Department of Biosciences and Bioengineering
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**Course:** BT-605 (Quiz)
**Total marks-20**

**Date:** 21/10/2024
**Total time:** 60 mins

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Q1. A newly identified sensor can detect foreign ssDNA in pancreatic cells. Scientists found it to regulate the pyroptosis pathway. How could it be possible? (3 Marks)

Q2. How could gene therapy be a boon in developing a cure strategy for influenza virus infection? *(*Kindly avoid the virus-related strategy)* (3 Marks)

Q3. Scientists used a miRNA-based approach to control excessive conjugation of bilirubin. Discuss the possible molecular mechanism behind this strategy. (3 Marks)

Q4. A recently identified rare genetic disorder is due to a mutation that could lead to a misfolded protein. The protein normally resides in mitochondria; however, the mutated one resides in the endoplasmic reticulum. Design an experiment to prove the mutation could lead to a misfolded protein. (3 Marks)

Q5. A genetic defect is identified by frothy urine secretion. Discuss the possibilities of the organ affected considering that the ***kidney was found functioning normal***. How can it be rectified using gene therapy? (3 Marks)

Q6. What are the similarities between chimeraplasty and ADAR technique, which one do you find better and why? Why these techniques are generally not applicable for muscular dystrophy. (2 Marks)

Q7. An oncofetal antigen was found to interact with CFTR protein, specifically in the lung tissues. Discuss the molecular mechanism and outcome of having this issue in a patient. (****Considering the patients is not suffering from cystic fibrosis and CFTR is adequately expressed and functional)*** (2 Marks).

Q8. A rare eye-specific genetic disorder was treated with an adenoviral vector for gene correction. The study was successful without raising an immune response for which adenovirus is notorious. Discuss how this therapy was successful. (1 Mark)