

TEST -3 EXAMINATIONS- 2025

M.Sc-IV Semester (BT)

COURSE CODE (CREDITS): 20MSWBT431 (2.0.0)

MAX. MARKS: 35

COURSE NAME: VACCINES

COURSE INSTRUCTORS: Dr. Tyson

MAX. TIME: 2 Hours

*Note: (a) All questions are compulsory.**(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems*

Q.No	Question	Marks
Q1	Tuberculosis remains a major global health challenge despite widespread use of the BCG vaccine. a. Analyze the pathogenesis of Mycobacterium tuberculosis in the context of latent versus active disease. b. Evaluate the limitations of the BCG vaccine in providing long-term protection, particularly in adults. c. Discuss potential strategies and vaccines against tuberculosis based on current understanding of host-pathogen interaction	3+2+4
Q2	Compare the immunogenicity and public health impact of different HPV vaccine and critically assess the challenges in implementing HPV vaccination programs, particularly in low- and middle-income countries.	4
Q3	Discuss the role of delivery systems in enhancing the stability, targeting, and immunogenicity of vaccine antigens. Compare different vaccine delivery platforms in terms of their interaction with the immune system.	4
Q4	Despite decades of control efforts, malaria continues to cause significant morbidity and mortality. a. Examine how the complex life cycle of <i>Plasmodium falciparum</i> complicates vaccine development. b. Compare the RTS,S/AS01 vaccine with newer candidates in terms of efficacy, target antigens, and immunization schedules.	3+4
Q5	A patient infected with the influenza virus experiences rapid onset of fever, fatigue, and respiratory symptoms. Although the virus initially evades immune detection, the host eventually clears the infection. Describe the sequence of immunological events that occur from the point of viral entry to clearance. In your response, emphasize the coordination between innate and adaptive immune component.	5
Q6	T cell development in the thymus is a tightly regulated process essential for	3+3

	generating a functional and self-tolerant T cell repertoire. a. Outline the key stages of T cell maturation in the thymus, including the role of surface markers in lineage commitment. b. Discuss the importance of positive and negative selection in shaping the T cell repertoire.	
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JUIT TEST-3 EXAMINATION- May-2025