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Invigilator's Signature :	

CS/B.TECH(BT-N))/SEM-3/CH(BT)-301/2011-12

2011

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

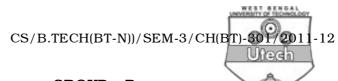
(Multiple Choice Type Questions)

- 1. Choose the correct alternatives for the following: $10 \times 1 = 10$
 - i) PAN is a type of
 - a) primary air pollutant
 - b) secondary air pollutant
 - c) composite air pollutant
 - d) radioactive pollutant.
 - ii) Air pollutant which reduces oxygen carrying capacity of haemoglobin is
 - a) Ammonia
 - b) Hydrogen sulphide
 - c) Carbon monoxide
 - d) none of these.
 - iii) Hazardous waste should have characteristics such as
 - a) Reactivity
- b) Corrosivity
- c) Toxicity
- d) all of these.

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iv)	Oxy	gen demanding waste is	3	O (C)(C)		
	a)	Inorganic pollutant	b)	Radioactive material		
	c)	Organic pollutant	d)	none of these.		
v)	Itai-Itai disease is related to					
	a)	Hg	b)	As		
	c)	Pb	d)	Cd.		
vi)	Which one is the slowest biochemical cycle?					
	a)	Oxygen cycle	b)	Phosphorus cycle		
	c)	Nitrogen cycle	d)	Sulphur cycle.		
vii)	Ozone acts as a pollutant when resides in					
	a)	stratosphere	b)	troposphere		
	c)	mesosphere	d)	ionosphere.		
viii)	Energy flow of an ecosystem is					
	a)	unidirectional				
	b)	b) may be unidirectional or cyclic				
	c)	cyclic				
	d) cannot be said conclusively.					
ix)	The grazing food chain starts from					
	a)	Fungi	b)	Bacteria		
	c)	Green plants	d)	Animal decomposers.		
x)	The value of earth's albedo is					
	a)	0.21	b)	0.31		
	c)	0.021	d)	0.031.		



GROUP - B

(Short Answer Type Questions)

Answer any three of the following.

 $3 \times 5 = 15$

- 2. a) What do you mean by atmospheric stability?
 - b) Discuss superadiabatic and subadiabatic lapse rate. 3
- 3. Discuss the principle of electrostatic precipitator as an air pollution control device.
- 4. Write a short note on bio-diversity.
- 5. Discuss about the regulatory mechanism of cell cycle.
- 6. Briefly describe the Ames Test.
- 7. Give a view on effects of abiotic factor on population growth.

GROUP - C

(Long Answer Type Questions)

Answer any *three* of the following.

 $3 \times 15 = 45$

- 8. a) Draw the food chains for grazing and detritus type.
 - b) Describe the various types of cohabitation of organism with examples.
 - c) Draw the food web for forest ecosystem.

4 + 8 + 3

9. Write short notes on any *three* of the following:

 3×5

- a) Eutrophication
- b) EIA
- c) Criteria pollutant
- d) Coagulation and flocculation
- e) Trickling filter
- f) Activated sludge process.

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- b) What is the main byproduct pollutant of smog? Explain with mechanism.
- c) What is the difference between sulphurous smog and photochemical smog?
- d) What are the effects of smog on living organism?

$$2 + 1 + 8 + 2 + 2$$

- 11. a) Define BOD and COD.
 - b) Why COD determination is necessary before the test for BOD?
 - c) State the factors that influence the amount of DO in a water body.
 - d) What do you mean by oxygen sag curve? 5 + 3 + 2 + 5
- 12. a) What is non-disjunction? Give example of one syndrome in humans.
 - b) Briefly describe deletion and inversion with labelled diagrams.
 - c) Categorise mutagens with examples of each. 4 + 7 + 4