UTTAR PRADESH RAJARSHI TANDON OPEN UNIVERSITY
SHANTIPURAM, SECTOR-F, PHAPHAMAU, PRAYAGRAJ-2110021

ASSIGNMENT PAPER

Semester-I

Session: 2026-27		
Program Name: **PGEVS**		
Course Code:**PGEVS-101N**	Course Name**: Ecosystem and Biodiversity Conservation**	
SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1.	Define ecosystem. Discuss the functions of ecosystem?	2
2.	What are the biotic and a biotic component of ecosystem?	
3.	Draw the food chain of terrestrial ecosystem with definition.	2
4.	Define biogeochemical cycles. Draw the carbon and hydrogen cycle	2
5.	What are the three types of ecological pyramids? Discuss it	2
6.	What are the three steps of the nitrogen cycle.	2
	SECTION -B	**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7.	Describe in brief the components of an ecosystem. How the abiotic components is use full for biotic components.	6
8.	Define a population. Give a coincise account of various characteristics of a population of organisms.	6
9.	What do you know about ecological succession? Discuss the process of ecological succession on land ecosystem	6

ASSIGNMENT PAPER

Semester-I

Session: Session: 2026-27		
Program Name: **PGEVS**		
Course Code: **PGEVS-102(N)**	Course Name: **Environmental Chemistry**	
SECTION -A		**2*6=12 marks**
Q.No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1.	What do you mean by pollutants? Define secondary pollutants with examples.	2
2.	What do you mean by air pollution? Discuss about composition of air quality of vehicles zone.	2
3.	What do you mean by green house effect?	2
4.	Define global warming. Write the effects of global warming	2
5.	What do you mean by photochemical oxidation?	2
6.	What is smog? Discuss the London and Los Angeles smog	2
	SECTION -B	**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7.	What are greenhouse gases? Write the name of greenhouse gasses and discuss the effects of greenhouses.	6
8.	Discuss about Montreal protocol and its agreement	6
9.	Briefly discus about settling chamber, its working methods, advantage and limitations.	6

ASSIGNMENT PAPER

Semester-I

Session: Session: 2026-27		
Program Name: **PGEVS**		
Course Code: **PGEVS-103(N)**	Course Name: **Environmental Microbiology**	
SECTION -A		**2*6=12 marks**
Q.No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1.	What do you understand about molecular taxonomy?	2
2.	What do you understand by Polyphasic classification	
3.	What do you mean by nomenclature, discuss the role of primary domain in nomenclature?	2
4.	What do you known about nutrient media? Discussed about microbial culture media?	2
5.	Define autotrophs and heterotrophs.	2
6.	Define bateriophage and protozoa.	2
	SECTION -B	**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7.	Soil is a habitat for microorganisms. Discuss critically.	6
8.	What is aero microbiology? Write in brief aeromicroflora of house and hospitals.	6
9.	Describe chemotherapy and its side effects on living systems.	6

ASSIGNMENT PAPER

Semester-I

Session: Session: 2026-27		
Program Name: **PGBR-01N**		
Course Code:	Course Name: **Basics in Research**	
SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1.	Write down the meaning and objective of research.	2
2.	Discuss the need for reviewing literature in brief. What are the types of literature review?	2
3.	What do you understand by google scholar, science direct?	2
4.	What do you understand by google Scopus, web of science?	2
5.	write short notes on the following- a) Journal abstracts b) SciFinder	2
6.	Write short notes on the following- a) Citation index b) Peer review and revision.	2
	SECTION -B	**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7.	Discuss in detail about the intellectual property and intellectual property rights (IPR).	6
8.	Write short notes on the following- a) Citation index b) Peer review and revision.	6
9.	What are the various kinds of report writing in academics and research. Explain in detail.	6

ASSIGNMENT PAPER

Semester-II

Session: Session: 2026-27		
Program Name: **PGEVS**		
Course Code: **PGEVS-106(N)**	Course Name: **Numerical and Statistical Computing**	
SECTION -A		**2*6=12 marks**
Q.No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1.	What are statistical data? Discuss the characteristics of qualitative data	2
2.	Discuss about major statistical techniques for organizing the data.	2
3.	Discuss about Histogram and its significance in data arrangement	2
4.	What do you mean by central tendency? Write about mean, mean and mode	2
5.	Define computer and its components in your views	2
6.	Discuss about super computer and its working process	2
	SECTION -B	**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7.	What is a computer? State the essential components of a compute and give function of each of them in brief.	6
8.	What are Microsoft words? Discuss the features of Microsoft words.	6
9.	What is the Basics of R software, discuss it.	6

ASSIGNMENT PAPER

Semester-II

Session: Session: 2026-27		
Program Name: **PGEVS**		
Course Code: **PGEVS-107(N)**	Course Name: **Energy Resources and Climate Change**	
SECTION -A		**2*6=12 marks**
Q.No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1.	Define law of thermodynamics.	2
2.	Define Ocean acidification and its impacts on ocean biodiversity.	2
3.	What do you mean by Environmental Sustainability?	2
4.	What is electromagnetic radiation? Types of electromagnetic radiation	2
5.	Discuss about thermal conduction effect in environmental systems.	2
6.	What are conventional sources of energy? Discuss source and application of natural gas.	2
	SECTION -B	**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7.	What do you understand by environmental physics? Discuss the scope and principle of environmental physics.	6
8.	Write the energy flow models in aquatic ecosystems and its characteristics.	6
9.	What is weather? Discuss the role of wind in the formation of weather	6

ASSIGNMENT PAPER

Semester-II

Session: Session: 2026-27		
Program Name: **PGEVS**		
Course Code: **PGEVS-108(N)**	Course Name: **Solid and Hazardous Waste Management**	
SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1.	What is the solid waste? discuss the characteristics of soil waste	2
2.	Discuss the role of municipal corporation in waste management	
3.	Write the classification of solid waste and its composition.	2
4.	Discuss about solid waste land filling in India	2
5.	What is the incineration waste treatment process	2
6.	Discuss the impact on sanitary landfill on local, regional, and global levels.	2
	SECTION -B	**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7.	How many types of waste disposal methods? Discuss the sanitary land fill method of waste disposal.	6
8.	What is bioremediation? How can we achieve effective bioremediation of hazardous waste?	6
9.	What is the e-waste? Define the e-waste management and its handling in India.	6

ASSIGNMENT PAPER

Semester-II

Session: Session: 2026-27		
Program Name: **PGED-02**		
Course Code:	Course Name: **Entrepreneurship development**	
SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1.	What is entrepreneurship? What are the main characteristics of an entrepreneur to do entrepreneurship?	2
2.	Differentiate between Entrepreneurs, Intrapreneur &Manager.	2
3.	What are the problems faced by women entrepreneurs in doing business?	2
4.	Explain the characteristics of projects with various types of project?	2
5.	Highlight the need of technology for entrepreneurs	2
6.	What is the various assistance of financial Institutions to entrepreneurs?	2
	SECTION -B	**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7.	Explain various type of entrepreneurship. Explain eight stages of Entrepreneurship Development Cycle.	6
8.	What are the needs and Objectives of Entrepreneurship Development Programs	6
9.	Explain any four all India Financial Institutions who aid to entrepreneur.	6

ASSIGNMENT PAPER

Semester-III

Session: Session: 2026-27		
Program Name: **PGEVS-111N**		
Course Code:	Course Name: **Water Quality and Water Treatment Technology**	
SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1.	Write the unique properties of water	2
2.	Discuss the role of water as solvent	2
3.	What is water quality? discuss the water quality estimation	2
4.	What are the Oxidation ponds? Write its types and application.	2
5.	Discuss the Lagoon system for wastewater treatment.	2
6.	Compare BIS and WHO guidelines for drinking water quality.	2
	SECTION -B	6*3=18 marks
	Long answer type question (approx. 500 -800 words)	Marks
7.	What is water quality parameter? Discuss the Chemical oxygen demand (COD) and its analysis.	6
8.	What is the Septic tank? Discuss it considerable design in urban area.	6
9.	Discuss the challenges in water quality management and suggest suitable strategies for sustainable water resource management.	6

ASSIGNMENT PAPER

Semester-III

Session: Session: 2026-27		
Program Name: **PGEVS-112N**		
Course Code:	Course Name: **Remote Sensing and GIS**	
SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1.	What do you understand about remote sensing?	2
2.	Write types of features of active and passive remote sensing with suitable examples	2
3.	What is electromagnetic radiation? Discuss it role in remote sensing	2
4.	Discuss the energy interactions with the earth surface features.	2
5.	What is image? Discuss the visual image interpretation.	2
6.	What is a classification algorithm? Give two examples	2
	SECTION -B	**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7.	What are the Laws of radiation, discuss it role in remote sensing. Also discuss the energy interactions with the earth surface features.	6
8.	What is the aerial photography? Discuss principle and various types of aerial photography	6
9.	What is the sensor? Discuss the active and passive sensors with suitable examples.	6

ASSIGNMENT PAPER

Semester-III

Session: Session: 2026-27		
Program Name: **PGEVS-113N**		
Course Code:	Course Name: **Plant Stress and Physiology**	
SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1.	What is the definition of stress in a biological context, particularly concerning plants?	2
2.	What are the primary indicators of drought stress in plants at a physiological level?	2
3.	How does heat stress affect the growth of plants?	2
4.	What are the main factors that contribute to heat stress in plants?	2
5.	How do plants naturally protect themselves from high temperatures?	2
6.	Discuss the Plant Chelating Proteins and Their Role	2
	SECTION -B	**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7.	How does dehydration postponement help plants survive during prolonged drought periods? Discuss briefly.	6
8.	What is the plant stress; discuss the alkalinity and salinity stress with examples. How the salinity effects at cellular and whole plant level.	6
9.	What are the reactive oxygen species, discuss the ROS generation in Mitochondria. Also discussed the role of cell wall and cell membrane in generation of ROS species	6

ASSIGNMENT PAPER

Semester-III

Session: Session: 2026-27		
Program Name: **PGRT-03N**		
Course Code:	Course Name: **Research Tools and Practices**	
SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1.	Write down the types and methods of data collection.	2
2.	What are the different types of sample design?	2
3.	What do you understand by data presentation?	2
4.	Briefly describe errors in hypothesis testing.	2
5.	Discuss the application of ICT in research.	2
6.	Discuss the application of MS office in research.	2
	SECTION -B	**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7.	Discuss sample designing detail. What are the characteristics of a good sample design?	6
8.	What is research hypothesis and formulation of hypothesis? Discuss the concept of hypothesis testing.	6
9.	What do you understand by Data classification and tabulation?	6

ASSIGNMENT PAPER

Semester-IV

Session: Session: 2026-27		
Program Name: **PGEVS-116**		
Course Code:	Course Name: **Geosciences and Natural Resource Management**	
SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1.	What do you understand by abiotic and biotic resources? Explain using examples.	2
2.	What is Biosphere? Discuss the role of biosphere for survival of life.	2
3.	Discuss the Plate Tectonics and its role in earth quack.	2
4.	Discus the classification of trace elements.	2
5.	Write the biogeochemical factors in environmental health	2
6.	What do you understand by Earthquakes? Discuss the Earthquakes in India	2
	SECTION -B	**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7.	What do you understand earth surface process: Discuss the type of earth surface process.	6
8.	What are Hazard and disaster? Discuss the natural hazards and its consequences with examples	6
9.	What is a natural resource? Discuss the interrelationships among different types of natural resources.	6

ASSIGNMENT PAPER

Semester-IV

Session: Session: 2026-27		
Program Name: **PGEVS-117N**		
Course Code:	Course Name: **Atmosphere and Ocean Science**	
SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1.	What is meant by the "origin of the universe? Discuss briefly.	2
2.	What do you know about Atmospheric window and its significance	2
3.	Discuss the Heat budget and its significance.	2
4.	Discuss the ozone chemistry of Troposphere Ozone formation.	2
5.	Write the thermal characteristics of stratosphere and mesosphere.	2
6.	Explain the formation of nitric acid and acid rain through atmospheric nitrogen reactions	2
	SECTION -B	**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7.	Explain the Big Bang Theory and its significance in understanding the universe's origin.	6
8.	What do you mean by atmosphere? Discuss the atomic structure based on vertical temperature profile.	6
9.	Describe the chemistry of ozone in the atmosphere. Explain the formation, destruction, and importance of the ozone layer.	6

ASSIGNMENT PAPER

Semester-IV

Session: Session: 2026-27		
Program Name: **PGEVS-118N**		
Course Code:	Course Name: **Environmental Impact Assessment and Management**	
SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1.	What do you mean about EIA? Discuss the principle of EIA	2
2.	What is the appraisal committee in EIA? Discuss the role of environmental appraisal committee in EIA.	2
3.	Explain the Environmental Impact Assessment (EIA) process in detail.	2
4.	Write the basic difference between the comprehensive and rapid EIA	2
5.	Write the Water and land environment assessment.	2
6.	Discuss the Socio-economic and health environment assessment.	2
	SECTION -B	**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7.	Explain the importance of public participation in the EIA process. What methods can be used to ensure meaningful involvement of stakeholders?	6
8.	What is Environmental auditing report (EAR)? Illustrate the outline of a standard Environmental audit report.	6
9.	Describe the structure and contents of an Environmental Impact Assessment Report (EIA Report). Why is it considered a decision-making tool?	6

ASSIGNMENT PAPER

Semester-IV

Session: Session: 2026-27		
Program Name: **PGEVS-120N**		
Course Code:	Course Name: **Environmental Toxicology & Occupational Health Hazards**	
SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1.	Define toxicology and toxicant? Explain the classification of toxic agents with suitable examples.	2
2.	Define non-target organ toxicity. Differentiate between toxicity and toxic agent.	2
3.	Differentiate between acute and chronic exposure.	2
4.	What is chemically induced renal injury?	2
5.	Write any four methods to prevent occupational exposure to toxicants	2
6.	What are environmental toxic materials? Define occupational toxicology.	2
	SECTION -B	**6*3=18 marks**
	Long answer type question (approx. 500 -800 words)	**Marks**
7.	Explain the toxic effects of essential minerals such as sodium, potassium, iodine, iron, calcium, zinc, copper, selenium, and manganese.	6
8.	Discuss occupational toxicants, exposure limits, and the risks associated with hazardous substances.	6
9.	Explain the structure and functions of the kidney. Discuss the susceptibility of the kidney to toxic injury.	6

ASSIGNMENT PAPER

Semester-IV

Session: Session: 2026-27		
Program Name: **PGEVS-121N**		
Course Code:	Course Name: **Biochemistry and Nanobiology**	
SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1.	Describe adaptation and its different kind with suitable examples.	2
2.	What is Aerobic Fitness. Define oxygen uptake.	2
3.	What do you mean by **membrane biochemistry**? Explain it.	2
4.	Describe the clinical significance of superoxide dismutase (SOD)	2
5.	What do you mean by xenobiotic compounds? Explain it.	2
6.	Describe the effects of environmental pollutants on living system.	2
	SECTION -B	6*3=18 marks
	Long answer type question (approx. 500 -800 words)	Marks
7.	What do you mean by respiration? Describe the aerobic respiration and anaerobic respiration.	6
8.	Describe the glycolysis and its pathway.	6
9.	What do you mean by catalytic properties of enzymes? Describe the coenzymes involved in different metabolic pathways	6

ASSIGNMENT PAPER

Semester-IV

Session: Session: 2026-27		
Program Name: **PGEVS-122N**		
Course Code:	Course Name: **Environmental Biotechnology and IPR**	
SECTION -A		**2*6=12 marks**
Q. No.	**Short answer type question (approx. 200 -300 words)**	**Marks**
1.	What do you mean by Bioremediation? Explain it.	2
2.	Write short notes on GMO for bioremediation.	2
3.	How phytodegradation are different from phytovolatilization? Explain it.	2
4.	What do you know by phytoremediation? Write short notes on the applications of phytoremediation.	2
5.	Write short notes on the followings. a) Hyperaccumulators b) Phytomining	2
	What do you mean by Biofilter? Explain it.	2
	SECTION -B	**6*3=18 marks**
6.	**Long answer type question (approx. 500 -800 words)**	**Marks**
7.	What is the bioremediation? Discuss the different types of bioremediation of metal contaminated soil	6
8.	What do you mean by biogas? Describe biogas production process (methanogenic bacteria) with diagram.	6
9.	What do you mean by biosensor? Describe the evolution of biosensor, its types and applications.	6

Semester-IV
Dissertation related topic

(It is not a part of assignment. It will submit separately under the supervision of concern faculty)

Session: Session: 2026-27	
Program Name: **PGEVS-124N(D)**	
Course Code:	Course Name: **Dissertation/Industrial training/Internship with Viva Voce**

Course Objective:

Project and Dissertation

In the last IV Semester of Master degree the main objective of the exposure of students' dissertation/Industrial training/ Internship is to elevate their understanding into the practical and experimental aspects of some targeted areas of Environmental Science. This course will develop their analytical ability, it will provide them an apt exposure to work in any research group and will motivate them to execute research in the area of their interest in Environmental Science or blew mention topic in the supervision of concern faculty such as:

- Assessment of Indoor Air Quality in Schools and Colleges
- Water Quality Assessment of Rivers and Lakes
- Heavy Metal Contamination in Soil
- Plastic Pollution and Its Environmental Impact
- Microplastic Pollution in Freshwater Ecosystems
- Industrial Wastewater Treatment Technologies
- Climate Change and Biodiversity Loss
- Carbon Footprint Assessment of Educational Institutions
- Groundwater Quality Assessment
- Water Scarcity and Sustainable Management
- Municipal Solid Waste Management
- Plastic Waste Recycling Technologies
- Sustainable Development Goals (SDGs) and Environmental Protection
- Land Use and Land Cover Change Analysis
- GIS-Based Groundwater Potential Mapping
- Remote Sensing for Forest Monitoring
- Microplastic Pollution in Drinking Water
- Air Quality Assessment Around Educational Institutions
- Household Solid Waste Management Practices
- Carbon Footprint of a University Campus
- Green Campus Assessment
- Rainwater Harvesting: A Case Study
- Plastic Waste Management in Urban Areas