Bachelor of Civil Engineering (Part Time) Examination 2018

(4th 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) Write the equation of formation of the most abundant criteria air pollutant(CAP).

    b) Name two organic CAPs.

    c) How is tropospheric ozone destructed naturally?

    d) What is the basic concept of control of NOx?

    e) Write the equation to describe the effect of acid rain on marble.

    f) Why is it comparatively difficult to control secondary air pollutants?

    g) Name wind speed and wind velocity measuring instruments.   h) Define windrose

    i) Name the two types of particulate matter which are separated in respirable dust sampler using

        centrifugal force.

    j) Which one is most preferred among reuse, recycle and recovery and why? $2 \times 10 = 20$

2. a) Draw the Global Energy Balance sketch and define albedo *from the sketch*. What percentage of global

        albedo is that of earth? Comment on the value. From the sketch, show the balance for atmosphere.

    b) Draw only the UV portion of combined absorption spectra of atmosphere. Write the equations

        responsible for 100 percent absorption. $9+6 = 15$

Bachelor of Civil Engineering (Part Time) Examination 2018 (Old)

(4th Year 1st semester)

Time: Three Hours

Full Marks: 100

(50 marks for each part)

3. a) Mention two alkanes whose derivatives are the CFCs, HCFCs, HFCs and Halons . Define ODP.

    b) Define smog. Name two synonyms of Photochemical Smog and justify the naming of all three.

    c) Define Acid Rain based on bicarbonate acidity only.   4+9+2=**15**

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 show only absolutely stable and absolutely unstable conditions.

    c) What is 'SSW' wind direction? Define 'calm' condition,

    d) Draw fumigating plume patterns along with lapse rates.   6+3+3+3=1

B.E.C.E. (PART TIME) 4ᵀᴴ YEAR EXAMINATION, 2018
(1ˢᵗ Semester Old)
SUBJECT: Environmental Pollution & Control

Time: Three hours

Full Marks 100
(50 marks for each part)

arks: 100

Use a separate Answer-Script for each part

No. of Questions	Part II	Marks
	Answer question no.1 (compulsory) and any two from the rest. Assume relevant data if necessary.	
Q1. a)	**Fill in the blanks:**	1×10
i.	As per international norm a country is known to be water scared country when per capita water availability is _____	
ii.	'D' type weighting network is required for monitoring _____ Noise.	
iii.	Reference power used for determining sound power level is _____	
iv.	After discharging pollution load the stream will return to its original condition after certain time due to its _____ capacity.	
v.	Thermal treatment of organic solid waste with stoichiometric amount of oxygen is known as _____	
vi.	After pollution discharge in a stream body the point where dissolved oxygen concentration is minimum is known as _____	
vii.	For propagation of wild life and fisheries the minimum dissolved oxygen concentration should be maintained _____	
viii.	For collection or transfer of solid waste where the whole container used for waste storing is transferred to disposal site is known as _____	
ix.	For octave band analysis the ratio between lower and upper frequency of sound should be always _____	
x.	Excessive algal growth in water body is termed as _____	
b)	**Justify in one or two sentences.**	2×5
i.	Source reduction is the best strategy for solid waste management.	
ii.	For municipal solid waste of Kolkata composting is the best method for processing.	
iii.	Landfilling cannot be avoided for solid waste management.	
iv.	Thermal stratification has less adverse effect for flowing water than lake.	
v.	The term 'sound level meter' instead of 'sound pressure level meter' is more appropriate name for the instrument measures sound level.	
Q2.a)	Define with the unit: sound intensity level, loudness of sound, continuous sound and equivalent sound level	3×4
b)	Find the summation of 60 dB(A) and 70 dB(A).	3
Q 3. a)	What are proximate analysis and ultimate analysis of solid waste? Name two methods of	3+2+2+

ODP.

three.

4+9+2=15

negative

+3+3+3=1

B.E.C.E. (PART TIME) 4TH YEAR EXAMINATION, 2018

(1st Semester Old)

SUBJECT: Environmental Pollution & Control

Full Marks 100

Time: Three hours

(50 marks for each part)

Use a separate Answer-Script for each part

No. of Questions	Part II	Marks
Q3. b)	quantifying solid waste. Name two methods of primary collection of Solid waste in India.	2
	If chemical formula for a typical solid waste generated in an area is $C_{500}H_{800}O_{400}N_5S$ then calculate its high heating value in KJ/kg using Modified Dulong's formula.	5
Q 4. a)	With a neat sketch describe the thermal zonation of a lake. Define zone of active decomposition.	5+2
b)	A municipality discharges 0.2m^3/s of sewage to a river having flow rate of 0.5m^3/s. The characteristics of the river and the sewage is presented in the table below.	8

Parameters	River	Sewage
Temperature (°C)	20	20
DO (mg/L)	8	2
BOD$_5$ at 20°C (mg/L)	3	40

Assume that the deoxygenetaion constant (base e) is 0.2/day at 20°C and reaeration constant (base e) is 0.4/day at 20°C for the mixture. Equilibrium concentration of D.O. (Cs) for the fresh water at 20°C is 8.79mg/L.

If the velocity of the river is 0.2 m/s then determine the distance where the DO value will be minimum.