

(A-41) **SARDAR PATEL UNIVERSITY**
M.Sc. (Integrated) Biotechnology
Industrial Biotechnology- Semester 10
PS10CIGIB1: Biopharmaceuticals and biotherapeutics
Tuesday 21st April, 2015
10.30 a.m. to 1.30 p.m.

Total Marks : 70

- Note :** (i) All questions are to be attempted.
(ii) Figures to the right indicate marks.

Q.1 Choose the correct option for the following:

[8]

1. For protein production by r-DNA technology the use of ligase is as
 - a. To cut
 - b. to clone
 - c. To glue
 - d. none.

2. Monoclonal antibodies:
 - a. possess long half-lives
 - b. do not need posttranslational modification
 - c. Both a & b is correct
 - d. none

3. What are the protein structures called that are expressed within the cell membranes and interact with endogenous signalling molecules or some drugs to initiate an intracellular response
 - a. Enzymes
 - b. Hormones
 - c. Ligands
 - d. Receptors

4. In pharmacokinetics what does the acronym ADME stand for?
 - a. Absorption, Distribution, Metabolism, and Excretion
 - b. Administration, Differentiation, Metabolism, and Excretion
 - c. Absorption, Disintegration, Metabolism, and Efficacy
 - d. Administration, Distribution, Metabolism, and Efficacy

5. Which of the following is not a type of cellular receptor?
 - a. Tyrosine kinase receptor
 - b. G-protein coupled receptor
 - c. Endocrine receptors
 - d. Intracellular/nuclear receptor.

6. ----- is a steroidal hormone.
 - a. Androgen
 - b. Insulin
 - c. Growth hormone
 - d. None of the above

7. Therapeutic compounds with short half-life are formulated for sustained release preparation since:
 - a. Induces dosing frequency.
 - b. Increase dosing frequency.
 - c. Reduces dosing frequency
 - d. None

8. For Haemostatic process which statement is correct?
 - a. The clumping of blood platelets
 - b. Plugging the site of blood leakage.
 - c. Induction of blood coagulation cascade.
 - d. All the above

- Q.2 Answer the following (any seven):** [14]
- (i) Elaborate the term Colony stimulating factors.
 - (ii) Describe antisense oligonucleotides.
 - (iii) What is lyophilization.
 - (iv) What is therapeutic index?
 - (v) Discuss the advantages of recombinant pharmaceuticals.
 - (vi) Write notes on Adverse drug reaction
 - (vii) How the whole blood can be used as a therapeutic mean.
 - (viii) Describe the liposomes.
 - (ix) Give function of: 1) hirudin 2) antithrombin 3) plasmin 4) factor XII

Q.3

- [A] Describe the safety issues for biotechnology derived drugs. [6]
[B] Explain why protein based pharmaceuticals pose unique challenges for development, production, formulation and administration compared to small molecules. [6]

OR

- [B] Explain the rationale for post translational modification of protein pharmaceuticals. [6]

Q.4

- [A] Describe the synthesis of a therapeutic protein using an E.coli expression system [6]
[B] What is Pharmacokinetics and pharmacodynamics? Describe three factors affecting distribution of drugs [6]

OR

- [B] What is Phase I metabolism of drugs? How it affects drugs administered by oral route? [6]

Q.5

- [A] Write a note on production of recombinant growth hormone. [6]
[B] What are cytokines? How IL6 receptor works [6]

OR

- [B] What is tumor necrosis factor alpha? Describe biological properties of TNF alpha [6]

Q.6

- [A] Give the characteristics of drug for formulation as sustained release dosage form and also highlight its merit and demerits. [6]
[B] Describe the blood coagulation pathways in brief [6]

OR

- [B] Enlist thrombolytic agents and describe function and production of any one. [6]