Total number of printed pages–4

3 (Sem–6/CBCS) BOT HE 1

2024

BOTANY

(Honours Elective)

Paper : BOT–HE–6016

(Industrial and Environmental Microbiology)

Full Marks : 60

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. Answer the following : 1×7=7

   (a) What was the first organic acid manufactured in a larger scale ?

   (b) What are baffles ?

   (c) Name the microorganisms involved in the production of cyclosporin A.

Contd.

(d) Which media is used to isolate cellulose degrading bacteria ?

(e) Which of the following is free-living nitrogen-fixing bacteria present in the soil ?

(i) *Azotobacter*

(ii) *Nitrosomonas*

(iii) *Rhizobium*

(iv) *Pseudomonas*

(f) _____, an industrial effluent, was notoriously responsible for Minamata incident occured in Japan.
(Fill in the blank)

(g) Numbers of ATP molcule required for nitrogen fixation is _____.
(Fill in the blank)

2. Answer the following in short : 2×4=8

(a) What is biosparging ?

(b) What is abyssal zone ?

(c) What is enzyme immobilization ?

(d) What do you mean by Lyophilization ?

3. Answer ***any three*** of the following : 5×3=15

(a) Mention the components of a typical bioreactor.

(b) Write down the preparation and methodologies on antibiotic penicillin production.

(c) Describe various steps involved in casein hydrolysis.

(d) Describe briefly about enumerations of microbes in air.

(e) Describe the role of microbes is sewage treatment.

4. Answer ***any three*** of the following : 10×3=30

(a) Define COD. How can we determine COD in polluted water ? Describe briefly.

(b) Write an essay on process of biological nitrogen fixation.

(c) What are different methods of enzyme immobilization ?

(d) Describe the importance of microbes in agriculture with example.

(e) Describe about the industrially important microbes involved in the production of various important products providing sufficient examples.

(f) Describe briefly about batch and continuous fermentation process.
