

(2) 9560

(b) Write the contribution of the following scientists (any three) : $1 \times 3 = 3$

(i) J. Handelsman

(ii) Eckard Wimmer

(iii) J. Doudna and E. Charpentier

(iv) S. Balasubramanian and D. Klenerman.

2. (a) Differentiate between the following (any two) : $4 \times 2 = 8$

(i) Core and flexible genomes

(ii) Autoinducers of Gram-positive and Gram-negative bacteria

(iii) Sequence-based and function-based metagenomics.

(b) Expand the following terms (any four) : $1 \times 4 = 4$

(i) Yop

(ii) XDR

(iii) PAM

(iv) AHL

(v) gRNA.

3. (a) What are virus-like nanoparticles ? Discuss their role in health care and vaccines ? 6

(b) Explain type-III secretion system using a suitable microbial system. 6

4. (a) Define viral zoonosis with suitable examples. What are the key factors that contribute to the emergence and spread of pandemics ? 6
- (b) What are biofilms ? Discuss the role of phages in treating biofilm infections. 6
5. (a) What are pathogenicity islands ? Give an example. Explain their different properties. 6
- (b) What do you mean by synthetic biology ? Discuss its potential applications with suitable examples. 6
6. Write short notes on the following (any *three*) : 4×3=12
- (i) Metatranscriptomics
 - (ii) Hypersensitive response
 - (iii) Biological networks
 - (iv) CRISPR-Cas.