

## Bachelor of Civil Engineering (Evening) Supplementary Examination 2017

(4<sup>th</sup> Year 1st semester)

### Environmental Pollution and Control

Time: Three Hours

Full Marks: 100

Use separate answer script for each part

(50 marks for each part)

#### Part-1

Answer **Question No. 1** and any **Two** from the rest. Answers should be brief. Any relevant data may be assumed, if needed. **Answer Question No. 1 first.**

1.
  - a) Mention the main source of most abundant criteria air pollutant(CAP).
  - b) Name two secondary gaseous CAP.
  - c) How is stratospheric ozone destructed naturally?
  - d) What is the significance of the reaction between Tropospheric ozone and nitric oxide?
  - e) Why is structure made with marble affected in acidic rains?
  - f) Why is it comparatively difficult to control secondary air pollutants?
  - g) What are secondary air quality standards?
  - i) Correlate emission standards and BAT.
  - j) Which one is most preferred among reuse, recycle and recovery and why?
  
2.
  - a) Draw only the *infrared portion* of Global Energy Balance sketch and define albedo *from the sketch*. What percentage of global albedo is that of earth? Comment on the value.
  - b) Draw the combined absorption spectra of atmosphere. Define natural and enhanced green house effect *from the sketch*. Write the equations responsible for 100 percent absorption. 7+8=15

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3. a) Mention two alkanes whose derivatives are the CFCs, HCFCs, HFCs and Halones . Define ODP.
- b) Why is London Smog also called Industrial Smog?
- c) Why is Photochemical Smog also called Vehicular Smog?
- d) Define Acid Rain.
- e) 'Indian AQI method (IND-AQI) is free from ambiguity and eclipsing'-explain. 4+2+2+2+5
4. a) With the help of single sketch draw super-adiabatic, sub-adiabatic , adiabatic, zero and negative environmental lapse rates.
- b) With a single sketch define absolutely stable and absolutely unstable conditions.
- e) What is 'SSW' wind direction? Define 'calm' condition 7+2+3+3=

Use a separate Answer-Script for each part

Marks: 100	No. of Questions	Part II	Marks
ODP.		<b>Answer question no.1 (compulsory) and any three from the rest. Assume relevant data if necessary.</b>	
	Q1. a)	<b>Write Short Note on (Any two):</b> i. Haul container system of solid waste collection ii. Octave band analysis for sound iii. Oxygen sag curve	5×2
+2+2+5	b)	<b>Answer all the questions briefly in one or two sentences</b> i. What is leachate? ii. What do you mean by heating value of solid waste? iii. What is loudness of sound? iv. What is 'DBU' for a water body? v. Write two limitations of Streeter Phelps' equation.	2×5
negative	Q2.a)	A city of $2 \times 10^5$ people deposits $0.2 \text{ m}^3/\text{s}$ of sewage having a $\text{BOD}_5$ of 28 mg/L and DO 1.8 mg/L into a river that has a flow rate of $0.5 \text{ m}^3/\text{s}$ and a flow speed of 0.2 m/s. Just at the upstream of the release point, the river has a $\text{BOD}_5$ of 3.6 mg/L and DO 7.6 mg/L. The saturation value of DO is 8.5 mg/L. The deoxygenation coefficient is 0.61/day and the reaeration coefficient is 0.76/day. Assume complete instantaneous mixing of the sewage and river. Find the distance of the critical point from the mixig point and the DO concentration at that point.	8
+2+3+3=1	b)	If the reaeration rate constant will become 0.61/day and the deoxygenation constant will become 0.76/day then where will the critical point shift for the same river? Write with proper justification	2
	Q 3. a)	Establish the relation between sound power level and sound intensity level.	3
	b)	Name the instrument by which we measure the sound pressure. Also, write the importance of weighting network in this instrument.	3+1
	c)	Find the summation of 60 dB(A) and 70 dB(A).	3
	Q 4. a)	Differentiate between garbage and rubbish.	2
	b)	Name two methods of quantification of solid waste.	2
	c)	For which characteristics of solid wastes will you suggest for biological treatment of solid waste?	2

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B.C.E. (EVENING) 4<sup>TH</sup> YEAR EXAMINATION, 2017

(1<sup>st</sup> Semester Supplementary)

SUBJECT: Environmental Pollution & Control

Time: Three hours

Full Marks 100  
(50 marks for each part)

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No. of Questions	Part II	Marks
Q4.d)	After ultimate analysis it was obtained carbon content of a solid waste is 35%. H content is 25%. O content is 20%, N content is 12% and S content is 8%. Determine the chemical formula of the solid waste with sulfur and without sulfur, considering 1000 kg waste.	4
Q5.a)	What is the most important parameter to check the quality of a water body? What do you mean by thermal stratification and over turning for a lake?	1+3+2+
b)	What is the basic difference between combustion and gasification for solid waste treatment?	2
c)	What is impulsive sound?	2