

B.E./B.TECH. Degree Examination, December 2020

Seventh Semester

BT16019- Molecular Therapeutics

(Regulation 2016)

Time: Three hours

Maximum : 80 Marks

Answer **ALL** questions**PART A - (8 X 2 = 16 marks)**

1. Which cell type among the following is not a direct target for gene therapy?
A) Red blood B) Muscle C) Liver D) Endothelium
2. _____ and _____ are the two defining feature of stem cells.
A) Unspecialised cells which can specialize B) Self renewal C) Mitosis
D) Proliferation E) Meiosis
3. Which of the product differ among the following with respect to route of administration?
A) Lispro B) Glargine C) Aspart D) Exubera
4. Beromun is human TNF- α -1a produced by recombinant means in yeast cell.
A) True B) False
5. How heterokaryon differs from a diploid cell?
6. What is the application of ontak?
7. Write a note on types of ribozymes
8. How does miRNA and siRNA differ?

PART B - (4 X16 = 64 marks)

09. (a) How gene therapy helps in the treatment of genetic diseases? Explain the methods used (16)
with at least 2 case studies (diseases).
(OR)
(b) Explain in detail about the different types of biodegradable polymers used in the tissue (16)
engineering scaffold synthesis.
10. (a) Explain in detail about the natural and recombinant anticoagulant factors and (16)
thrombolytic agents.
(OR)
(b) Explain the biosynthesis of insulin and its signaling and application in the treatment of (16)
diabetes mellitus. Highlight the role of engineered insulins.
11. (a) Explain the principle behind the surface plasmon resonance technique and phage (16)
display technique in understanding antigen antibody interactions.

(OR)

- (b) Explain in detail about the different types of vaccines and their applications along with their safety issues and routes of administration. **(16)**

12. (a) (i) Explain the applications and working principle behind the CRISPR technique. **(8)**
(ii) How antisense oligo nucleotides and ribozymes helps in curing disease. **(8)**

(OR)

- (b) Justify that therapeutic proteins can be produced using transgenic animals with atleast four case studies and the methods involved in creating them. **(16)**