THE APOLLO UNIVERSITY
Saketa, Chittoor, AP
AHS - V Semester End Examination, June-2024
MLTT 3601-ARTIFICIAL INTELLIGENCE IN MICROBIOLOGY

Time: 3 hours   **Max. Marks: 60**

Section –A (10x2=20 marks)
Answer all Questions with short answers

1. Define artificial intelligence (AI) in the context of clinical microbiology.
2. Define Computer vision and Robotics.
3. Define AI based Diagnostic tools.
4. What is Image recognition?
5. Define AI driven antimicrobial stewardship.
6. What do the acronyms 'PIDS' and 'IDSA' stand for?
7. What is AI enhanced Epidemiological Surveillance?
8. List the traditional methods of epidemiological surveillance
9. What is Pathogen Genomics?
10. Define Genome Assembly.

Section –B (5X8=40 marks)
Answer all Questions either A or B with essay type answers

11. A) Explain how machine learning algorithms can be utilized to predict and manage antibiotic resistance in clinical settings.
    ### OR
    B) What is the primary aim of Health-related AI applications? Give a brief overview on the Artificial Intelligence in Healthcare. Add a note on its applications.

12. A) Describe in brief how AI-based diagnostic tools can identify and classify microbial pathogens in clinical samples.
    ### OR
    B) Explain how automated cell detection and counting using AI algorithms can benefit microbial research. Provide an example of a specific application where CNNs have been used for this purpose.

13. A) Discuss in brief the key components of Antimicrobial Stewardship program. What are the challenges faced in antimicrobial stewardship?

    OR

    B) Identify the challenges faced in antimicrobial stewardship and suggest possible solutions.

14. A) What is the importance of public health in healthcare? Discuss briefly the traditional methods of epidemiological surveillance.

    OR

    B) Discuss in brief how AI can automate and enhance data collection from various sources in Epidemiology.

15. A) Explain the role of AI in improving the efficiency and accuracy of data processing and analysis in genomic sequencing.

    OR

    B) Discuss the role of AI in epidemiological surveillance and how it enhances real-time monitoring and response strategies for infectious disease outbreaks.

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