



**Department of Biosciences and Bioengineering
Indian Institute of Technology Guwahati
Guwahati 781039 Assam, India**

Course: BT-616 Molecular Virology (Quiz)

Total marks-21

Date: 28/01/2025

Total time: 60mins

(All carry equal marks)

1. A scientist revisited the Hershey-Chase experiment using radioactive isotopes of oxygen. Explain the outcome of the experiment based on the known facts.
2. Assuming a newly discovered virus from Guwahati is shown to be replicated in neurons. The virus can cause lameness in pregnant but not any disease in normal females. Predict this odd biology of the virus based on your understanding of the subject.
3. Assuming Goiter patients could express high levels of Glycosaminoglycans. What would be your hypothesis about the treatment of Poxvirus in view of the condition. Discuss any two possible possibilities.
4. Assuming the protein to be the genetic material of the virus. Design an experiment to prove the hypothesis. What advantage will it get over class II viruses.
5. A newly discovered virus can cause the production of host protein "X" in infected *kidney* cells. The "X" is shown to increase the host PKR and TLR3 proteins expression. Predict the biology of "X" in terms of host pathogen interaction.
6. The stock of virus contains 8×10^8 PFU/ml particles. The stock contains 30% of the DI particles. The stock is equivalent to 2^8 HA unit. Calculate the viable virions in 2^6 HA unit.
7. A viral protein is known to activate the latent phase of the viral replication cycle. The scientist's hypothesized to use this unique protein for the benefit of human medicine. How could this be possible? Design a short experiment to prove the hypothesis.