

OR

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

(a) Gene identification using proteomics

(b) Plant metabolomics tools

(c) Plant system biology

5. Discuss the principle and applications of different sequencing technologies in relation to plants. 14

OR

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

(a) Comparative genomics

(b) mRNA

(c) Examples of plant genomes sequencing completed

7. Explain how different DNA markers present in angiosperm are used in plant classification and identification. Add a note on advantages and disadvantages of each marker. 14

OR

8. What are the types of evolutionary relatedness measurement methods for identification and classification of organisms? Add a note on advantages and disadvantages of each. 14

9. Discuss how comparative protein modelling is used for active site identification. 14

OR

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

(a) Important phytochemicals as drugs

(b) Lipinski rule of five and molecular docking

(c) QSAR and ADME/TOX

Course No. : LSBCC–403 (Z)

(DEVELOPMENTAL BIOLOGY)

1. Differentiate between the following : 7+7=14

(a) Potency and Competence

(b) Determination and Differentiation

OR

2. What are stem cells? Enumerate the similarities and differences between embryonic and adult stem cells. 3+3+4+4=14

3. Based on the type of eggs, what are different kinds of cleavage? Write giving example and diagram of each type. What is grey crescent? 4+6+4=14

OR

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

(a) Egg activation

(b) Slow block to polyspermy

5. Define gastrulation. What are the different types of cellular movements during gastrulation? Giving sea urchin as example, write the process of gastrulation with suitable diagram. 1+6+7=14

OR

6. Outline a comparison of process of gastrulation in insects and mammals with suitable diagrams. 4+10=14

7. Describe the role of maternal genes in the regulation of early development process of Drosophila. 14

OR

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

(a) Developmental cycle of *Dictyostelium*

(b) Hox genes

9. What is apoptosis? Write in detail on the role of apoptosis in development. Write a note on the mechanism of apoptosis. 2+5+7=14

OR

10. What is ageing? Describe molecular and cellular ageing. Write in detail on mitochondrial control of ageing. 2+5+7=14

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