



Name :

Roll No. :

Invigilator's Signature :

**CS/M.PHARM/SEM-2/MPT-209/2013
2013**

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) Genetically engineered bacteria are being used in commercial production of

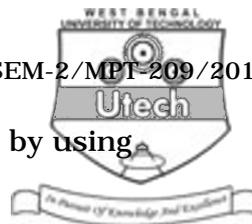
- a) Melatonin b) Testosterone
c) Human insulin d) Thyroxine.

ii) The enzyme employed for joining the DNA fragments to finally produce rDNA is

- a) DNA polymerase b) DNA ligase
c) endonuclease d) exonuclease.



- iii) Soyabean case in digest media is used for the growth of
- a) aerobic bacteria b) anaerobic bacteria
c) fungus d) protozoa.
- iv) Baffled stirred tank fermenter is used for production of
- a) antibiotics b) alcohol
c) both (a) and (b) d) none of these.
- v) Sickle cell anemia is an example of
- a) Point mutation b) Frame shift mutation
c) Segment mutation d) None of these.
- vi) A specific protein can be identified by
- a) southern blotting b) northern blotting
c) western blotting d) eastern blotting.
- vii) The compound which blocks the cellular biosynthesis of purine and pyrimidine is
- a) Thyamidine b) Hypoxanthine
c) Aminopterin d) None of these.
- viii) *lac* repressor protein is coded by which of the following genes ?
- a) *lac I* b) *lac Y*
c) *lac Z* d) *lac A*.
- ix) The integrity of HEPA filter is checked by
- a) vacuum b) membrane filter
c) DOP test d) none of these.



- x) Short DNA fragments can be analyzed by using
- Agarose gel electrophoresis
 - Polyacryl amide gel electrophoresis
 - Pulsed field gel electrophoresis
 - Counter-clamped homogeneous electric field gel electrophoresis.
- xi) Discontinuous sterilization is called
- Pasteurization
 - Incineration
 - Fermentation
 - Tyndalization.
- xii) In a continuous culture of cells the micro-organisms are maintained in
- exponential phase
 - growth phase
 - stationary phase
 - all of these.

GROUP - B

(Short Answer Type Questions)

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

- Write in brief about gaseous sterilization.
- Write in short about D-Value and 2-Value of microbial death kinetics.
- Write a short note on restriction endonuclease.
- What is chymosin ? What are the industrial methods for chymosin production ?
- Give a brief account on agarose gel electrophoresis.



GROUP - C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. What is gene therapy ? Discuss the different strategies for gene therapy. What is stringency control ? $3 + 10 + 2$
8. Describe briefly the production of monoclonal antibody. Why is HAT medium used in mAb preparation ? What are the functional and structural differences between monoclonal and polyclonal antibodies ? What are the applications of mAb ? $4 + 4 + 4 + 3$
9. What is sterilization ? Write on different parameters for validation of sterilization process. How test for sterility is done for pharmaceutical product ? $2 + 6 + 7$
10. Differentiate bioreactor from biofermenter. What is the significance of Trophophase and Idiophase in fermentation ? What is the bioprocess control of a typical bioreactor ? Describe stirred tank bioreactor. $2 + 3 + 7 + 3$
11.
 - a) What are the enzymes involved in lac operon ?
 - b) With reference to Trp operon explain the term ORF.
 - c) Why is PCR considered to be 'error prone' ?
 - d) Which blotting technique is employed for analyzing RNA ?
 - e) Explain the basic principle of Polymerase Chain Reaction.
 - f) Write a brief account on Southern Blotting.

$3 + 3 + 2 + 1 + 3 + 3$

