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Invigilator's Signature :	

CS/B.TECH/FT(N)/SEM-3/CH(FT)-301/2012-13

2012

BASIC ENVIRONMENTAL ENGINEERING AND ELEMENTARY BIOLOGY

Time Allotted: 3 Hours Full Marks: 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

GROUP - A

(Multiple Choice Type Questions)

- 1. Choose the correct alternatives of the following: $10 \times 1 = 10$
 - i) Reactor explosion of uranium releasing radioactive elements into the environment in April 1986 and more than 2000 died in
 - a) Fukushima, Japan b) Chernobyl, Ukraine
 - c) Hiroshima, Japan d) Sevego, Italy.
 - ii) The lowest layer of atmosphere is
 - a) Mesosphere b) Troposphere
 - c) Stratosphere d) Ionosphere.
 - iii) Activated sludge process is classified under
 - a) Primary treatment b) Secondary treatment
 - c) Tertiary treatment d) None of these.

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a)	Ammonia	b)	Methyl isocyanides	
c)	Carbon monoxide	d)	Carbon dioxide.	
	-	es oxy	gen carrying capacity of	
a)	Ammonia	b)	Hydrogen sulphide	
c)	Carbon mono oxide	d)	Sulphur dioxide.	
For a sample of wastewater containing biodegradable waste will have				
a)	BOD < COD	b)	BOD = COD	
c)	BOD > COD	d)	BOD ≠ COD.	
Lake rich in nutrients is known as				
a)	Atrophic lake	b)	Eutropic lake	
c)	Mestrophic lake	d)	Oliographic lake.	
Cyclone separator is a kind of				
a)	waste substance treatment			
b)	way of energy generation			
c)	device for controlling air pollution			
d)	a kind of organic cult	ure.		
The term 'Ecosystem" was coined by				
a)	Simmens	b)	Odum	
c)	Tansley	d)	Heitzer.	
Coli	Coliform test is performed to detect			
a)	a) a class of living biological contaminants			
b)	b) biodegradable organic pollutants			
c)	inorganic pollutants			
d)	none of these.			
	2			
	c) Air j hae: a) c) For was a) c) Lake a) c) Cycl a) b) c) d) The a) c) Colii a) b) c)	c) Carbon monoxide Air pollutant which reduce haemoglobinis a) Ammonia c) Carbon mono oxide For a sample of wasteway waste will have a) BOD < COD c) BOD > COD Lake rich in nutrients is known and an experience of the controlling of the	c) Carbon monoxide d) Air pollutant which reduces oxyhaemoglobinis a) Ammonia b) c) Carbon mono oxide d) For a sample of wastewater of waste will have a) BOD < COD b) c) BOD > COD d) Lake rich in nutrients is known a) Atrophic lake b) c) Mestrophic lake d) Cyclone separator is a kind of a) waste substance treatment b) way of energy generation c) device for controlling air pold d) a kind of organic culture. The term 'Ecosystem" was coine a) Simmens b) c) Tansley d) Coliform test is performed to det a) a class of living biological of b) biodegradable organic pollut c) inorganic pollutants d) none of these.	



(Short Answer Type Questions)

Write short notes on any *three* of the following. $3 \times 5 = 15$

- 2. Name two hazardous chemicals present is waste water. Write down their source and biochemical effects.
- 3. a) What do you mean by the term environment?
 - b) What are the objectives of environmental studies ? 2 + 3
- 4. a) What is black body?
 - b) It took the world about 300 years to increase in population from 0.5 billion to 4.0 billion. If we assume exponential growth at a constant rate over that period of time, what would that growth rate be? 2+3
- 5. a) What do you mean by environmental Impact assessment?
 - b) How is it related to the setting up of a new process industry? 2+3
- 6. a) What is lapse rate? What do you mean by inversion condition of the atmosphere?
 - b) A sample of air analysed at 20°C and $1\cdot0$ atmospheric pressure is reported to contain 10 ppm of CO. Determine equivalent CO concentration in $\mu g/m^3$ 3 + 2

GROUP - C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

5

- 7. a) Differentiate between primary and secondary treatment for waste water. 5
 - b) Define BOD stating its principle and calculation.
 - c) State the effects of low DO on aquatic life. State the factors influencing DO.



- 8. a) Briefly discuss the solid waste management procedures.5
 - b) Mention a few international environmental treaty/agreement/protocol available for environmental management.
 - c) Define noise pollution. Write down the effects of noise pollution.
- 9. a) Define biodiversity. Give a brief account of the biogeographical classification of India. What do you understand by 'hotspots of biodiversity'?
 - b) Distinguish between activated sludge process and trickling filtration process.
 - c) Calculate the population equivalent of a city given: 5
 - (i) the average sewage flow from the city is $90 \times 10^6 1/\text{day}$
 - (ii) the average 5 day BOD is 280 mg/1.
- 10. a) What do you mean by ozone layer depletion?
 - b) Which pollutants are responsible for ozone layer depletion and how?
 - c) What are control methods of ozone layer depletion?
 - d) What is Montréal protocol?
 - e) What are the harmful effects of acid rain?

$$3 + (1 + 3) + 3 + 2 + 3$$

- 11. Write notes on any five of the following:
- 5×3

- a) Hydrological cycle
- b) Trickling filter
- c) Catalytic converter
- d) Aquifers
- e) Temperature Inversion
- f) Lead Pollution
- g) Bag House.