2017/ODD/09/26/LSB–304 (B)
(A/B/C)/075

PG Odd Semester (CBCS) Exam., December—2017

LIFE SCIENCE AND BIOINFORMATICS

(3rd Semester)

Course No. : LSBEC–304 (B)

(Special Paper)

Full Marks : 70
Pass Marks : 28

Time : 3 hours

The figures in the margin indicate full marks for the questions

Candidates have to answer *either* Option—A *or* Option—B *or* Option—C

OPTION—A

Course No. : LSBEC–304 (B) (A)

(Microbial Biotechnology)

1. *(a)* Outline with suitable examples the characteristics of microbes used in industry.

(b) Give examples of patented microbial resources. 10+4=14

OR

2. *(a)* Explain the organization of rRNA operon in prokaryotes.

(b) Discuss various methods which use rRNA operon for microbial systematics. 4+10=14

3. *(a)* Discuss the features of prokaryotic expression vectors.

(b) What are the pitfalls associated with prokaryotic expression systems? 10+4=14

OR

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

(a) *Pichia Pastoris* expression system—advantages

(b) Site-directed mutagenesis

5. Explain with suitable examples how microbes help in plant growth and tolerance. 14

OR

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

(a) Vaccine production in microbial host

(b) Therapeutic protein production in microbes

7. *(a)* Give an account of structural features of plant biomass utilized in biofuel production.

(b) What are the microbial enzymes used for degradation of plant biomass? 10+4=14

OR

8. Illustrate the roles of various microbes in *(a)* probiotic production and *(b)* methane production. 7+7=14

9. *(a)* Explain the process of solid state fermentation process.

(b) Add advantages, disadvantages and applications with respect to traditional fermentation. 10+4=14

OR

10. *(a)* Discuss the theory and classification of continuous microbial cultivation.

(b) Add a note on air-lift fermentation process. 10+4=14

OPTION—B

Course No. : LSBEC–304 (B) (B)

(Plant Biochemistry and Molecular Biology)

1. Discuss kinetics of enzyme catalyzed reactions and derive various plots. 14

OR

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

(a) Entropy

(b) Cooperativity

3. Discuss oxidation of glucose with special emphasis on oxidative phosphorylation. 14

OR

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

(a) Biosynthesis of starch

(b) -oxidation

5. What are the various methods of plant genetic engineering? Explain with examples about transgenic plants produced for different traits. 14

OR

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

(*a*) Expression vectors

(*b*) Biosafety

(*c*) Plant gene structure

7. Write a note on different sequencing technologies available for plant genome sequencing with examples. 14

OR

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

(*a*) Transcriptome

(*b*) Metabolomics

(*c*) Molecular breeding

9. Illustrate the signal transduction mechanisms in plants. 14

OR

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

(*a*) Reactive oxygen species (ROS)

(*b*) Ion pumps

(*c*) Epigenetic memory

OPTION—C

Course No. : LSBEC–304 (B) (C)

(Taxonomy of Angiosperm and Medicinal Plant Studies)

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

(*a*) Indented key and its use in identification of taxa

(*b*) Embryological and palynological evidences in solving taxonomic problems

OR

2. Write notes on the following : 3½×4=14

(*a*) Nomenclature synonym

(*b*) Homonym

(*c*) Priority of publication

(*d*) Paratype

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

(*a*) Keystone and flagship species

(*b*) Exotic species of India

(*c*) Western Ghats biodiversity hotspot

OR

4. Discuss the morphological diversity, interrelationship and economic importance of the order Cyperales following Cronquist (1981) System of Classification. 14

5. Write a note on quantitative methods used in ethnobotanical investigation. 14

OR

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

(a) Online sources of medicinal plants literature

(b) Method of determination of CNS depressant activity

7. Write in brief the working principle of HPLC mentioning its application. 14

OR

8. Write a note on biosynthesis of terpenes or alkaloids. 14

9. Write a note on strategy requirements for patenting in India. 14

OR

10. Write a brief note on computer-aided drug design specially mentioning its significance in drug discovery. 14

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