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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT  
TEST -2 EXAMINATION- October 2018  
B.Tech Vth Semester

COURSE CODE: 10B11BT513

MAX. MARKS: 25

COURSE NAME: Genetic Engineering

COURSE CREDITS: 04

MAX. TIME: 1Hr 30 Min.

*Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means.*

Q1

1.5x4=6 (CO II CO III)

1. Why is it important that restriction sites within the MCS are unique (found only once in the plasmid)?
2. Mention any three recombination systems, their components and source organisms.
3. Name three essential complements of YAC vectors. What is role of pBR sequences in YAC vectors?
4. What is Trp1 and URA3 (+ve and -ve) based selection of transformants.

Q.2 Answer any three of following

3x3=9 (CO II)

- A. Explain the basis of following techniques used in Genetic engineering. i) Bacterial Blue and white selection of transformed cells 2) Red and White selection of yeast transformants
- B. What do you understand by BP and LR reaction of  $\lambda$  phage and E. coli recombination?
- C. Enlist any five ideal characteristics of cloning vectors?
- D. Write a comprehensive note on classification of plasmids.

Q.3

(CO II CO V)

What are essential functional modules in of P1 phage based vectors (Draw suitable diagram)? Briefly explain how insertion of desired fragment in such vectors and selection of recombinant is done in such vectors.

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Q.4

(CO IV CO V)

- A. Calculate the minimum number of clones required in a gene library of *rice*? Given genome size  $5.7 \times 10^2$  MB, fragment size 35 KB, desired probability of finding the fragment 0.95.  
2
- B. Discuss the advantages of cDNA library compared to genomic libraries. With help of suitable diagram describe 1) any one method of second strand synthesis of cDNA 2) any one method of directional cloning of cDNA  
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