2 0 1 9

B.Tech Even Semester (CBCS) Exam., May—2019

AGRICULTURAL ENGINEERING/
COMPUTER SCIENCE AND ENGINEERING

(6th/8th Semester)

Course No. : AE-EL–10

(Environmental Engineering Fundamentals)

<u>Full Marks</u> : 50
<u>Pass Marks</u> : 15

Time : 2 hours

Note : 1. Answer *any* **five** questions.
2. Begin each answer in a new page.
3. Answer parts of a question at a place.
4. Assume reasonable data, wherever required.
5. The figures in the margin indicate full marks for the questions.

1. *(a)* Define scope of the environmental engineering and its application in the present scenario. 5

(b) Explain turbidity and colour of water in terms of equality. 5

(**2**)

2. *(a)* Explain different chemical requirements for microbial growth. 6

(b) What is soil pollution? Explain different causes of pollution. 4

3. *(a)* What is metabolic classification of life? Discuss in brief. 6

(b) What is air quality index? Explain in detail. 4

4. *(a)* In fermentation process what are electron acceptors and donors? 3

(b) Explain first-order reaction and calculate rate constant. 4

(c) Define water cycle with a sketch. 3

5. *(a)* How methanotrophs and methanogens differ from each other? Explain on the basis of oxidation-reaction process or products. 6

(b) Define aeration and ultra filtration. 4

6. *(a)* Explain with details of the growth cycle or phases of microbial growth. 5

(b) Draw a neat flowchart of water treatment plant and explain it. 5

(*Turn Over*)

(*Continued*)

(3)

7. *(a)* If in 6 hour an exponentially growing cell population increase from 25×10^6 cells/ml to 8×10^8 cells/ml, calculate generation time, number of generations, division rate and specific growth rate.　　　　　5

　(b) What is stoichiometry and equilibrium of an equation?　　　　　5

8. *(a)* What are the guidelines for drinking water?　　　　　5

　(b) Write on the following :

　　(i) Gene expression

　　(ii) Most probable number (MPN)

　　(iii) Virulence of organisms

　　(iv) DNA replication

　　(v) Water softening

★ ★ ★