

BIOPHARMACEUTICALS
(BIOT 6132)

Time Allotted : 2½ hrs

Full Marks : 60

Figures out of the right margin indicate full marks.

Candidates are required to answer Group A and any 4 (four) from Group B to E, taking one from each group.

Candidates are required to give answer in their own words as far as practicable.

Group – A

1. Answer any twelve:

12 × 1 = 12

Choose the correct alternative for the following

- (i) First Pass metabolism occurs in
(a) Liver (b) Kidney (c) Pancreas (d) Intestines
- (ii) What is meant by therapeutic ratio or index?
(a) The ratio of LD₅₀ to ED₉₉ (b) The ratio of LD₅₀ to ED₅₀
(c) The ratio of LD₁ to ED₅₀ (d) The ratio of ED₉₉ to ED₅₀
- (iii) Which of the following interleukin is responsible for T cell expansion after antigen recognition?
(a) IL-3 (b) IL-2 (c) IL-7 (d) IL-1.
- (iv) IL-3 and GM-CSF are the representative of which cytokine family?
(a) Interleukin family (b) Interferon family
(c) Hematopoietic family (d) Chemokine family.
- (v) Which family of cytokines use the JAK kinase for expression?
(a) Interferon family (b) Chemokine family
(c) Hematopoietic family (d) Interleukin family
- (vi) Bispecific antibodies can bind with their Fab regions both to target antigen and to _____.
(a) Other antibodies (b) An effector cell
(c) Proteins around (d) Prostaglandins
- (vii) The hybridomas are made by fusing
(a) T cells with myeloma cells
(b) B cells with myeloma cells
(c) T helper cells with myeloma cells
(d) B memory cells with myeloma cells.

- (viii) Which of the following blood cells play an important role in blood clotting?
 (a) Thrombocytes (b) Nutrophils
 (c) Luecocytes (d) Erythrocytes.
- (ix) DNA is not present in
 (a) an enucleated ovum (b) hair root
 (c) a mature spermatozoa (d) mature RBC.
- (x) Which of the following statement is incorrect about the Live attenuated vaccine?
 (a) It is prepared using whole weakened living bacteria or virus
 (b) It can generate a long-term immune response with the administration of a single dose
 (c) Measles, MMR, and oral polio vaccine are live attenuated vaccines
 (d) It is stable at normal room temperature.

Fill in the blanks with the correct word

- (xi) When two or more drugs used in combination to increase the pharmacological action, the phenomenon is known as _____.
- (xii) The full form of ADME is _____.
- (xiii) The gene for IFN gamma is located in human chromosome of _____.
- (xiv) IL2 is produced by _____.
- (xv) Cytokine produced by viral infected cells is known as _____.

Group - B

2. (a) Distinguish between pre-clinical and clinical trials. [[CO1](Compare/IOCQ)]
 (b) What is pKa? Determine the reasons by which pKa can be used as a criterion for drug absorption. [[CO1](Evaluate/HOCQ)]
 (c) Draw a conclusion between first order and zero order elimination of drug. Which one is better? [[CO1](Evaluate/HOCQ)]
- 4 + (2 + 2) + (2 + 2) = 12**

3. (a) Distinguish between pharmacodynamics and pharmacokinetics. [[CO1](Understand/LOCQ)]
 (b) Discuss with the help of diagram the differences between tolerance and sensitization. [[CO1](Apply/IOCQ)]
 (c) What are the different types of drug-drug interactions? [[CO1](Remember/LOCQ)]
- 4 + 4 + 4 = 12**

Group - C

4. (a) Analyse how type2 interferon prevents virus infected cells. [[CO3](Analyse/HOCQ)]
 (b) Discuss the effect of TGF. [[CO4](Remember/LOCQ)]
 (c) Define chemokines. [[CO4](Apply/IOCQ)]
- 7 + 3 + 2 = 12**

5. (a) Analyse different medicines isolated from interferons. [[CO3](Analyse/HOCQ)]
 (b) Discuss the role of lymphocyte activating factor. [[CO4](Remember/LOCQ)]
 (c) Compare the mode of action of EGF and FGF. [[CO3](Apply/IOCQ)]
4 + 4 + 4 = 12

Group - D

6. (a) Discuss the importance of cord blood cells in therapeutics and research. [[CO4](Analyze/IOCQ)]
 (b) How are anti-D immunoglobulins used as biopharmaceuticals? [[CO4](Understand/LOCQ)]
 (c) Critically discuss the role of snake and spider antivenins in polyclonal antibody preparations. [[CO4](Criticize/HOCQ)]
4 + 4 + 4 = 12
7. (a) What do you mean by tumour antigens? Give examples. [[CO4](Understand/LOCQ)]
 (b) Design an experiment in which a cancer vaccine is prepared to treat tumour cells. [[CO4](Design/HOCQ)]
 (c) Describe the technique of using cytokines and co-stimulators for immunotherapy of tumours. [[CO4](Understand/LOCQ)]
(3 + 1) + 4 + 4 = 12

Group - E

8. (a) Analyse the term Haemostasis. [[CO5](Analyse/HOCQ)]
 (b) What is G-CSF? [[CO6](Remember/LOCQ)]
 (c) What are the different factors related to blood coagulation process? [[CO5](Apply/IOCQ)]
3 + 3 + 6 = 12
9. (a) Analyse the polycythemia disease and its prevention method. [[CO5](Analyse/HOCQ)]
 (b) Discuss the role of beta galactosidase. [[CO6](Remember/LOCQ)]
 (c) Discuss different advantages of blood substitute. [[CO6](Apply/IOCQ)]
4 + 4 + 4 = 12

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	35.4	29.2	35.4

