1. Define significant bacteriuria. Enumerate the microbial agents causing urinary tract infections (UTI). Briefly describe approach to laboratory diagnosis of UTI. 2+4+4

2. What do you mean by pre-exposure prophylaxis? How does it differ from post exposure prophylaxis? 4+6

3. Discuss the guidelines for Biomedical waste management in India. 10

4. Describe next gen sequencing. Describe briefly the applications of next gen sequencing in Microbiology. 4+6

5. Describe the role of various expert systems being used in clinical microbiology. 10

6. Describe briefly various components of antimicrobial Stewardship programs. Describe in brief implementation of such program in a hospital. 5+5

7. Describe recent advances in the field of malaria vaccines. 10

8. Describe briefly quality control as applicable to nucleic acid testing technologies. 10

9. Define biofilms. Describe briefly their role in antibiotic resistance in bacteria. Write briefly about biofilm detection in laboratory. 3+4+3

10. What are Extended Spectrum Beta lactamases (ESBL)? Describe in short recent advances of detection of ESBL in bacteria. 3+7