Name- Entry No- 05691 Group No-

ENERGY, ECOLOGY, ENVIRONMENT (ESL 330)
Major Test
29-04-2008

Duration – 1PM to 3 PM (Two hours)

PART (A) **(60 MARKS)**

1. a) Indicate if the following statements are True (T) or False (F). **(7 marks)**

i) Most of the gaseous air pollutants are totally transparent with exception of NO_2. ( )

ii) Diesel engines are a significant source of CO emission ( )

iii) Eye irritating components of photochemical smog are both formic acid and acetic acid. ( )

iv) Each CFC molecule can last in the atmosphere for 65-110 years ( )

v) Methane has got about 30% of contribution to overall global warming. ( )

vi) Each habitat provides only one Niche ( )

vii) $CaCO_3$ does not fall in the category of VOCs ( )

b) Amplify the terms **(4 marks)**

i) ODP

ii) PAHs

iii) RSPM

iv) CPCB

v) CARB

vi) IPCC

vii) NESHAP

vii) NMVOC

c) Write down the name of the instrument which measures **(3 marks)**

i) HC level from your Petrol car----

ii) Smoke level from your Diesel car----

iii) CO level from a CNG-fuelled auto rickshaw-----

2. Briefly explain the following **(12 marks)**

i) If earth has warmed and cooled throughout history, what makes scientists think that humans are causing global warming now?

Name- Entry No- Group No-

ii) How might "global warming affect sea level"?

iii) Which is worst for the environment, plastie or aluminum produets? Why?

iv) What is unlcaded petrol and how is it better for the environment?

v) How Replaeing gasoline with CNG in a vehicle reduces the emissions of VOCs .

vi) How does albedo affeet influence global warming?

vii) Why visibility is normally much better in dry elimates than in moist ones?

viii) Why the most famous statues at the Parthenon have been moved into an air conditioned museum; fibre glass replicas now stand outdoors in their place?

Name- Entry No- Group No-

3. Till now it is believed that the Moon has no atmosphere and it refleets 12% of ineoming solar radiation. What would happen if

(a) it absorbed all and reflected none? **(3 marks)**

(b) if it reflected the same percentage as the Earth?

4. Match the following in eolumn A with the corresponding source/ application area in Column B

Column A	**Column B (4 marks)**
a. Sulphur dioxide	West-Gaeke method ( )
b. Electrostatic precipator	Removal of Particular from gas stream ( )
c. NDIR	Oxides of Nitrogen ( )
d. Chemiluminescent analyzer	Carbon monoxide ( )

5. List out the important "natural gases" and "human inputs" for green house gases and ozone shield

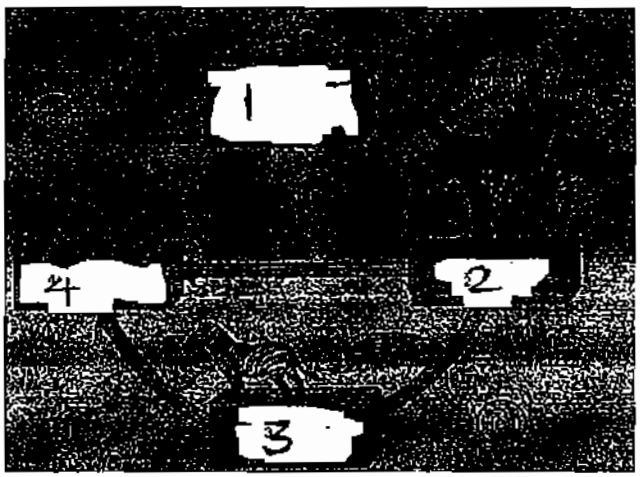
(4 marks)

	Green House Effect	Ozone Shield
Natural Gases involved		
Significant human inputs		

6. Mention Bharat III emission norms of pollutants for passenger cars in India (3 marks)

Name- Entry No- Group No-

7. Comment on the ecosystem and identify 1, 2, 3, and 4 in the figure below. **(2 marks)**



8. Demonstrate graphically/through schematic diagrams. **(10marks)**

(i) The distribution pattern of Ozone in the stratosphere and troposphere.

(ii)The overall relationship between greenhonse gas concentrations and Antarctic Temperature.

(iii)Conversion efficiency of a three –way catalyst system as a function of Air-fuel ratio

Name- Entry No- Group No-

(iv) Energy flow pyramids

(v) Energy flow in food chain of ecosystem

9. Suppose an emission scenario estimates the following concentrations for CO_2 and CH_4 in the year 2100. Using a climate seusitivity factor λ equal to 0.57°C per W/m^2, estimate the equilibrium global temperature change caused by the forciug of these two gases (5marks)

Gas	1992(ppb)	2100(ppb)
CO_2	356000	710000
CH_4	1714	3616

10. If CO is present in air at a concentration of 1 ppm, what are the number of CO moleeules in 1 m^3, and what is the mass of CO in 1 m^3 ? (3 marks)

Name: Ent.No: Group: 29.04.2008

ESL 330 Energy Ecology and Environment **Major Exam**

Part B: 40 points (20 marks)

1. Highlight the Kyoto protocol and G8 summit (3)

2. Discuss positive and negative impacts of interlinking of rivers on energy and environmental aspects in our country (4)

3. 50 MT of diesel is consumed annually by transport sector in our country. If 20% of the fuel is utilized by locomotives, how much CO_2 emission will be reduced and how much fuel will be shaved? (4)

Name: Ent.No: Group: 29.04.2008

4. Explain the methods for storing CO_2 emission in deep underground geological formations? Write advantages and disadvantages of each method? (4)

5. What are the causes for global warming and its effects on sea level change, and agricultural and food cycle change? (4)

Name: Ent.No: Group: 29.04.2008

6. What energy and environmental advantages does nuclear power offer over coal energy?. Explain nuclear power plant with comparison of 1MW coal based power plant per year operation. (6)

7. Write the options for use of biomass in transportation sector?. How will it help to increase energy security and reduce emissions? (4)

Name: Ent.No: Group: 29.04.2008

8. If world switchover completely to CFL lamp for lighting in domestic sectors, how much CO_2 emission could reduce for energy use of today's level. Assume the electricity is generated from coal based power plant. The end use efficiency is increased from 2.2% with incandescent lamp to 24% with CFL lamp. (6)

9. Write the relative contributing factors to bring CO2 emission to 2003 levels in 2050 by Technology area (5)