Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/B.Pharm/SEM-7/PT-709B/2010-11

2010-11

ADVANCED PHARMACEUTICAL BIOTECHNOLOGY

Time Allotted : 3 Hours *Full Marks* : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following : 10 × 1 = 10

   i) Thymine dimer is used for

      a) cutting of DNA fragment

      b) strand separation of DNA

      c) sealing of DNA fragments

      d) none of these.

   ii) Biotechnologically insulin can be produced from

      a) *Pseudomonas aeruginosa*

      b) *Bacillus pumilus*

      c) *Escherichia coli*

      d) None of these.

   iii) Okazaki fragments are joined with each other by

      a) DNA ligase b) endonuclease

      c) DNA gyrase d) topoisomerase.

iv) Vitamin *C* can be produced by using

a) *Coryne bacterium spp.*

b) *Erwinia spp.*

c) *Bacillus spp.*

d) *Escherichia spp.*

v) Most easy method for genetic improvement of industrially important microbial strain is

a) mutation b) recombination

c) protoplast fusion d) none of these.

vi) Large size proteins are best expressed in

a) bacterial expression system

b) yeast expression system

c) mammalian expression system

d) viral expression system.

vii) Which of the following is degraded by treatment with RNase A ?

a) DNA - RNA duplex

b) RNA - RNA duplex

c) single stranded RNA

d) all of these.

viii) Which of the following bacteria plays a significant role in PCR ?

a) *Bacillus subtilis*

b) *Pseudomonas aeruginosae*

c) *Thermus aquaticus*

d) *Helicobacter pylori.*

ix) Which of following is absent in mature RNA ?

a) Start codon b) Leader sequence

c) Poly A tail d) Exon.

x) Sanger method is a method for

a) DNA hybridization b) DNA replication

c) DNA amplification d) DNA sequencing.

xi) RFLPs are

a) restriction factor length polymorphisms

b) restriction fragment length polymorphisms

c) rearrangement fragment length polymorphisms

d) all of these.

xii) Among the different restriction endonucleases, which one is used for moleular cloning ?

a) Type - I restriction endonuclease

b) Type - II restriction endonuclease

c) Type - III restriction endonuclease.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following. $3 \times 5 = 15$

2. Write a short note on the improvement in productivity of ascorbic acid biotechnologically.

3. Write a short note on ELISA.

4. Enumerate the DNA repair mechanism in brief.

5. Define humulin. How does it differ from isolin lispro ? $2\frac{1}{2} + 2\frac{1}{2}$

6. Write a short note on CDNA library.

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. 3 × 15 = 45

7. What meant by cloning vector ? Enumerate the role of plasmids as a vector.

8. Define DNA vaccines. What are the key components of DNA vaccines ? Describe the modes of delivery of DNA vaccine. What are the advantages of DNA vaccines over other attenuated vaccines/inactivated vaccines ? 1 + 3 + 6 + 5

9. a) Schematically represent the production pathway of penicillin from biotechnologically improved strain of *P. chrysogenum.*

   b) How does *r*DNA technology improve the quality of antibiotic production ? 7 + 8

10. Discuss in brief the following : $2 \times 7\frac{1}{2}$

    a) Production of insulin by *r*DNA technology.

    b) Erythopoietin by *r*DNA technology.

11. Write short notes on any *two* of the following : $2 \times 7\frac{1}{2}$

    a) Protein separation by gel electrophoresis

    b) Nanotechnology in cancer therapy

    c) Steps involved in the PCR prpocess

    d) Ethical implication of biotechnology.