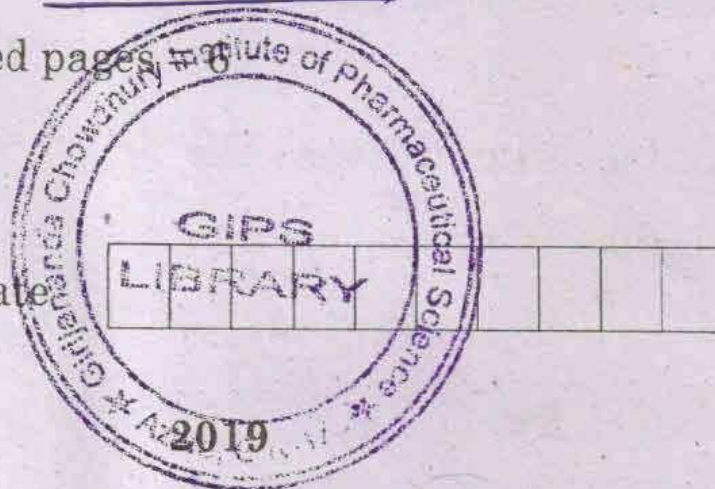


12-01-19

Total No. of printed pages 8

PY 132708

Roll No. of candidate



B.Pharm. 7th Semester End-Term Examination

PHARMACEUTICAL BIOTECHNOLOGY

Full Marks – 100

Time – Three hours

The figures in the margin indicate full marks
for the questions.

Question No. 1 is compulsory and any six from the rest.

1. Objective questions: (10 × 1 = 10)
- (i) Which one of the following assay is used to identify the presence of small amount of hormones/antigens?
- (a) Fluorescent antibody technique
 - (b) Enzyme linked assay
 - (c) Radio-immuno assay
 - (d) Opsonization.
- (ii) Which of the following enzyme present in honey responsible for conversion of glucose and oxygen to hydrogen peroxide?
- (a) Invertase
 - (b) Papain
 - (c) Pepsin
 - (d) Inhibin

[Turn over

- (iii) Schultz-Charlton test is the identification test for
- (a) Scarlet fever
 - (b) Diphtheria
 - (c) Measles
 - (d) Rickettsial
- (iv) Sex pilus is seen mostly in which type of genetic recombination process?
- (a) Transformation
 - (b) Conjugation
 - (c) Transduction
 - (d) Protoplast fusion
- (v) Which of the following microbe is used for the conversion of cortisone to prednisolone?
- (a) *Escherichia coli*
 - (b) *Corynebacterium simplex*
 - (c) *Bacillus subtilis*
 - (d) *Aspergillus niger*
- (vi) Which of the following is an endo-enzyme?
- (a) Invertase
 - (b) Cellulase
 - (c) Polyglucuronase
 - (d) Esterase

- (vii) Which of the following is the causative agent for smallpox?
- (a) *Salmonella typhi*
 - (b) *Paramyxovirus*
 - (c) *Variola major*
 - (d) None of the above
- (viii) Which of the following is not the suitable area to inoculate the virus in Egg based method?
- (a) Chorioallantoic membrane area
 - (b) Amniotic area
 - (c) Albumin area
 - (d) Yolk sac area
- (ix) The carrier matrix for an enzyme catalase is _____
- (a) Cellophane
 - (b) Charcoal
 - (c) Cellulose
 - (d) Agarose gel
- (x) Protoplast are _____ charged naked-cells.
- (a) Neutral
 - (b) Positive
 - (c) Negative
 - (d) Both positive and negative

2. Answer the following (any six) (6 × 15 = 90)

(a) Define the following biotechnological terms: (5 × 1 = 5)

- (i) Palindromes
- (ii) Cloning vectors
- (iii) Monoclonal antibodies
- (iv) Plasmids
- (v) Serology

(b) Give in short the difference between the following: (5 × 2 = 10)

- (i) Vaccination and immunization.
- (ii) Auxotroph and prototroph.
- (iii) Active and passive immunization.
- (iv) Cellular and humoral immunity
- (v) Specialized and generalized transduction process

3. (a) Define hypersensitivity reactions. Classify hypersensitivity reactions with examples and describe any one in details. (1+3+6)

(b) Match the following: (5 × 1 = 5)

Group A

Group B

- | | |
|-----------------------------|------------------------------|
| (i) APC cells | (1) Expressed in bone marrow |
| (ii) T-lymphocyte cells | (2) Type-II (cytotoxic) |
| (iii) Complement cells | (3) Dermatitis |
| (iv) T _{DTH} cells | (4) Expressed by antigen |
| (v) Mast cells | (5) Histamine release |

4. (a) Define vaccines. Classify the different types of vaccines with examples. Describe in details the preparation, standardization, labelling, storage and dosage regime of BCG vaccine. (1+3+6)
- (b) Fill in the gaps: (5 × 1 = 5)
- (i) The first mammalian clone was observed in the lamp named after “ _____ ”
- (ii) ELISA stands for _____
- (iii) Deficiency of human growth hormone (hGR) leads to _____
- (iv) S_i nuclease enzyme is responsible for _____
- (v) The successful hybridoma technology was produced by fusing _____ and _____
5. (a) Define gene cloning. Give the basic principles and steps involve in gene cloning. Write a note on restricting enzymes with examples. (1+3+6)
- (b) Define protoplast fusion. Write a note on the types of protoplast fusion process. (1+4)
6. (a) Describe in detail the production of humulin by biotechnological process. (5)
- (b) Define hybridoma. Give in detail the procedure and steps involve in the production of monoclonal antibodies by hybridoma technology. (1+4)
- (c) Write a note on plasmid vectors with a neat diagram. (5)

7. (a) Give the advantages of microbial transformation process. Describe the microbial transformation of diosgenin. (3+5)
- (b) Give the chemical reaction in microbial biotransformation involving *Nocardia restricta*, *Bacillus putrificus*, *Corynebacterium simplex* and Baker's yeast. (4)
- (c) What is the difference between growth phase and transformation phase in microbial transformation process? (3)
8. (a) Give in detail the various standardization methods used to screen antibiotics. (6)
- (b) Define bioreactors. What are the characteristics of ideal bioreactors? Write a note on forced convection fermentor. (1+3+5)
9. (a) Explain in short the principle mechanism of entrapment, adsorption, cross-linking, covalent linking and complexation process involving in immobilization of enzyme. (1 × 5 = 5)
- (b) Define enzyme immobilization. Describe in details the microbial enzyme activity of hyaluronidase and amylase with a suitable example. (1+4.5+4.5)
-