

MICROBIOLOGY

PAPER-IV

MICRO/J/19/18/IV

Time: 3 hours

Max. Marks:100

Important Instructions:

- *Attempt all questions in order.*
- *Each question carries 10 marks.*
- *Read the question carefully and answer to the point neatly and legibly.*
- *Do not leave any blank pages between two answers.*
- *Indicate the question number correctly for the answer in the margin space.*
- *Answer all the parts of a single question together.*
- *Start the answer to a question on a fresh page or leave adequate space between two answers.*
- *Draw table/diagrams/flowcharts wherever appropriate.*

Write short notes on:

1. a) Define multiple drug resistant (MDR) bacteria. 3+7
b) Role of active surveillance culture in prevention of hospital acquired infections caused by MDR pathogens.
2. a) Enumerate the non-antibiotic alternatives to treat bacterial infections. 4+6
b) Current status of bacteriophage therapy in management of bacterial infections.
3. a) Whole genome sequencing. 3+2+3+2
b) RIBA.
c) Tuberculosis vaccines.
d) Inhaled antibiotics for Gram negative respiratory infections.
4. Define outbreak, epidemic and pandemic. Give an outline of the role of a clinical microbiologist in management of an infectious disease outbreak. 3+7
5. a) Define taxonomy. 3+7
b) Advantages and disadvantages of molecular taxonomy.
6. Define reverse vaccinology. Give an outline of reverse vaccinology technique with example. 3+7
7. a) Define pre-emptive, empiric and prophylactic antibiotic therapy. 3+7
b) Principles of prophylactic antibiotic therapy in prevention of surgical site infections.
8. a) Enumerate the molecular epidemiological typing methods for bacteria. 4+6
b) Parameters to evaluate efficacy of a typing method.
9. CRISPR-Cas system and enlist the applications of the CRISPR-Cas technology in biomedical science. 5+5
10. a) Enumerate the uses of animal models in infectious disease research. 4+6
b) Invertebrate models currently used in infectious disease research.
