



Name :

Roll No. :

Invigilator's Signature :

CS/M.PHARM/ SEM-2/MPT-209/2012

2012

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 correct alternatives for any *ten* of the following :

10 × 1 = 10

- i) Streptomyces alboniger is the preferred organism for the biosynthesis of which antibiotic ?
 - a) Puromycin
 - b) Blasticydin A
 - c) Neoplasmin A
 - d) Neoplasmin B.
- ii) Which of the following is a restriction enzyme ?
 - a) ECoRI
 - b) DNA Polymerase
 - c) RNA Polymerase
 - d) Reverse transcriptase.
- iii) Which of the following is a vector used in *rDNA* technology ?
 - a) pBR322
 - b) M13
 - c) Baculovirus
 - d) all of these.



- iv) Three basic requirements to carry out a fermentation process are
- a) media, culture, fermenter
 - b) temperature, oxygen, pH
 - c) pH, culture, temperature
 - d) none of these.
- v) HEPA filter efficiency can be determined by
- a) DOP test
 - b) bubble point test
 - c) MTR
 - d) none of these.
- vi) Short DNA fragments can be analysed by using
- a) agarose gel electrophoresis
 - b) polyacryl amide gel electrophoresis
 - c) pulsed-field gel electrophoresis
 - d) contour-clamped homogeneous electric field gel electrophoresis
- vii) Baffled stirred tank fermenter is used for production of
- a) antibiotics
 - b) alcohol
 - c) both (a) and (b)
 - d) none of these.
- viii) Soybean casein digest media is utilized for the growth of
- a) aerobic bacteria
 - b) anaerobic bacteria
 - c) fungi
 - d) protozoa.



- ix) DNA made from mRNA template is
- a) rDNA
 - b) cDNA
 - c) Z-DNA
 - d) all of these.
- x) Introns are usually found in
- a) prokaryotes
 - b) eukaryotes
 - c) both (a) and (b)
 - d) none of these.
- xi) Validation of sterilization requires knowledge of
- a) *D*-value
 - b) volatile carbon content
 - c) shelf life of filter material
 - d) none of these.
- xii) The amino acid acting as a source for sulphur in cephalosporin biosynthesis is
- a) Methionine
 - b) Cysteine
 - c) Cystine
 - d) Homocysteine.

GROUP – B

(Short Answer Type Questions)

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

2. Explain *D*-value and *Z*-value of microbial death kinetics.
3. Explain lac operon with diagram.
4. Write a note on Penicillin amidase.
5. Write a note on Interferons.
6. Write a short note on second generation protein programme designing.



GROUP – C

(Long Answer Type Questions)

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

7. Define the sterilization. Describe the applications, mechanism of action, instrumentation and validation of different sterilization processes. $3 + 12$
8. Describe a fermenter with its different parts with proper diagram. What are the applications of fermentation technology in pharmaceutical industry ? Write about the instrumentation for controlling of fermentation process. $7 + 3 + 5$
9. a) What do you understand by attenuation ?
b) Mention the culture media, temperature and pH for cephalosporin biosynthesis.
c) Which antibiotic biosynthesis is inhibited in presence of high quantity of glucose, ammonia and phosphate ?
d) Write an account on various electrophoresis techniques for genetic analysis.
e) Write briefly on β -lactam technology. $2 + (2 + 1 + 1) + 1 + 6 + 2$
10. a) Describe briefly the production of monoclonal antibodies.
b) Elaborate the diagnostic and therapeutic application of monoclonal antibodies with examples. $5 + 10$
11. a) List the variations of PCR.
b) Write a brief account on Reverse Transcriptase PCR.
c) Discuss about the various blotting techniques for genetic analysis. $5 + 5 + 5$