M.TECH/BT/3 ᴿᴰ SEM/BIOT 6153/2017
BIOPHARMACEUTICALS
(BIOT 6153)

Time Allotted: 3 hrs   **Full Marks: 70**

Figures out of the right margin indicate full marks.

Candidates are required to answer Group A and
Any 5 (five) from Group B to E, taking at least one from each group.

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

Group – A
(Multiple Choice Type Questions)

1. Choose the correct alternative for the following: **10 × 1 = 10**

   (i) What is a disadvantage of adult stem cells over embryonic stem cells?
   (a) They are much smaller and therefore difficult to maneuver
   (b) They are difficult to locate
   (c) They grow too fast
   (d) No disadvantage; they are identical.

   (ii) Which of the following statements is incorrect about HAT medium?
   (a) HAT medium is a selective medium
   (b) Aminopterin in HAT medium blocks de novo pathway of DNA synthesis
   (c) Salvage pathway requires Aminopterin and Thymidine
   (d) Hypoxanthine is converted to Guanine by HGPRT enzyme.

   (iii) Mabs are
   (a) specific towards an epitope   (b) specific towards a paratope
   (c) specific towards an antigen   (d) none of these.

   (iv) What cells produced by therapeutic cloning are used to culture new tissue?
   (a) Nerve cells   (b) Muscle cells
   (c) Transplant cells   (d) Inner cell mass.

   (v) JAK protein has
   (a) kinase activity   (b) dehydrogenase activity
   (c) phosohodiesterase activity   (d) none of these.

   (vi) Medicine associated with treatment of Hepatitis C Is
   (a) ribovirin   (b) roferon
   (c) betaseron   (d) none of the above.

   (vii) Pancreatic carcinoma is prevented in presence of
   (a) DNase   (b) Urate oxidase
   (c) Galactosidase   (d) Asparaginase.

   (viii) IL-10 acts to
   (a) enhance T cell responses   (b) activate macrophages
   (c) suppress cytokine production   (d) suppress antibody production.

   (ix) The first recombinant antigen vaccine approved for human use is
   (a) Hepatitis B vaccine   (b) DPT vaccine
   (c) Var vaccine   (d) HiB vaccine.

   (x) Which of the following is not a neurotransmitter ?
   (a) Acetylcholine   (b) Cyclic AMP
   (c) Noradrenaline   (d) Dopamine.

Group - B

2. (a) Discuss the concept of ADME (life-cycle of a drug) in detail.

   (b) Describe the mode of action of agonist and antagonistic drugs.
                                                         6 + 6 = 12

3. (a) How do you classify drug based on drug receptor interaction.

   (b) Describe the following terms in detail :
   (i) Drug substance
   (ii) Excipients
   (iii) Impurities
                                                    6 + (2 + 2 + 2) = 12

Group - C

4. (a) What are the different effects of cytokines?

   (b) Write the mode of action of IL-2 and IL-4.

   (c) Write short notes on epidermal and fibroblast growth factor.
                                                         4 + 2 + 6 = 12

5. (a) Write the effects of interferon on cancer cell.

   (b) Discuss how cytokine participate in signal transduction pathway.

   (c) Distinguish TNF and TGF.

   3 + 5 + 4 = 12

Group - D

6. (a) What are Immunotoxins?

   (b) How can you use T cell co-stimulators in cancer immunotherapy?

   (c) What do you mean by Adoptive immunotherapy?

   4 + 4 + 4 = 12

7. (a) What are Unipotent and Multupotent stem cells?

   (b) What are the drawbacks of mouse monoclonal antibodies?

   (c) Why are embryonic stem cells valuable for medical research?

   4 + 4 + 4 = 12

Group - E

8. (a) What is Haemostasis

   (b) What are different factors related to blood coagulation process?

   (c) What is G-CSF ?

   3 + 6 + 3 = 12

9. (a) What are different blood clotting disorder diseases?

   (b) Write notes on Thrombopoietin and erythropoietin.

   4 + 8 = 12