	Utech
Name:	
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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:
 - $10 \times 1 = 10$

- 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.

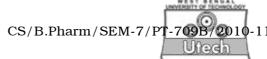
7509 [Turn over

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



- 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.

7509



- 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.

7509

3

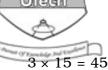
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CS/B.Pharm/SEM-7/PT-709B/2010-11



(Long Answer Type Questions)

Answer any three of the following.



- 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 rDNA 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.

7509

4