

[A-26]

**SARDAR PATEL UNIVERSITY**  
**M. Sc. Integrated Biotechnology (IG-IBT) 10<sup>th</sup> Semester**  
**Theory Exam – April 2018**  
**PS10CIGIB1 – Biopharmaceuticals & Biotherapeutics**  
**09<sup>th</sup> April 2018 (Monday), 10:00 am to 1:00 pm**

Maximum Marks: 70

Note: (1) All the Questions are compulsory. (2) Figures on the right indicate marks.

**Q.1.** Choose the correct option

1x8 = 8

- (i) Prostaglandins are a sub-family of a polyunsaturated fatty acids having \_\_\_\_\_.
- [A] 10 - carbon [B] 60 - carbon  
[C] 40 - carbon [D] 20 - carbon
- (ii) Androgens are produced by \_\_\_\_\_.
- [A] Pancreas [B] Leydig cells of the testes  
[C] Liver [D] None of these
- (iii) Which of the following statements is the closest description of Phase I metabolism?
- [A] Reactions which add a polar molecule to a functional group already present on a drug or one of its metabolites.  
[B] Reactions which occur in the blood supply.  
[C] Reactions which add a polar functional group to a drug.  
[D] Reactions which occur in the gut wall.
- (iv) TNF- $\alpha$  is also known as \_\_\_\_\_ and necrosin
- [A] Cachectin [B] Macrophage cytotoxic factor  
[C] Macrophage cytotoxin [D] All of these
- (v) Which of the following statements is true?
- [A] Drugs and drug targets generally have similar molecular weights.  
[B] Drugs are generally smaller than drug targets.  
[C] Drugs are generally larger than drug targets.  
[D] There is no general rule regarding the relative size of drugs and their targets.
- (vi) Which of the following enzymes is not involved in catalyzing a Phase I metabolic reaction?
- [A] flavin-containing monooxygenases  
[B] monoamine oxidases  
[C] glucuronyltransferase  
[D] esterases
- (vii) Disadvantages of natural gums in pharmaceutical science is due to \_\_\_\_\_
- [A] Uncontrolled rate of hydration [B] Reduced viscosity  
[C] Both A & B [D] None of these
- (viii) The ideal drug delivery should be \_\_\_\_\_.
- [A] inert [B] Reactive  
[C] Both A & B [D] None of these

P.T.O.

- Q.2.** Attempt any Seven of the following **2x7 = 14**
- (a) How the microorganisms are useful in pharmaceuticals.
  - (b) Write the function and clinical significance of Urokinase.
  - (c) Define the terms pharmacokinetics and pharmacodynamics.
  - (d) What is lyophilization.
  - (e) What is therapeutic index.
  - (f) Define the terms agonist and antagonist.
  - (g) Explain the role of colony stimulating factors (CSFs).
  - (h) Describe the qualification for ideal drug delivery system.
  - (i) Give the classification of gums.
- Q. 3.** [A] Discuss in detail the safety issues for Biotechnology-derived drugs with reference to contamination, storage concerns and immune response. [06]
- [B] Discuss in detail the pharmaceutical substances of plant origin. [06]
- OR**
- Q. 3.** [B] Discuss in detail *E. coli* as a source of recombinant, therapeutic proteins. [06]
- Q. 4.** [A] Explain in detail the routes of drug administration. [06]
- [B] Write various properties of drugs and explain the mode of action in detail. [06]
- OR**
- Q. 4.** [B] Explain in detail on the manufacturing facility for production of biopharmaceuticals. [06]
- Q. 5.** [A] Describe the biological activity of IL – 2 with its production in detail. [06]
- [B] Explain insulin like growth factors and its biological effects. [06]
- OR**
- Q. 5.** [B] Write a note on Erythropoietin (EPO). [06]
- Q. 6.** [A] Describe the main component of blood and explain how the whole blood, platelets and red blood cells are used in pharmaceutical science. [06]
- [B] Elaborate the advantage, disadvantage and application of Gums in pharmaceutical science. [06]
- OR**
- Q. 6.** [B] Describe the general design and principle for controlled - release drug delivery systems with the comparison between controlled - release and conventional dosage forms [06]

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