

Total No. of Questions : 8]

SEAT No. :

**P2738**

**[5030]-303**

[Total No. of Pages : 2

**M.Sc.**

**MICROBIOLOGY**

**MB - 703 : Industrial Waste Water Treatment  
(2013 Pattern) (Semester - III)**

*Time : 3 Hours]*

*[Max. Marks : 50*

*Instructions to the candidates:*

- 1) *Attempt any Three from Q.1 to Q.4.*
- 2) *Attempt any two from Q.5 to Q.8*
- 3) *All questions carry equal marks.*
- 4) *Draw neat labelled diagram wherever necessary.*
- 5) *Use of logarithmic tables and scientific calculators is allowed.*
- 6) *Assume suitable data if necessary.*
- 7) *Figures to the right indicate full marks.*

**Q1)** Attempt any two:

**[10]**

- a) Explain TOC method of measurement of organic matter. What is the relationship between BOD, COD and TOC.
- b) Describe Respirometric determination of BOD.
- c) Discuss the determination of Total Solid content from waste water.

**Q2)** Attempt any two:

**[10]**

- a) Give significance of flocculation process in waste water treatment.
- b) Describe flotation and give its significance.
- c) Describe membrane filtration process.

**Q3)** Attempt any two:

**[10]**

- a) Describe composting process of sludge.
- b) Explain Trickling Filter / Activated Sludge combined treatment process.
- c) Briefly explain anaerobic suspended Growth processes.

**P.T.O.**

**Q4) Attempt any two: [10]**

- a) Define COD. Give Flow Chart of COD estimation.
- b) Explain Flow equalization process.
- c) Explain disinfection with chlorine dioxide.

**Q5) Attempt any two: [10]**

- a) Describe the characteristic of Textile waste.
- b) Elaborate on variation in effluent treatment from different food processing industry with suitable examples.
- c) How is color removed from paper and pulp industry effluent.

**Q6) Attempt any two: [10]**

- a) What is significant impact? How is it determined.
- b) What is EIA? Explain the need for it to be introduced.
- c) Explain Phase II, study of EIA.

**Q7) Attempt any two: [10]**

- a) Describe the principle elements of Rotating Biological contactor reactor.
- b) Discuss measures for controlling membrane Fouling in MBR.
- c) Explain working of SAFF Reactors.

**Q8) Attempt any two: [10]**

- a) Justify :- MBBR is most effective and efficient waste water treatment system.
- b) Describe biological treatment of dairy waste.
- c) Discuss, Identity, Predict and Judgement with respect to EIA study.

