CENTRAL UNIVERSITY OF HARYANA

End Semester Examinations April 2022

Programme: M.Sc. EVS **Session: 2021-22**

Semester: First **Max. Time: 3 Hours**

Course Title: Environmental Statistics **Max. Marks: 70**

Course Code: SIAS EVS 01 01 04 C 2002

Instructions:

1. Question no. 1 has seven parts and students need to answer any four. Each part carries three and half Marks.

2. Question no. 2 to 5 have three parts and student needs to answer any two parts of each question. Each part carries seven marks.

Q 1. (4X3.5=14)

a) Explain about collection and processing of statistical data.

b) "Mean and Standard deviation are necessary and sufficient parameters to describe any set of data". Comment on this statement.

c) Calculate mean and median from the following frequency distribution class.

No. of fruits/plant	15-25	25-35	35-45	45-55	55-65	65-75
No. of plants	4	15	17	19	2	28

d) Write short notes on Degree of Correlation and Significance test of Correlation Coefficient.

e) What is a hypothesis? Discuss about the different types of hypothesis and errors in the testing of hypothesis.

f) In a single throw of two dice, determine the probability of getting, a total of 2; total of 12 and total of 7 or 9.

g) What is standard error? Discuss the statistical importance of standard error.

Q 2. (2X7=14)

a) Discuss in detail about the different functions of statistics.

b) What are the different methods to represent the frequency distribution graphically? Discuss its significance and limitations.

c) Data were recorded on black color of cows in 10 herds. The number of black cows and their frequencies in each herd is given below. Calculate the mean, variance, standard deviation and coefficient of variation from this distribution.

Black cows/herd	2	4	6	8	5	3	1
No. of cows/herd	8	10	12	15	11	9	4

Q3. (2X7=14)

a) Explain various methods used in the collection and processing of data.

b) What is an experimental research design? Describe the three basic principles of a good experimental design.

c) Calculate mode and median from the following frequency distribution of data

Age (Years)	15-20	20-25	25-30	30-35	35-40	40-45	45-50	50-55
Frequency	50	65	100	170	140	120	70	60

Q 4. (2X7=14)

a) What is probability? Explain in detail the different laws of probability and their applications.

b) What are samples and populations? Explain sampling techniques in detail and the criteria which help in determining the size of a sample along with advantages and limitations.

c) During an experiment conducted on linseed, the researcher obtained 300 seedlings in F_2 generation, segregated in the following four classes. Find out whether the two characters under the study are linked?

	Lilac petal		Deep lilac petal	
	White stigma	Purple stigma	White stigma	Purple stigma
	AB	Ab	aB	ab
Observed frequency	200	35	35	30
	(fo_1)	(fo_2)	(fo_3)	(fo_4)

Q 5. (2X7=14)

a) What is experimental error and how it is controlled? Explain different methods to reduce experimental error.

b) In an experiment on sweet Pea (*Lathyrus odoratus*), 580 seedlings were observed to have been segregated in the following four classes in the F_2 generation. Find out whether the two characters under the study are linked?

	Long pollen	Round pollen
Purple flower	350	90
Red flower	90	50

c) Following table gives the number of pods per plant. Draw your conclusion on the differences in the mean number of pods per plant of the 4 varieties of black-gram.

Plots	A	B	C	D
1	50	50	55	50
2	56	53	52	45
3	55	45	49	50
4	57	50	52	41
5	52	50	50	45

CENTRAL UNIVERSITY OF HARYANA

End Semester Examinations April 2022

Programme:	**M.Sc. EVS**	**Session: 2021-22**
Semester:	**Semester I**	**Max. Time: 3 Hours**
Course Title:	**Fundamentals of Ecology**	**Max. Marks: 70**
Course Code:	**SIAS EVS 01 01 01 C 4004**	

Instructions:

1. Question no. 1 has seven parts and students need to answer any four. Each part carries three and half Marks.

2. Question no. 2 to 5 have three parts and student need to answer any two parts of each question. Each part carries seven marks.

Q 1. (4X3.5=14)

a) Explain different levels of biological organization.

b) Explain combined concept of limiting factors.

c) Explain the term Ecological energetics.

d) What are Survivorship curves?

e) What is Gause's Principle?

f) What do you understand with Standing crops?

g) What is Edge effect?

Q 2. (2X7=14)

a) What is applied ecology? How can it help in attaining sustainability?

b) How is structure and composition of ecosystem is used in applied ecology?

c) How does applied ecology take lead from ecological pyramids?

Q3. (2X7=14)

a) What is an Ecological Succession? Discuss in detail about different types of ecological succession.

b) Explain different theories of Ecological Succession.

c) What kind of population interactions take place during ecological succession?

Q 4. (2X7=14)

a) What is an Ecological niche? Discuss its role in Environment.

b) Discuss how different ecological modelling tools used in understanding an ecological niche.

c) How does ecological factors affect the ecological niche?

Q 5. (2X7=14)

a) How is environmental heterogenicity is considered in ecological studies?

b) How does energy flow models vary with the environmental heterogenicity?

c) Does the environmental heterogenicity impact population characteristics and selection?

CENTRAL UNIVERSITY OF HARYANA

End Semester Examinations April 2022

Programme: M.Sc. (Environmental Science) GEC **Session: 2021-22**

Semester: First **Max. Time: 3 Hours**

Course Title: Foundation Course in Ecology and Environment **Max. Marks: 70**

Course Code: SIAS EVS 01 01 01 GE 4004

Instructions:

1. Question no. 1 has seven parts and students need to answer any four. Each part carries three and half Marks.

2. Question no. 2 to 5 have three parts and students need to answer any two parts of each question. Each part carries seven marks.

Q 1. (4X3.5=14)

a) Explain in brief about the scope of ecology in our environment.

b) Discuss in detail about the biotic components of a desert ecosystem.

c) With the help of diagram describe the flow of energy through different trophic level.

d) Write short notes on food chain and food web with figures.

e) Explain Liebig's law of minimum and Shelford's law of tolerances with examples.

f) Write short notes on keystone species, flagship species and organizational level of ecological systems.

g) Explain the general phenomenon of succession.

Q 2. (2X7=14)

a) Describe the major components of a forest ecosystem in detail.

b) Explain in brief about the positive and negative interactions of a population with example?

c) What are ecological pyramids? Describe the pyramid of number, biomass and energy of a forest ecosystem?

Q3. (2X7=14)

a) What is synecology? Explain the different attributes of population in detail.

b) Give an account of sequential stages of a typical Lithosere succession.

c) Explain how the plants and animals behave in response to extreme temperature condition?

Q 4. (2X7=14)

a) Describe about the biotic and abiotic components of a pond ecosystem.

b) Describe in detail about the life history strategies. What is the difference between r and k species?

c) Discuss in brief about the energy flow models and ecological pyramids with figures.

Q 5. (2X7=14)

a) Write in brief about the different abiotic & biotic factors of a terrestrial ecosystem.

b) Explain how light and temperature play an important role in the distribution of animals?

c) What is ecosystem? Give an account of the structure and function of a desert ecosystem.

CENTRAL UNIVERSITY OF HARYANA

End Semester Examinations April 2022

Programme: M.Sc. Environmental Science **Session: 2021-22**

Semester: First **Max. Time: 3 Hours Course**

Title: Biodiversity Conservation **Max. Marks: 70**

Course Code: SIAS EVS 01 01 02 C 4004

Instructions:

1. Question no. 1 has seven parts and students need to answer any four. Each part carries three and half Marks.
2. Question no. 2 to 5 have three parts and student need to answer any two parts of each question. Each part carries seven marks.

Q 1. Attempt any four of the following (4X3.5=14)

a) What are the components of biodiversity?
b) How does habitat land use change induces biodiversity loss?
c) What are the aims of Convention of Biological Diversity?
d) What are homestead gardens? Discuss their importance.
e) How does the religious value of organisms influences the life of man?
f) What are the basic differences between in-situ and ex-situ conservation?
g) What is IUCN? Write a brief note on national and global red data list.

Q 2. Answer any two of the following (2X7=14)

a) Define biodiversity. How human population growth impact biodiversity?
b) Who coined the term biodiversity? Discuss in brief about the importance of agro-biodiversity.
c) Discuss in detail about the biodiversity indices.

Q3. Writes short notes on any two of the following (2X7=14)

a) Biosphere reserves and preservation plots
b) Sacred groves
c) DNA bank

Q 4. Attempt any two of the following (2X7=14)

a) What are biodiversity hot spots? Enlist the global and national biodiversity hotspots with their exceptional characteristics.
b) Explain the role of UNEP, UNESCO, WWF and ICSU in biodiversity conservation and management.
c) Environmental protection act 1986 is known as umbrella act for biodiversity conservation. Comment on the statement.

Q 5. Justify the following (2X7=14)

a) Bioprospecting is the need of an hour.
b) Global biodiversity conservation measures has an impact on National conservation initiatives.
c) Wetlands are the most productive aquatic ecosystems of the world.

CENTRAL UNIVERSITY OF HARYANA

End Semester Examinations April 2022

Programme: M.Sc. (Environmental Sciences) **Session: 2021-22**

Semester: First **Max. Time: 3 Hours**

Course Title: Natural Resource Conservation and Management **Max. Marks: 70**

Course Code: SIAS EVS 01 01 03 C 4004

Instructions:

1. Question no. 1 has seven parts and students need to answer any four. Each part carries three and half Marks.

2. Question no. 2 to 5 have three parts and student needs to answer any two parts of each question. Each part carries seven marks.

Q 1. Write the note on the following: (4X3.5=14)

a) Concept of natural resources

b) Characteristics of soil

c) Coal

d) Forest resources

e) Urban forestry

f) Rain water harvesting

g) OTEC

Q 2. Discuss the following: (2X7=14)

a) Environmental impacts of mineral extraction

b) Distribution and uses of mineral resources

c) Exploration of Oceanic minerals

Q3. Explain the following: (2X7=14)

a) Soil classification

b) Desertification

c) Salinization

Q 4. Write note on the following: (2X7=14)

a) Composition and classification of fossil fuel

b) Hydropower

c) Renewable energy resources

Q 5. Discuss on the following: (2X7=14)

a) Forest types

b) Deforestation

c) Techniques of forest management

CENTRAL UNIVERSITY OF HARYANA

End Semester Examinations April 2022

Programme: M.Sc. Environmental Sciences **Session: 2021-22**

Semester: First **Max. Time: 3 Hours**

Course Title: Biodiversity Conservation **Max. Marks: 70**

Course Code: SIAS EVS 01 01 02 0C 4004

Instructions:

1. Question no. 1 has seven parts and students need to answer any four. Each part carries three and half Marks.

2. Question no. 2 to 5 have three parts and students need to answer any two parts of each question. Each part carries seven marks.

Q 1. Attempt any four of the following (4X3.5=14)

a) Define soil biodiversity and its importance
b) Enumerate the ecosystem good and ecosystem services obtained from forests.
c) Make a short note on biodiversity informatics.
d) What do you understand by wildlife corridors?
e) What is acceleration of ecological succession? Support with the suitable example.
f) What is IPR? Explain about ownership of traditional knowledge.
g) What is ex-situ conservation? Explain any two methods with examples.

Q 2. Answer any two of the following (2X7=14)

a) Define biodiversity degradation? Explain various threats casing biodiversity loss.
b) What do you understand by esthetic and cultural value of biodiversity?
c) Describe the importance of ecological restoration with a case study. Add a note on methods of ecological restoration.

Q3. Write short notes on any two of the following (2X7=14)

a) Captive breeding. Discuss few examples.
b) International biodiversity laws.
c) National and international programs for biodiversity conservation.

Q 4. Answer any two of the following (2X7=14)

a) What are biodiversity hotspots? Discuss salient features of hot-spots found in India.
b) Define megadiverse countries and its qualifying criteria. Make a brief note on India as a megadiverse country.
c) What is endemism? Make a note on five endemic species found in India.

Q 5. Write short notes on any two of the following (2X7=14)

a) CITES and TRAFFIC
b) Role of NGOs in biodiversity conservation
c) Eco-tourism

CENTRAL UNIVERSITY OF HARYANA

End Semester Examinations April 2022

Programme: Integrated B.Sc.-M.Sc./ B.Sc. (HONS) Psychology **Session: 2021-22**

Semester: First **Max. Time: 3 Hours**

Course Title: Environmental Sciences **Max. Marks: 70**

Course Code/ s: SBS PHY 03 107 AECC 3104/ SBS MAT 03 01 01 AECC 3104/ EVS/ SHSS PSY 03 01 01 AECC 3104

Instructions:

1. Question no. 1 has seven parts and students need to answer any four. Each part carries three and half Marks.

2. Question no. 2 to 5 have three parts and student need to answer any two parts of each question. Each part carries seven marks.

Q 1. (4X3.5=14)

a) Drought

b) Food resources

c) Ecological succession

d) Ecological energetics

e) Biodiversity hot-spots

f) Nuclear hazards

g) Solid waste management

Q 2. (2X7=14)

a) Define natural resources. What are the problems associated with the natural resources?

b) Define forest resources? What are the major reasons for deforestation in India?

c) What do you understand by renewable resources Give five examples?

Q3. (2X7=14)

a) Discuss structure and functions of a forest ecosystems.

b) What do you understand by energy flow in an ecosystem? Discuss Y shaped model.

c) Define ecological pyramid. Why pyramid of energy is always upright?

Q 4. (2X7=14)

a) Define biodiversity. Discuss biogeographical classification of India with the cultural furthers of each.

b) How many mega-diverse regions have been notified Worldwide? Make a short note on India as a mega-diversity nation?

c) Why the requirement to conserve the biodiversity? What are the major threats to biodiversity?

Q 5. (2X7=14)

a) Define soil pollution. What are the control measures for soil pollution?

b) Define thermal pollution. What are the major sources of thermal pollution in the environment?

c) Define air pollution. What are the control measures of gaseous pollutants in the atmosphere?

CENTRAL UNIVERSITY OF HARYANA

End Semester Examinations April 2022

Programme: M.Sc. **Session: 2021-22**

Semester: I **Max. Time: 3 Hours**

Course Title: Environmental Statistics **Max. Marks: 70**

Course Code: SIAS EVS 01 01 04 C 2002

Instructions:

1. Question no. 1 has seven parts and students need to answer any four. Each part carries three and half Marks.

2. Question no. 2 to 5 have three parts and student needs to answer any two parts of each question. Each part carries seven marks.

Q 1. (4X3.5=14)

a) What is statistics? Explain clearly the functions and limitations of statistics.

b) What does dispersion indicate about the data? Why is this of great importance? Explain in detail.

c) Explain the difference between correlation and regression?

d) Write short notes on random and non-random sampling giving merits and demerits?

e) Write short notes on One-Way and Two-Way ANOVA?

f) What is Box-plot technique for description of data?

g) Draw a histogram, frequency polygon and frequency curve representing the following data

No. of grains/spike	20-22	23-25	26-28	29-31	32-34	35-37	38-40
No. of plants	6	9	15	18	12	7	2

Q 2. (2X7=14)

a) What are the different types of diagram used for the diagrammatic representation of qualitative data and discuss their significance and drawbacks?

b) What is correlation? Explain its types and different measures to study correlation with figures?

c) What is central tendency and explain different measures of central tendency with merit and demerits. The distribution of age of females at the time of marriage is given below-

Age (years)	15-20	20-25	25-30	30-35	35-40	40-45
No. of families	28	18	5	37	29	22

Calculate the average age and modal age at the time of marriage

Q3. (2X7=14)

a) What are the different methods for measures of dispersion? Giving its merits and demerits explain which measure of dispersion do you consider the best and why?

b) Calculate the correlation coefficient for the following ages of the husband and their wives in year at the time of their marriage. Find out significant level and interpret your result.

Age of husbands	23	27	28	29	30	31	33	36	38	40
Age of wives	18	23	23	24	25	26	30	31	33	35

c) Describe the different methods of sampling with suitable examples and merits and demerits of each of the sampling method?

Q 4. (2X7=14)

a) Data recorded on culm length (cm) in a wheat variety. Calculate the mean, variance, standard deviation, and the coefficient of variation from the following distribution:

Culm length	50-52	53-55	56-58	59-61	62-64	65-67	68-70	71-73	74-76	77-79
No. of plants	2	4	6	6	8	5	5	4	3	2

b) Explain laws of probability? The probability that a student passes in Physics is 2/3 and the probability that he passes in Chemistry is 3/4. If the probability of passing in at least one subject is 2/4 what is the probability that he will pass in both the subjects?

c) What is Chi-square test? Explain its characteristics and applications in detail. In a Mendelian experiment on breeding, four types of plants are expected to occur in the proportion of 9:3:3:1. The observed values are: 891 round and yellow, 316 wrinkled and yellow, 290 round and green, and 119 wrinkled and green. Calculate the chi-square value.

Q 5. (2X7=14)

a) What are experimental designs? Explain different types of experimental design in detail giving its advantages and disadvantages?

b) What is the probability of getting 0, 1, 2, 3 and 4 heads when a coin is tossed 4 times?

c) Dry seeds were irradiated with three different doses of gamma rays. Germination percentage is given below. Analyze the data statistically using F-test.

Replicates	Gamma ray doses		
	10kR	20kR	30kR
1	90	85	75
2	95	80	80
3	90	85	75
4	85	75	60
5	80	70	65

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CENTRAL UNIVERSITY OF HARYANA

End Semester Examinations April 2022

Programme: M.Sc. (Environmental Sciences) **Session: 2021-22**

Semester: First **Max. Time: 3 Hours**

Course Title: Natural Resource Conservation and Management **Max. Marks: 70**

Course Code: SIAS EVS 01 01 03 C 4004

Instructions:

1. Question no. 1 has seven parts and students need to answer any four. Each part carries three and half Marks.

2. Question no. 2 to 5 have three parts and student needs to answer any two parts of each question. Each part carries seven marks.

Q 1. Write the note on the following: (4X3.5=14)

a) Mineral resources and reserves

b) Types of soil

c) Petroleum and natural gas

d) Afforestation

e) Oceanic minerals

f) Tidal energy

g) Ocean Thermal Energy Conversion

Q 2. Discuss the following: (2X7=14)

a) Environmental impacts and exploration prospective of mineral resources

b) Define concept of natural resources and explain distribution and uses of oceanic minerals

c) Factors affecting exploration of Oceanic minerals

Q3. Explain the following: (2X7=14)

a) Define the term Soil. Write methods of soil development.

b) Ground water recharge

c) Environmental issues of water resource projects

Q 4. Write on the following: (2X7=14)

a) What is renewable energy resource? Discuss principal of renewable energy generation.

b) Wind Energy

d) Solar Energy

Q 5. Discuss on the following: (2X7=14)

a) Classification of forest

b) Discuss various causes and effects of Deforestation

c) Human interaction with forest

CENTRAL UNIVERSITY OF HARYANA

End Semester Examinations April 2022

Programme: GEC **Session: 2021-22**

Semester: I **Max. Time: 3 Hours**

Course Title: Foundation Course in Ecology and Environment Max. Marks: 70

Course Code: SIAS EVS 01 01 01 GE 4004

Instructions:

1. Question no. 1 has seven parts and students need to answer any four. Each part carries three and half Marks.

2. Question no. 2 to 5 have three parts and student need to answer any two parts of each question. Each part carries seven marks.

Q 1. (4X3.5=14)

a) What is ecological niche and explain its types in detail giving examples.

b) Write short notes on Natality, mortality and biotic potential?

c) Explain in brief about the process of succession?

d) What are ecological pyramids? Discuss in brief.

e) Discuss about the productivity of an ecosystem?

f) Write short notes on keystone species, flagship species and indicator species?

g) What are the basic types of succession? Explain.

Q 2. (2X7=14)

a) Describe the major components of an aquatic ecosystem in detail?

b) Discuss in detail about the abiotic components of an ecosystem

c) Explain the following Liebig's law of minimum, Shelford's law of tolerance and combined concept of limiting factors with examples

Q3. (2X7=14)

a) Explain in brief about the population and its characteristics?

b) What are the abiotic components of an environment? Explain in brief

c) How does the light and temperature play an important in the distribution of plants?

Q 4. (2X7=14)

a) Describe the single channel and Y-shaped energy flow model of an ecosystem with examples

b) What are the different strategies that plants and animals adopt to acclimatize themselves in response to extreme of temperature? Explain in brief.

c) What is symbiosis? Explain in brief various types of positive and negative interactions among the organisms giving suitable examples.

Q 5. (2X7=14)

a) What is succession and explain the different stages of pond succession with suitable examples?

b) Discuss in detail about the biotic and abiotic components of a freshwater ecosystem?

c) What are biogeochemical cycles? Explain its types and describe nitrogen cycle with the help of figure.