

(e) Write briefly the screening process of microbes used in industries. Why is secondary screening important? 8+2=10

(f) Describe the scope and application of Microbes in biotechnology and other branches of biology.

Answer any three questions. 3x3=9  
10x3=30

(a) Define Industrial Microbiology. Write five aspects of Industrial Microbiology and three advantages of microbial processes.

(b) Define Microbial processes. Write five advantages of microbial processes.

(c) Define Microbial processes. Write five advantages of microbial processes.

(d) Define Microbial processes. Write five advantages of microbial processes.

(e) Define Microbial processes. Write five advantages of microbial processes.

(f) Define Microbial processes. Write five advantages of microbial processes.

(g) Define Microbial processes. Write five advantages of microbial processes.

(h) Define Microbial processes. Write five advantages of microbial processes.

(i) Define Microbial processes. Write five advantages of microbial processes.

(j) Define Microbial processes. Write five advantages of microbial processes.

(k) Define Microbial processes. Write five advantages of microbial processes.

(l) Define Microbial processes. Write five advantages of microbial processes.

(m) Define Microbial processes. Write five advantages of microbial processes.

(n) Define Microbial processes. Write five advantages of microbial processes.

(o) Define Microbial processes. Write five advantages of microbial processes.

(p) Define Microbial processes. Write five advantages of microbial processes.

(q) Define Microbial processes. Write five advantages of microbial processes.

(r) Define Microbial processes. Write five advantages of microbial processes.

(s) Define Microbial processes. Write five advantages of microbial processes.

(t) Define Microbial processes. Write five advantages of microbial processes.

(u) Define Microbial processes. Write five advantages of microbial processes.

(v) Define Microbial processes. Write five advantages of microbial processes.

(w) Define Microbial processes. Write five advantages of microbial processes.

(x) Define Microbial processes. Write five advantages of microbial processes.

(y) Define Microbial processes. Write five advantages of microbial processes.

(z) Define Microbial processes. Write five advantages of microbial processes.

Total number of printed pages-40 Name \_\_\_\_\_ (a)

Computation of marks \_\_\_\_\_ (b)

3 (Sem-6/CBCS) BOT HE 1 (c)

2023 (d)

2023 (e)

Answer is Handed over (f)

BOTANY (g)

(Honours Elective) (h)

Answer to Paper I: BOT-HE-6016 (i)

(Industrial and Environmental Microbiology) (j)

Full Marks : 60 (k)

Time: Three hours (l)

The figures in the margin indicate full marks for the questions. (m)

1. Answer the following : 1x7=7 (n)

(a) Who coined the term 'antibiotic'? (o)

(b) What is the role of leg-haemoglobin in N<sub>2</sub>-fixation? (p)

(c) Mention any two advantages of immobilized enzymes used in fermentation. (q)

3 (Sem-6/CBCS) BOT HE 1/G 4 (r)

2500 (s)

Contd. (t)

(d) Name one microorganism used in commercial production of lipase.

(e) What is biosorption?

(f) What is 'Hartig net'?

(g) Name one air-borne bioallergen.

2. Answer the following in short:  $2 \times 4 = 8$

(a) Why is impeller or agitator called as a key component of a bioreactor?

(b) Write one isolation method of soil microorganisms.

(c) Define synthetic media. Write the composition of any one synthetic medium.

(d) How was water pollution related to 'Minamata' disease in Japan?

3. Write on any three of the following:  $5 \times 3 = 15$

(a) Characteristics of Microbes used in industrial microbiology

(b) Air-lift bioreactor

(c) Basic components of a fermentation medium

(d) Indicators of water pollution

(e) Screening of Microbes for casein hydrolysis

4. Answer any three of the following:  $10 \times 3 = 30$

(a) Define fermentation. Write briefly about solid state and liquid state fermentations and also mention their various uses in industries.  $1+(4+4+1)=10$

(b) What is mycorrhiza? Write about the different types of mycorrhiza. Describe the contribution of arbuscular mycorrhizal fungi in agriculture.  $2+4+4=10$

(c) Write about the commercial production of citric acid and its use in various industries.  $8+2=10$

(d) Write an essay on bioremediation of contaminated soil. Discuss its advantages and disadvantages.  $8+2=10$