JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2, EXAMINATION- 2024

B.Tech-VI Semester (BT & BI)

COURSE CODE (CREDITS):18B1WBT632 (3) MAX. MARKS: 25

COURSE NAME: INFECTIOUS DISEASES

COURSE INSTRUCTORS: Dr. Gopal Singh Bisht MAX. TIME: 1 Hour 30 Minutes

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

Q1. Develop a plan for diagnosing and treating tuberculosis in a resource-limited setting, considering factors such as access to healthcare, diagnostic tools, and treatment regimens. [3][CO III]

b) Understanding the structure of mycobacterium tuberculosis is essential for elucidating its biology, pathogenesis, development of effective TB diagnostics and treatments. Explain. [3] [CO III]

Q2.a) Describe the mechanisms of action of common antifungal medications, in inhibiting fungal growth and replication. [3] [CO III]

b) Compare and contrast the clinical manifestations of superficial, cutaneous, subcutaneous, and systemic fungal infections, highlighting key differences in symptoms and treatment approaches. [2] [CO III]

Q3.a) Design a comprehensive treatment plan for a patient with a severe bacterial infection, incorporating appropriate antimicrobial therapy. Explain the mechanisms, by which microorganisms develop resistance to antimicrobial agents. [4] [CO V]

Q4. Identify common pathogens known to form biofilms and describe the diseases or conditions associated with biofilm-related infections. Explain why biofilms are often more resistant to antimicrobial agents. [3] [CO III]

Q5. a) Suggest diagnosis and treatment for following cases. [4] [CO V]

Case 1. Maria Rodriguez, a 7-year-old female student, presents to the pediatric clinic with a two-day history of fever, vomiting, and fatigue. Her parents report that they recently moved back to the United States after living in a malaria-endemic country in South America for the past two years. Maria's physical examination is significant for pallor and splenomegaly (enlargement of spleen). A peripheral blood smear confirms the presence of *Plasmodium vivax* parasites.

Case 2. John Doe, a 35-year-old male tourist, recently returned from a trip to a malaria-endemic region in Africa. He presents to the emergency department with complaints of high fever, chills, headache, and muscle aches. He reports experiencing these symptoms for the past three days. On examination, he is found to have an elevated temperature of 103°F (39.4°C), and his blood smear reveals the presence of *Plasmodium falciparum* parasites

b) Describe the lifecycle of the malaria parasite within the human host and the mosquito vector. [3]