

B.Tech. CIVIL ENGINEERING (BTCLEVI)

Term-End Examination

June, 2015

00366

**BICEE-024 : ADVANCED ENVIRONMENTAL
ENGINEERING**

Time : 3 hours

Maximum Marks : 70

*Note : Answer any **five** questions. All questions carry equal marks. Assume any suitable data, if missing. Use of scientific calculator is allowed.*

1. (a) Explain the principles of designs for oxidation ponds and aerated lagoons. 8
- (b) Explain how the wastewater can be reused before and after treatment. 6
2. (a) Discuss the characteristics of a sound pressure wave. 5
- (b) What is A-weighted sound pressure level. Draw the decibel scale to show various sound pressure levels. 5
- (c) Differentiate between enclosures and barriers. 4

3. (a) Explain the various particulate collection mechanisms for control of air pollution. 8
- (b) What is DO sag curve ? Explain the significance of Streeter-Phelps equation. 6
4. (a) Explain the working of catalytic converters. 6
- (b) How are the oxides of nitrogen, sulphur and carbon analyzed. Explain in detail. 8
5. (a) Describe the various absorption units for water and wastewater treatment. 8
- (b) Explain the flue gas control methods for NO_x . 6
6. Explain the various mechanisms of disinfection. What are the factors influencing the action of disinfectants ? Explain Residual free chlorine and Breakpoint chlorination. 14
7. (a) BOD tests performed on 4 ml sample of a wastewater using 300 ml standard BOD bottles at different times, have yielded the following results :

Time (d)	0	0.5	1.0	1.5	2.0	3.0	5.0
DO (f) (mg/l)	8.4	7.4	6.6	6.0	5.4	4.5	3.5

Calculate the value of

(i) BOD rate constant

(ii) BOD_5

(iii) Ultimate BOD

Use Thomas Graphical Method.

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(b) When is extended aeration used for treatment of wastewater and why?

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