

Name : .....

Roll No. : .....

Invigilator's Signature : .....

**CS/B.Pharm(NEW)/SEM-6/PT-610B/2013  
2013**

**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 the following :

10 × 1 = 10

i) Gene is a segment of

- |               |                      |
|---------------|----------------------|
| a) RNA        | b) DNA               |
| c) RNA or DNA | d) both (a) and (b). |

ii) DNA amplification by the polymerase chain reaction  
uses

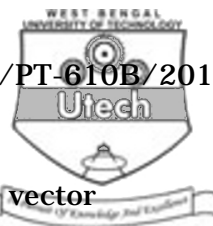
- |   |
|---|
| a) <i>Thermus aquatictus</i> DNA polymerase |
| b) DNA topoisomerase                        |
| c) RNA polymerase                           |
| d) DNA helicase.                            |

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[ Turn over



- iii) The improvement of an industrial microbial strain can be achieved through
- a) Somaclonal variation      b) Mutation
  - c) Genetic recombination      d) all of these.
- iv) The commercial production of streptomycin is carried out by the microbial culture of
- a) *Aspergillus niger*      b) *S. griseus*
  - c) *S. fradiae*      d) *Bacillus subtilis*.
- v) A 'chimeric DNA' is also the name for
- a) vector DNA      b) insert DNA
  - c) recombinant DNA      d) phage DNA.
- vi) "Biological Scissors" is a special term used for
- a) restriction endonuclease
  - b) polymerase
  - c) ligase
  - d) synthetase.
- vii) Which of the following is an ultrasound contrasting agent ?
- a) Carbon nanotube
  - b) Perfluorate filled nanosome
  - c) Dendrimers
  - d) None of these.
- viii) Agrobacterium mediated transformation is a type of
- a) vector mediated gene transfer
  - b) vectorless DNA transfer
  - c) virus mediated gene transfer
  - d) none of these.



- ix) pUC19 is a type of
- a) plasmid vector                      b) cosmid vector
- c) bacteriophage                      d) shuttle vector.
- x) The DNA made from RNA by the process of reverse transcriptase is
- a) double stranded
- b) single stranded
- c) none of these.
- xi) Which of the following sequences is the basis of DNA fingerprinting ?
- a) RTS                                      b) VNTRs
- c) SNPs                                      d) ESTs.
- xii) Eukaryotic ribosome are made up with two subunits, which are
- a) 50s + 30s                              b) 50s + 20s
- c) 60s + 40s                              d) 60s + 20s.

**GROUP - B**

**( Short Answer Type Questions )**

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

2. Write a short note on DNA ligase.
3. Briefly explain the applications of micro- and nano-technology.
4. a) What is the side chain precursor of penicillin-G ?
- b) How is "6-APA" prepared from penicillin-G ?                      1 + 4
5. Write an account on biosensors.
6. a) What do the letters on "EcoR-I" stand for ?
- b) What do you mean by the term "Central Dogma Reverse" ?                      2 + 3



**GROUP - C**  
**( Long Answer Type Questions )**

Answer any *three* of the following.

$3 \times 15 = 45$

7. Define DNA vaccine. What are the key components of DNA vaccine ? Describe the modes of delivery of DNA vaccine. What are the advantages of DNA vaccine over other attenuated vaccine/inactive vaccine ? 1 + 3 + 6 + 5
8. Define gene pharming. Why are transgenic plants more preferred than transgenic animals for the production of biopharmaceuticals ? What are the advantages of using transgenic tobacco plants as expression system in large scale production of biopharmaceuticals ? 3 + 5 + 7
9. Write short notes on any *three* of the following : 3 × 5
  - a) DNA fingerprinting and DNA footprinting
  - b) In situ hybridization
  - c) Western blotting
  - d) Southern blotting.
10. What is bioinformatics ? How does it help the biological scientists ? How does bioinformatics help in 'newer drug delivery' as well as in 'individual therapy' ?
11. a) Write a descriptive note on Tissue Plasminogen activator.  
b) Briefly write down the method of commercial production by rDNA technology of any *two* of the following :
  - i) Erythropoietin
  - ii) Ascorbic acid
  - iii) Insulin.