PG Even Semester (CBCS) Exam., May—2018

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

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)

1. *(a)* What do you mean by intellectual property? Why is it important to promote and protect intellectual property? 2+5=7

(b) Write in detail about the kinds of inventions that can be patented with the name of some patenting agencies. 5+2=7

OR

2. *(a)* Differentiate among PCR, RT-PCR and multiplex PCR. 3

(b) What is ribotyping? How does ribotyping help in differentiating various strains of bacteria? 2+9=11

3. Discuss about the steps involved in next generation sequencing of plant genomes. 14

OR

4. Discuss how metabolomic studies are helpful in understanding plant processes. 14

5. *(a)* Write notes on the following : 5+5=10

(i) Maxam-Gilbert sequencing

(ii) Shotgun sequencing

(b) Add a note on metagenomics. 4

OR

6. Discuss the global gene expression analysis using RNA sequencing. 14

7. *(a)* Discuss about the steps involved in phylogenetic analysis. 7

(b) Add a note on the role of DNA markers in angiosperm taxonomy. 7

OR

8. *(a)* Discuss about the steps involved in herbarium digitization and database management. 8

(b) Write about the role of cytotaxonomy in understanding taxonomic problems. 6

9. *(a)* What is active site? What are the important characteristic features of an active site? 2+4=6

(b) Discuss about the role of phytochemicals in identification of drug leads. 8

OR

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

(a) Lipinski RO5 and ADME-Tox

(b) Molecular docking

(For Zoology Students)

Course No. : LSBCC–403 (Z)

(DEVELOPMENT BIOLOGY)

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

(a) Cell fate

(b) Morphogenetic gradient

OR

2. What do you mean by cytoplasmic determinants? Write a note on the importance of transgenics in analysis of development. 7+7=14

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

(a) Sperm-egg recognition in animals

(b) Structure of sperm

OR

4. What is polyspermy? How does it affect the process of zygote formation? How is it prevented? 2+4+8=14

5. What is gastrulation? What are the different types of cell movement? Write a note on mechanism of cell movement during gastrulation. 2+4+8=14

OR

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

(a) Germ layers

(b) Gastrulation in insects

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

(a) Maternal genes

(b) *Hox* genes

OR

8. Describe the life cycle and genetic regulation of *Dictyostelium* development. 14

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

(a) Insulin pathway control of ageing

(b) Senescence

OR

10. Define apoptosis. What is the mechanism to induce apoptosis? How does apoptosis differ from necrosis? 14

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