D 70916 (Pages : 2) Name.....

Reg. No.....

THIRD SEMESTER M.Sc. DEGREE (REGULAR) EXAMINATION NOVEMBER 2019

Botany

BOO 3C T11—BIOTECHNOLOGY AND BIOINFORMATICS

Time : Three Hours Maximum : 36 Weightage

I. Answer all the *fourteen* questions very briefly :

1 Why are Ti-plasmid based vectors disarmed ? Where is the gene of interest incorporated in this plasmid ?

2 What are fluorochromes ?

3 What is recombinant insulin ?

4 What is the use of antibiotics in transgenic experiments ?

5 Expand NCBI, EMBJ, DDBJ, and PIR.

6 Expand and explain TELNET.

7 Differentiate PAM and BLOSUM Matrices.

8 What are Global and Local alignment ?

9 Describe *two* methods/tools of sequence submission to databases.

10 What is Markov chain ?

11 What is sum of pairs? Which programme uses this scoring ?

12 What is real time PCR ?

13 Explain copy number variations

14 What are ddNTPs ?

(14 × 1 = 14 weightage)

II. Answer any *seven* questions in not more than 100 words :

15 What are single nucleotide polymorphisms ? With the help of any *two* examples explain the relevance of studying SNPs.

16 How can single plant cells be isolated and cultured ? Give *two* applications of single cell suspension cultures.

17 Write *two* distinguishing features of BAC and YAC vectors.

18 How a primer is designed ? Analyse the various steps involved.

Turn over

19 What is significance of automated sequencing systems ?

20 What are the advantages and disadvantages of a coculturing ?

21 Write a note on hardening of tissue cultured plantlets.

22 Explain the steps involved in sterilization of tissue culture medium.

23 Explain the importance of DNA microarrays.

24 List out the components in a PCR mixture for RAPD? What is the significance of high annealing temperature.

(7 × 2 = 14 weightage)

III. Answer any *two* questions in 300 words :

25 Discuss the ethical issues raised against genetic modification.

26 Explain DNA sequencing techniques. Comment on bioinformatic tools used in sequencing.

27 What are type II restriction endonucleases (RE) ? Give an example of a type II RE that generates flush ends and the sequence recognised by it. Explain how REs are named. Mention *two* other enzymes and their utility in cloning experiments.

28 Schematically depict the steps in downstream processing of a microbially produced recombinant insulin. Name an organism used for the commercial production of penicillin.

(2 × 4 = 8 weightage)