Dr Anil Kant

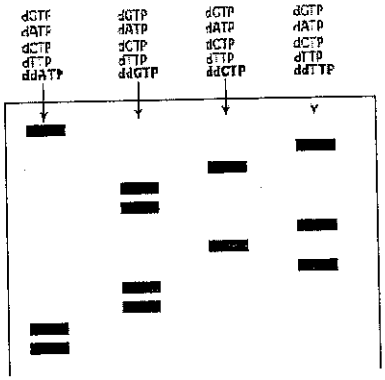
JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -3 EXAMINATION- DECMBER 2018
B.Tech V Semester

COURSE CODE: 10B11BT513 **MAX. MARKS: 35**
COURSE NAME: Genetic Engineering
COURSE CREDITS: 04 **MAX. TIME: 2Hrs**

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

Q.1 **1.5x6 = 9.0 (COII,COIII COV) (20 min.)**

a. Why amplification of full-length cDNA of longer RNA is difficult? Mention any two specific reasons.
b. Immunological based screening of gene library cannot be used unless it is an expression library. Comment with reasoning.
c. Under what circumstances of available information subtractive hybridization can be used to identify and isolate gene of interest?
d. Why dideoxy nucleotides in Sanger's sequencing terminate the strand synthesis?
e. The gel radiograph shown was generated after electrophoresis of products synthesized by dideoxy chain termination method. Deduce the nucleotide sequence of the nascent and parent strand.



f. How whole genomes are sequenced given the fact that DNA is sequenced in very small reads compared to genome size?

Q.2 **Attempt any three of following** **3x3 = 9 (COI,COII,COIII) (20 min.)**

i. Write about the principle and cascade of reactions involved in pyrosequencing? Enlist the steps involved in 454 next generation sequencing platform.
ii. Why development of transgenic animals is not as straightforward as transgenic plants. Enlist common techniques used for development of transgenic animals.
iii. Diagrammatically outline the technique of nuclear transfer technology, used for animal cloning.
iv. What are general objectives of developing transgenic animals? Mention some latest developments in case Cattle, Fish, Human beings

Q.3 **5 (COIV) (15 min.)**

Enlist different recombinant protein expression host systems and write a note on *E. coli* or Mammalian expression systems.

Q.4 **6.0 (COIII) (15 min.)**

Explain detailed procedures of any two of following techniques. 1) The CAPture method of full-length cDNA cloning 2) 5′ Rapid amplification of cDNA ends (RACE) 3) Differential Display PCR (DDRT-PCR)

Q.5 **6.0 (COII, COV) (15 min.)**

Suppose your company have assigned task of isolation of a gene which code for a known protein which can be purified. Suggest any two methods for gene isolation under such circumstance and outline one of method in detail.