



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

Dundigal, Hyderabad-500043

FRESHMAN ENGINEERING

TUTORIAL QUESTION BANK

Course Name	:	Engineering Chemistry
Course Code	:	AHS009
Class	:	B. Tech II Semester
Branch	:	Common for all branches
Year	:	2017- 2018
Course Coordinator	:	Ms.M .Lakshmi Prasanna, Assistant Professor
Course Faculty	:	Dr. P Ramakanth, Professor Dr. C Mahendar, Professor Dr. M. Shanmugan, Professor Ms. V Anitha Rani, Associate Professor Mr. B Raju, Assistant Professor Mr. M Praveen, Assistant Professor Ms. M Malathi, Assistant Professor Mr. G Mahesh Kumar, Assistant Professor Ms. T Mallika, Assistant Professor Mr. V Taraka Rama Rao, Assistant Professor Ms. P Sarvatra, Assistant Professor Ms. M Swathi, Assistant Professor

COURSE OBJECTIVES (COs):

The course should enable the students to:

I	Analyze the interrelationship between living organism and environment
II	Understand the importance of environment by assessing its impact on the human world
III	Enrich the knowledge on themes of biodiversity, natural resources, pollution control and waste management
IV	Understand the constitutional protection given for environment

COURSE LEARNING OUTCOMES (CLOs):

Students, who complete the course, will have demonstrated the asking to do the following:

CAHS009.01	Understand and realize the importance of multi-disciplinary nature of the environment in day to day life
CAHS009.02	Describe various types of ecosystems its components and inter-relationship between man and environment.
CAHS009.03	Examine how pollutants move through various levels in an ecosystem in our daily life.
CAHS009.04	Explain the pathways of relevant chemical elements through the components of the biosphere in real world applications.
CAHS009.05	Understand the relevance and importance of the natural resources in the sustenance of life on earth and living standard.

CAHS009.06	Develop an understanding of the natural resources problems and ethical issues facing humans and the environment.
CAHS009.07	Correlate the exploitation and utilization of conventional and non-conventional resources.
CAHS009.08	Demonstrate the level of chemical usage in agricultural development and its impact in our daily life.
CAHS009.09	Understand the concept of growing energy needs in the world in terms of consumption of energy.
CAHS009.10	Establish knowledge and existence of endemic, extinct, endangered and threatened species, types and values of biodiversity.
CAHS009.11	Describe our country as mega biodiversity nation in terms of hotspots.
CAHS009.12	Explain on threats and innovative methods for conservation of biodiversity.
CAHS009.13	Establish a foundation on different pollutants and pollutions in the environment.
CAHS009.14	Ability to use methods, and strategies to investigate and interpret the pollution problems.
CAHS009.15	Use innovative methods to control the level of water pollution in our day to day life.
CAHS009.16	Acquire Knowledge on global effects and how to interpret with global environmental problem in our daily life.
CAHS009.17	Acquire knowledge and skills about health and safety protocols when working with polluted environment in day to day life.
CAHS009.18	Describe the role of government and legal aspects in environmental protection.
CAHS009.19	Knowledge of proper decontamination techniques for solid waste management.
CAHS009.20	Understand the importance of EIA for developmental activities to have minimum negative impacts on people.
CAHS009.21	Prepare entry level for future generations to meet sustainable development.

QUESTION BANK QUESTIONS

UNIT – I			
ENVIRONMENT AND ECOSYSTEMS			
Part – A (Short Answer Questions)			
S.NO	QUESTIONS	Blooms Taxonomy Level	Course Learning Outcomes (CLOs)
1	Define ecosystem. How does an ecosystem work?	Understand	CAHS009.02
2	What are biotic and abiotic factors?	Remember	CAHS009.02
3	Explain briefly the importance of ecological pyramids.	Understand	CAHS009.02
4	What are producers, consumers and decomposers in an ecosystem?	Remember	CAHS009.02
4	Discuss pyramid of biomass.	Understand	CAHS009.02
5	What is meant by biomagnification?	Remember	CAHS009.03
6	Explain the energy flow of an ecosystem.	Understand	CAHS009.02
7	Discuss pyramid of energy.	Understand	CAHS009.02
8	What is the nature of an ecosystem? Give its structure and functions.	Remember	CAHS009.02
9	Differentiate between food chain and food web.	Understand	CAHS009.02
10	Discuss pyramid of number.	Understand	CAHS009.02
11	What is the structure of an ecosystem?	Remember	CAHS009.04

12	Relate ecosystem and biosphere?	Understand	CAHS009.02
13	What are the processes that autotrophic organisms use to produce organic material from inorganic substances?	Remember	CAHS009.02
14	Classify ecosystems based on their habitat, creation and exchange of matter and energy.	Remember	CAHS009.02
15	List the different trophic levels of ecosystem.	Understand	CAHS009.02
16	What kind of organisms do we find in aquatic life zones?	Remember	CAHS009.02
17	Define biogeochemical cycles. Explain their importance.	Remember	CAHS009.04
18	What are terrestrial and aquatic ecosystems?	Remember	CAHS009.02
19	Define autotrophic and heterotrophic organisms.	Remember	CAHS009.04
20	Define ecosystem. How does an ecosystem work?	Understand	CAHS009.02

Part - B (Long Answer Questions)

1	List the main components of ecosystem and briefly describe the functions of each.	Understand	CAHS009.02
2	Explain about carbon and nitrogen cycles with the help of a diagram.	Understand	CAHS009.04
3	Discuss the significance of food chains and food webs with relevant examples.	Understand	CAHS009.02
4	What are biogeochemical cycles? Explain phosphorous cycle with the help of a diagram.	Understand	CAHS009.04
5	Explain why the hydrological cycle is important to life on earth with schematic representation.	Understand	CAHS009.04
6	Write a note on biomagnification. Explain about biomagnification of DDT in a food chain?	Understand	CAHS009.03
7	What are ecological pyramids? Explain why some of these pyramids are upright while others are inverted in different ecosystem.	Understand	CAHS009.02
8	Differentiate between grazing food chain and detritus food chain.	Understand	CAHS009.02
9	Explain the role of producers, consumers and decomposers in an ecosystem with practical example.	Understand	CAHS009.02
10	Explain how the energy and nutrient flow through an ecosystem.	Understand	CAHS009.02

Part - C (Analytical Questions)

1	Explain energy flow pattern in different types of ecosystem. What happens to the energy flow as we move up the trophic levels?	Understand	CAHS009.02
2	Explain the major drawbacks of using pesticides and other agrochemicals in the soil on any ecosystem.	Understand	CAHS009.03
3	Why ecosystem is getting degraded and what are the steps have to be taken by public?	Understand	CAHS009.01
4	If every organism must eat another organism for survival, where does the food chain start? Recall.	Understand	CAHS009.02
5	What is the role of an individual to conserve the environment?	Understand	CAHS009.01
6	Mention type of cycles we have in an ecosystem. Explain how water circulates on earth.	Understand	CAHS009.04
7	What is the scope and importance of environment?	Understand	CAHS009.01
8	Explain why there are only 4 to 5 trophic levels in any ecosystem.	Understand	CAHS009.02
9	Write a short note on the need for public awareness on environment in today's scenario.	Understand	CAHS009.01
10	Explain how food becomes energy in organisms.	Understand	CAHS009.02

UNIT - II

NATURAL RESOURCES

Part – A (Short Answer Questions)

1	What are renewable and non-renewable resources? Give examples.	Remember	CAHS009.05
2	Enlist different surface and ground water resources.	Remember	CAHS009.05

3	What are the environmental and social impacts of mining?	Remember	CAHS009.06
4	What is an aquifer? Discuss its types.	Remember	CAHS009.06
5	List the environmental effects of using of mineral resources.	Understand	CAHS009.05
6	Define mineral. Write its uses.	Remember	CAHS009.05
7	What is the importance of rain water harvesting?	Understand	CAHS009.05
8	What are the benefits and problems provided by large dams?	Understand	CAHS009.06
9	Define solar cells. Write its applications.	Understand	CAHS009.07
10	What is the impact of deforestation on the environment?	Understand	CAHS009.06
11	State any two reasons that why should we conserve natural resources.	Understand	CAHS009.05
12	What is the importance of land as a natural resource?	Understand	CAHS009.05
13	List the different types of natural resources.	Remember	CAHS009.05
14	What are the uses of various types of minerals?	Understand	CAHS009.05
15	Discuss the problems of over exploitation of ground water.	Understand	CAHS009.07
16	What exactly are fossil fuels and why are they non-renewable?	Understand	CAHS009.05
17	Define soil erosion. How can it be checked?	Remember	CAHS009.06
18	What is meant by exhaustible natural resources? Mention any two alternate energy resources and give their uses.	Remember	CAHS009.07
19	Describe the measures to be taken for the control of floods?	Understand	CAHS009.06
20	What are the main reasons for water scarcity in India?	Understand	CAHS009.06
Part - B (Long Answer Questions)			
1	Classify natural resources. What are the different methods of conserving water resource?	Understand	CAHS009.05
2	Explain how water becomes a renewable resource. What are the effects of over exploitation of water resources?	Understand	CAHS009.07
3	Discuss briefly droughts and floods with respect to their occurrence and impacts.	Understand	CAHS009.06
4	What are the advantages and disadvantages of dams to the society and environment?	Understand	CAHS009.06
5	Discuss in detail the major environmental and social impacts of mineral extraction.	Understand	CAHS009.06
6	List out alternate energy sources. Explain their present status, merits and demerits.	Understand	CAHS009.07
7	Compare the advantages and disadvantages of oil, coal and natural gas as energy sources.	Understand	CAHS009.06
8	What are the advantages of hydropower? How energy is generated in hydroelectric power plant.	Understand	CAHS009.05
9	What is the impact of urbanization and industrialization on land?	Understand	CAHS009.06
10	Write a note on non-renewable energy resources. Explain how almost every source of energy has its limits.	Understand	CAHS009.09
Part - C (Analytical Questions)			
1	Discuss the importance of land as a natural resource. Explain how world's land surface is getting degraded.	Understand	CAHS009.05
2	Explain how every source of energy has its limits. What should be our attitude to using energy in this world?	Understand	CAHS009.09
3	What changes would you incorporate in your life-style in a move towards a sustainable use of our resources?	Understand	CAHS009.05
4	What you can do to conserve water? Explain how rain water can be harvested.	Understand	CAHS009.05
5	Water is a unique resource. Comment on this statement.	Understand	CAHS009.05
6	What are the environmental and social impacts of mining?	Understand	CAHS009.06
7	What are the major anthropogenic causes of droughts and floods? Give its	Understand	CAHS009.06

	remedial measures.		
8	What is wind energy? Enumerate advantages and disadvantages associated with wind power.	Understand	CAHS009.05
9	Discuss some of the water resources problems in India.	Understand	CAHS009.05
10	What kind of energy do we get from the sun? Explain how we convert solar energy in to electricity.	Understand	CAHS009.07

UNIT-III

BIODIVERSITY AND BIOTIC RESOURCES

Part – A (Short Answer Questions)

1	Define biodiversity. How biodiversity is measured?	Remember	CAHS009.10
2	What are the uses of biodiversity?	Remember	CAHS009.10
3	Define biodiversity hotspot. Where are biodiversity hotspots located?	Remember	CAHS009.11
4	What are the main causes of loss of biological diversity nowadays?	Understand	CAHS009.12
5	Summarize India as a mega diversity nation.	Remember	CAHS009.11
6	Differentiate between genetic and species diversity.	Understand	CAHS009.10
7	List the indirect values of biodiversity.	Remember	CAHS009.10
8	What is the value of biodiversity?	Remember	CAHS009.10
9	Define the term genetic banks.	Remember	CAHS009.12
10	What is habitat fragmentation?	Remember	CAHS009.12
11	Describe how can human activities have an effect on biodiversity.	Understand	CAHS009.12
12	Define national park. Name few such parks in India.	Remember	CAHS009.12
13	Outline in situ and ex situ conservation of biodiversity.	Remember	CAHS009.12
14	What does NBPGR AND NBAGR stand for?	Remember	CAHS009.12
15	List the national wildlife sanctuaries.	Remember	CAHS009.12
16	List the major causes of man-wild life conflict.	Understand	CAHS009.12
17	Enumerate major threats to biodiversity.	Understand	CAHS009.12
18	Discuss how poaching affects the environment.	Understand	CAHS009.12
19	Why habitat loss is a threat to biodiversity?	Understand	CAHS009.12
20	What is a biosphere reserve? List few biosphere reserves in India.	Remember	CAHS009.12

Part – B (Long Answer Questions)

1	Define biodiversity. Explain genetic diversity, species diversity and ecosystem diversity.	Understand	CAHS009.10
2	Summarize consumptive use value, productive use value, social value, ethical value, aesthetic value and optional value of biodiversity.	Understand	CAHS009.10
3	Explain how the study of biodiversity is beneficial to human life?	Understand	CAHS009.10
4	Explain hot spots of biodiversity and mention three hot spots found in India. Discuss their salient features.	Understand	CAHS009.11
5	What is the flora and fauna found in Indo-Burma, Western Ghats and Eastern Himalayas regions of India?	Understand	CAHS009.11
6	What is meant by biodiversity conservation? Explain the role of zoos and botanical gardens in biodiversity conservation.	Understand	CAHS009.12
7	Enumerate five important biosphere reserves, national parks and wildlife sanctuaries of India. Also mention the state where they are located.	Understand	CAHS009.12
8	What are the major causes of human-wild life conflicts? Suggest suitable wild life conservation practices.	Understand	CAHS009.12
9	Explain in-situ and ex-situ conservation of biodiversity with examples.	Understand	CAHS009.12
10	Explain major threats to biodiversity.	Understand	CAHS009.12

Part – C (Analytical Questions)

1	What are the three categories in to which biodiversity can be separated?	Understand	CAHS009.10
2	List different developmental activities, including construction of dams, affect the biodiversity and action need to be taken to conserve them.	Understand	CAHS009.12
3	Why is biodiversity valuable and how can be the value of biodiversity estimated?	Understand	CAHS009.10
4	India is one of the world's richest countries in terms of its vast array of biological diversity. Support the statement with three facts.	Understand	CAHS009.11
5	What are the basic issues in protecting wild flora and fauna?	Understand	CAHS009.12
6	Describe the measures taken by India to save our biodiversity.	Understand	CAHS009.12
7	Explain how ex-situ conservation is practised. Write its advantages and disadvantages.	Understand	CAHS009.12
8	Describe how effective are different types of protected areas at conserving biodiversity and providing ecosystem services.	Understand	CAHS009.12
9	a) Name the types of plants for which gene sanctuaries in India exist. b) Name the animals for whose protection and conservation specific projects have been launched in our country.	Understand	CAHS009.12
10	Explain how in-situ conservation is practised. Write its advantages and disadvantages.	Understand	CAHS009.12

UNIT-IV

ENVIRONMENTAL POLLUTION, POLLUTION CONTROL TECHNOLOGIES AND GLOBAL ENVIRONMENTAL PROBLEMS

Part – A (Short Answer Questions)

1	Define pollution. Name various atmospheric pollutants.	Remember	CAHS009.13
2	What is noise pollution? Mention its sources.	Remember	CAHS009.13
3	What are the natural and man-made pollutants that cause air pollution?	Remember	CAHS009.13
4	Mention various methods to control air pollution in industries.	Understand	CAHS009.13
5	Discuss soil pollution caused by fertilizers.	Remember	CAHS009.13
6	Discuss the adverse health effects due to industrial noise.	Understand	CAHS009.14
7	Explain how ground water get pollutes.	Understand	CAHS009.13
8	Define air pollution. What are the sources of air pollution?	Remember	CAHS009.13
9	Define solid waste. How can solid waste be recycled?	Understand	CAHS009.19
10	Describe how we measure water quality.	Understand	CAHS009.14
11	Mention treatment methods used for industrial effluents.	Remember	CAHS009.19
12	Define e-waste. Why does it require management?	Understand	CAHS009.19
13	What is bioremediation?	Remember	CAHS009.19
14	What is ozone layer and why is it getting depleted?	Understand	CAHS009.16
15	What are the major causes of deforestation?	Understand	CAHS009.13
16	Outline the provisions of the Kyoto protocol.	Remember	CAHS009.17
17	What are ozone depleting substances?	Remember	CAHS009.16
18	What are the major causes of desertification?	Understand	CAHS009.16
19	Differentiate between climate change and global warming.	Understand	CAHS009.16
20	What are the results of implementation of the Montreal protocol?	Remember	CAHS009.17

Part – B (Long Answer Questions)

1	What are primary and secondary air pollutants? Enumerate various methods to control air pollution.	Understand	CAHS009.13
2	Describe the major sources of soil pollution. How does soil pollution affect soil productivity and what measures can be taken to prevent soil pollution?	Understand	CAHS009.13
3	Describe briefly the sources, effects and control of noise pollution.	Understand	CAHS009.13
4	Discuss how e-waste can be managed to prevent environmental pollution.	Understand	CAHS009.19

5	Describe the various ways of treating and purifying sewage water.	Understand	CAHS009.19
6	What adverse effects can solid wastes cause? Discuss how can the solid waste be managed.	Understand	CAHS009.19
7	Explain the concept of bioremediation. What are the advantages of bioremediation?	Understand	CAHS009.19
8	Discuss Kyoto protocol. What can it do to curb climate change?	Understand	CAHS009.17
9	What are the major causes and consequences of deforestation?	Understand	CAHS009.14
10	What are ozone depleting substances? Discuss the theme of Montreal protocol.	Understand	CAHS009.16

Part - C (Analytical Questions)

1	List the physical, physiological and psychological effects of noise. Discuss the adverse health effects due to industrial noise.	Understand	CAHS009.13
2	Explain climate change and global warming. How are they related and what is the evidence that proves climate is changing?	Understand	CAHS009.16
3	What is the role of automobiles in creating air pollution and other environmental problems?	Understand	CAHS009.13
4	Enumerate any five major categories of water pollutants, their sources and effects.	Understand	CAHS009.13
5	Explain how groundwater in many places in India become contaminated with fluoride and arsenic.	Understand	CAHS009.13
6	Draw layouts of Sewage treatment, effluent treatment and common effluent treatment plants.	Understand	CAHS009.19
7	Explain the problems encountered in the disposal of solid waste from various sources.	Understand	CAHS009.19
8	How can a change of one or two degrees in global average temperatures have an impact on our lives?	Understand	CAHS009.16
9	What are the international initiatives against the depletion of the ozone layer?	Understand	CAHS009.16
10	Explain how does climate change become a global issue and what were the international initiatives.	Understand	CAHS009.16

UNIT-V

ENVIRONMENTAL LEGISLATIONS AND SUSTAINABLE DEVELOPMENT

Part - A (Short Answer Questions)

1	List out the objectives of Air pollution act.	Understand	CAHS009.18
2	What are the objectives of wild life protection act?	Remember	CAHS009.18
3	Enlist various acts related to environment protection.	Remember	CAHS009.18
4	What is the role of green buildings in reducing global warming?	Understand	CAHS009.21
5	Write a note on bio-medical wastes.	Remember	CAHS009.19
6	What is meant by environmental impact assessment?	Remember	CAHS009.20
7	What is meant by crazy consumerism?	Remember	CAHS009.21
8	Enumerate the various effects of urban sprawl.	Understand	CAHS009.21
9	What is the importance of environmental education?	Understand	CAHS009.21
10	List any three categories of waste and give their sources.	Remember	CAHS009.19
11	What does the forest conservation act of 1980 specify?	Remember	CAHS009.18
12	Define hazardous waste. Are hazardous wastes dumped in India?	Remember	CAHS009.19
13	Mention some salient features of biomedical waste management and handling rules, 2016.	Remember	CAHS009.18
14	What is municipal solid waste and why does it require management?	Understand	CAHS009.19
15	Define sustainable development. Why is it necessary?	Understand	CAHS009.21
16	What is meant by population explosion?	Remember	CAHS009.21

17	Discuss the basic characteristics of green buildings.	Remember	CAHS009.21
18	What are some threats to sustainability?	Understand	CAHS009.21
19	What are the duties and powers assigned to State Pollution Control Board under water act?	Remember	CAHS009.18
20	Mention the objectives of environmental protection act.	Remember	CAHS009.18
Part - B (Long Answer Questions)			
1	Discuss the salient features of Air (Prevention and Control of Pollution) Act, 1981.	Understand	CAHS009.18
2	Discuss the salient features of Environmental protection Act, 1986.	Remember	CAHS009.18
3	List major provisions in Forest Conservation Act, 1980.	Understand	CAHS009.18
4	Discuss the salient features of Wild life protection Act.	Understand	CAHS009.18
5	What are the major municipal solid waste management and handling rules?	Understand	CAHS009.19
6	Define sustainable development. What are the threats and measures for sustainable development?	Understand	CAHS009.21
7	Describe the importance of environmental education. What is value-based environmental education?	Remember	CAHS009.21
8	Write the objectives, principles, key elements and importance of environmental impact assessment.	Understand	CAHS009.20
9	Discuss the major components of population growth. What are the advantages of having a healthy population?	Understand	CAHS009.21
10	What is urban sprawl? Mention causes and effects of urban sprawl.	Understand	CAHS009.21
Part - C (Analytical Questions)			
1	Why do we refer environment protection act 1986 as an umbrella act? Discuss the role of various governmental agencies in environmental protection and control.	Understand	CAHS009.18
2	How do you define the pollution as per water act, 1974? Write the salient features of this act.	Remember	CAHS009.18
3	Explain the concept of green building. How will green building impact the environment overall.	Understand	CAHS009.21
4	What are the rules and regulations that guide waste management in India?	Understand	CAHS009.18
5	Why is sustainable development so often associated with protecting the environment?	Understand	CAHS009.18
6	Explain how does wild life protection act, 1972 deal with human-animal conflict? Mention the major threats being faced by the wild life in India.	Understand	CAHS009.18
7	What is meant by a basic environmental assessment? Describe the key steps of this process.	Understand	CAHS009.20
8	Why are developing countries experiencing rapid population growth while developed countries are growing more slowly?	Understand	CAHS009.21
9	What are the functions of central board and state board under the air act?	Understand	CAHS009.18
10	“Environmental education can play an important role in environmental protection”. Explain it.	Understand	CAHS009.21

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