

This question paper contains 2 printed pages]

**NEPNY—85—2023**

**FACULTY OF SCIENCE**

**M.Sc. (NEP) (First Semester) EXAMINATION**

**NOVEMBER/DECEMBER, 2023**

**MICROBIOLOGY**

**SMICE-401**

**(Commercial Microbiology)**

**(Thursday, 28-12-2023)**

**Time : 10.00 a.m. to 12.30 p.m.**

*Time—2½ Hours*

*Maximum Marks—60*

*N.B. :—* (i) Question No. 1 is compulsory.

(ii) Out of the remaining, attempt any *three* questions.

(iii) Draw neat and labelled diagram wherever required.

1. Write brief notes on any *three* :

15

(a) Microbial techniques for hydrocarbon exploration.

(b) Role of microbial nanoparticles in diagnostics.

(c) Microbial solar cells.

(d) Bitransformation processes for value added products generation using agro-wastes.

P.T.O.

2. (a) Take a detailed account on microbial treatments of petroleum waste. 8
- (b) Discuss origin of petroleum with special emphasis on its biogenesis. 7
3. (a) Define microbial nanotechnology. Explain in detail intracellular and extracellular biosynthesis of nanoparticles. 8
- (b) Write on nanostructures and nanobacteria. 7
4. (a) Define electromicrobiology. Give an account on electroactive microorganisms. 8
- (b) What are the various applications of electromicrobiology ? 7
5. (a) Take a detailed account on production, degradation and applications of polyhydroxyalkanoates. 8
- (b) Discuss the role of bacterial products in cosmetic industry. 7
6. Write notes on any *three* : 15
- (a) Enzyme enhanced oil recovery
- (b) Bacterial silver nanoparticles
- (c) Microbial fuel cells
- (d) Types of antimicrobial textiles.