

Sardar Patel University
M. Sc. Genetics, Fourth Semester Examination
Monday, 18th March, 2019
10:00 a.m. – 01:00 p.m.
PS04CGEN21: Recombinant DNA Technology

Total Marks: 70

- Q1. Multiple Choice Questions (Attempt all questions). [8X1=8]
- (i) PolyA tail is the characteristic feature of
a) mRNA b) rRNA c) tRNA d) siRNA
- (ii) _____ is the most suitable tracking dye in Polyacrylamide Gel Electrophoresis.
a) Bromophenol blue b) Ethidium bromide
c) Silver stain d) Coomassie blue
- (iii) Conventional agarose gel electrophoresis is not suitable for separation of nucleic acid molecules of _____.
a) 10kb b) 5kb c) 1kb d) 10bp
- (iv) Capping step is essential during solid phase synthesis of DNA following phosphoramidite method mainly because it _____.
a) prevents chain growth of unlinked residue
b) removes unused water and acetonitrile
c) prevents water accumulation
d) allows attachment of next nucleotide
- (v) Isoschizomers recognize
a) Same recognition sequence but different recognition site
b) Same recognition sequence and recognition site
c) Same recognition site but different recognition sequence
d) Different recognition site and different recognition sequence
- (vi) Which of these restriction enzymes produce blunt ends?
a) *SalI* b) *EcoRV* c) *XhoI* d) *HindIII*
- (vii) Which of the following has highest cloning capacity?
a) pUC18 b) λ ZAP c) BAC d) Cosmid
- (viii) Which of the following consist of ARS, centromere and telomere?
a) BAC b) PAC c) Fosmid d) YAC
- Q2. Answer any seven questions from following: [7X2=14]
- (i) What is an isoschizomer? Give an example.
- (ii) What is the function of RNase A?
- (iii) What is the significance of *par* gene in a vector?
- (iv) Define plasmid. Why is plasmid not considered genome?
- (v) How is Y3H different from Y2H?
- (vi) What is pUC? What does it stand for?
- (vii) What is a selectable marker?
- (viii) Define Weiss Unit.
- (ix) What are Plantibodies?

(P.T.O.)

Q3(A) Explain CaCl_2 method of transformation for bacterial cells. [6]

Q3(B) Describe in detail the procedure for the preparation of total cell DNA from a bacterial cell. How does the process differ from that of isolation of total plant DNA? [6]

OR

Q3(B) Write a note on cDNA preparation and its significance. [6]

Q4(A) Describe salient features of a YAC cloning vector with special emphasis on selectable markers employed. [6]

Q4(B) What is Cosmid? How is it different from Fosmid? [6]

OR

Q4(B) Explain the problems faced while cloning mammalian genes in *E.coli*. How can they be resolved? [6]

Q5(A) What is PFGE? Explain its different variants with principles. [6]

Q5(B) Write a note on colony blot hybridization and compare it with plaque lift hybridization. [6]

OR

Q5(B) What is HRT/HART? Give its applications. [6]

Q6(A) What is Gene Therapy? Mention its types and applications. [6]

Q6(B) Write a detailed note on recombinant DNA vaccines. [6]

OR

Q6(B) Explain salient features of Biological Containment Levels [6]

*****BEST OF LUCK*****

— X —
②