

COURSE CODE (CREDITS):18B1WBT632 (3)

MAX. MARKS: 35

COURSE NAME: INFECTIOUS DISEASES

COURSE INSTRUCTORS: Dr. Gopal Singh Bisht

MAX. TIME: 2 Hour

*Note: (a) All questions are compulsory.*

*(b) Marks are indicated against each question in square brackets.*

*(c) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems*

- Q1a). Describe the structure and genetic composition of the HIV virus. Explain the mechanism by which HIV replicates within a host cell. What are the implications of a high viral load and low CD4 count in an HIV-positive patient? Discuss the role of antiretroviral therapy (ART) in the management of HIV/AIDS. [6][COIII]
- b) Compare and contrast the roles of Tat, Nef, and Vif proteins in HIV pathogenesis. [3] [COIII]
- Q2a) Explain the replication cycle of the Dengue virus within a human host and evaluate the challenges faced in developing an effective vaccine for Dengue. [4] [COIV]
- 2b) Identify the main types of Influenza viruses and their subtypes. Explain the pathogenesis of influenza virus infection in the human respiratory tract. [3] [COIV]
- Q3a) : Explain the mechanism by which prions propagate within an organism. Describe the diagnostic methods commonly used to confirm prion diseases in humans. Analyze the differences and similarities between Creutzfeldt-Jakob disease (CJD) and variant Creutzfeldt-Jakob disease (vCJD).[6] [COV]
- b) How the following factors a) Surface proteins on red blood cells b) Cytoskeleton defects in red blood cell c) Low-level Immunity affect susceptibility to malaria? [3][CO V]
- Q4) How do pathogenic bacteria evade the human immune system? How would the immune response differ if a patient has a viral rather than a bacterial infection? [4] [COII]
- Q5) Answer the following questions. [2x3=6] [COII]
- Why to study infectious disease epidemiology? Explain Zoonosis, epizootic and Enzootic infections.
  - Describe the clinical signs and symptoms that may indicate a patient is developing sepsis.
  - Explain the importance of parameters such as a)  $T > MIC$  b)  $C_{max}/MIC$  in anti-infective therapy.