

111 PU Ph.D Ecology & Environmental Studies

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In electromagnetic radiation IR has more energy than:-

- Visible rays
- X-rays
- UV rays
- Microwave

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Turbidity of water is an indication of the presence of:-

- dissolved gases
- dissolved solids
- suspended inorganic matter
- floating solids

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What are the parameters underlying species diversity indices?

- Evenness
- Species richness
- Abundance
- Species richness and evenness

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Bioluminescence is caused by the enzyme:-

- Peroxidase
- Hormones
- Luciferin
- Epithelial reflectance

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Maximum density of water is at:-

- 0°C
- 100°C
- 272°C

- 4°C

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A K-selected species is likely to exhibit:-

- A Type I survivorship curve and a short generation time
- A Type II survivorship curve and a short generation time
- A Type III survivorship curve and a short generation time
- A Type I survivorship curve and a long generation time

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The peak of last glaciations was approximately:-

- 20,000 years ago
- 2000 years ago
- 1000 years ago
- 200,000 years ago

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Arsenic problem in India is primarily due to:-

- Overexploitation of arsenopyrite in the hinterland
- Overexploitation of surface water in affected area
- Overexploitation of groundwater in affected area
- Overexploitation of coal in Bihar and Bengal

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A mushroom is:-

- The food-absorbing region of a basidiomycete
- A reproductive structure formed by basidiomycetes
- A specialized form of mycelium not constructed of hyphae
- The food -absorbing region of an ascomycete

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One day, you trapped and marked 90 butterflies in a population. A week later, you returned to the population and caught 80 butterflies, including 16 that had been marked previously. What is the size of the butterfly population?

- 450
- 154

- 186
- 170

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Type of radiation being emitted depends on the ____ of the object.

- Shape
- Mass
- Surface texture
- Temperature

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The exponential growth of populations was proposed by:-

- Malthus
- Fisher
- MacArthur
- Mendel

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Minimum viable population:-

- Predict whether a threatened species will use habitat corridors
- Predict the minimum population size of a threatened species that is likely to survive
- Determine how large an area must be preserved for the protection of a threatened species
- Identify the source population from which an individual dispersed to sink population.

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Adjacent populations that produce hybrid offspring with low relative fitness may be undergoing:-

- Clinal isolation
- Parapatric speciation
- Allopatric speciation
- Sympatric speciation

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Sources of natural rubber include:-

- Ficus, Morus & Artocarpus
- Mimusops, Ruta & Euphorbia

- Ficus, Hevea & Manihot
- Calotropis, Plumeria & Melia

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The increase of persistent pollutants in the food-chain is called:-

- Bioaccumulation
- Bioexcretion
- Biomagnification
- Bioconcentration

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The base of the trophic pyramid consists of:-

- Detritivores
- Consumers
- Producers
- Decomposers

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Some of the hottest Biodiversity hot spots include:-

- Russia, Nigeria and Mangolia
- Australia, Texas, Canada and Sri Lanka
- Canada, Greenland and Finland
- Western Ghats-Sri Lanka, Indo-Burma, Madagascar, Brazil

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NO₂ stays in atmosphere for:-

- 50 years
- 100 years
- 75 years
- 25 years

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Secondary metabolites include:-

- tannins, proteins and carbohydrates
- sugar, proteins and fats

- gums, resins, tannins and polyphenols
- amino acids, proteins and carbohydrates

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Which of these regions has high level of biodiversity?

- Amazon basin
- Antarctica
- Australia
- Europe

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How is genetic diversity measured?

- Number of chromosomes
- Percentage of rare alleles
- Proportion of alleles
- Proportion of heterozygous loci

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What was the major cause of species extinctions in the Pleistocene?

- Diseases
- Human hunting
- Climate change
- Meteorite

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Competitive Exclusion Principle was proposed by:-

- G. F. Gause
- Lotka and Volterra
- Robert MacArthur
- G. Evelyn Hutchinson

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Predation and parasitism are which type of interactions?

- +,-
- ,-

- +,+
- +,0

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What kind of distribution does territoriality produce?

- Clumped
- Differs with species
- Random
- Uniform

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Which structure allows living organisms to detect changes in the environment?

- a gene
- a receptor
- RNA
- Protein

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Cell organelle peroxysomes help in:-

- Energy metabolism
- Nutrient transfer
- Protein synthesis
- Cell division

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The solubility of dissolved oxygen in water at 20°C is _____.

- 10ppm
- 9ppm
- 14ppm
- 28ppm

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The most uncertain factor in the development of global climate models is:-

- Vegetation
- Oceanic process

- Human choices
- Natural process

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Operating principle of cyclone separator is based on the action:-

- Electrostatic force on
- Centrifugal force on
- Gravitational force on
- Diffusion of

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Prions are:-

- micro RNA's
- a type of virus
- a gene sequence
- proteinaceous infectious agent

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What is the major communication mode of bats?

- Visual signals
- Echolocation
- Acoustic signals
- Electrical signals

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Ozone layer is located in the:-

- Exosphere
- Stratosphere
- Troposphere
- Thermosphere

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Major determinants of global distribution of biomes include:-

- altitude, latitude, and longitude
- temperature and rainfall

- soil and rainfall
- temperature and altitude

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The main mechanisms causing purification of sewage in trickling filters are:-

- Absorption and biological oxidation
- Absorption and chemical oxidation
- Absorption and adsorption
- None of the above

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Identify the free living nitrogen fixing bacteria.

- Azospirillum
- Rhizobium
- Acetobacter
- Azotobacter

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Medical advances now allow many people who suffer from genetic diseases to survive and reproduce. These advances:-

- Disprove descent with modification
- Refute Darwin's theory
- Support Lamarck's theory
- Reduce the effects of natural selection

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The coefficient of correlation:-

- has no limits
- can be less than one
- varies between 0 and 1
- can be more than one

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Univoltine in insects refers to:-

- One brood per year

- Ecdysis
- One cocoon
- Emergence

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Adaptive radiations often follow mass extinctions because:-

- Mass extinctions foster allometry and heterochrony
- Extinctions open niches that were previously occupied.
- Mass extinctions decimate all forms of life on earth
- Mass extinctions limit the impact of species selection

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LIDAR records the reflected value in:-

- TIN
- Pixels
- Grid
- Points

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How many molecules of ATP are produced in glycolysis per glucose molecule?

- 4
- 2
- 36
- 34

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Swath's size of the Sensor determines:-

- Radiometric resolution
- Spectral resolution
- Temporal resolution
- Spatial resolution

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Which of these are less likely to go extinct in the near future?

- Polar Bear

- Snow leopard
- Common Crow
- Asian elephant

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Population genetics is the study of:-

- The rate of phenotypic changes with evolution
- Heterozygosity and fitness of populations
- Genetic diversity in populations
- Changes in allele frequency over generations

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Which of these groups is more likely to go extinct faster?

- Insects
- Large mammals
- Birds
- Plants

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In spatial mapping precision of location is higher in _____.

- Vector data
- Scalar data
- Grid data
- Raster data

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What is the role of oceans in waste treatment called?

- Cultural services
- Provisioning services
- Regulatory services
- Supporting services

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How do populations within a metapopulation interact?

- Gene flow

- Random mating
- Genetic drift
- Population fluctuations

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What will probably be the major cause of species extinction in the future?

- Habitat loss
- Climate change
- Hunting
- Invasive species

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The maximum desirable limit (BIS) of mercury in the drinking water is:-

- 0.9mg/l
- 0.001mg/l
- 0.1mg/l
- 0.05mg/l

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Tetra ethyl lead air pollutant is released from the source:-

- Fertilizer industry
- Incinerator
- Automobile
- Pulp and paper industry

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The order of increasing soil grain size is:-

- sand, clay & humus
- clay, silt, fine & coarse sand
- sand, clay & silt
- sand, silt & clay

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A keystone species:-

- Is usually a primary producer

- Has an important role in maintaining community structure
- Usually reduces the species diversity in a community
- Forages optimally

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The major problems of fisheries in lake Victoria is:-

- presence of toxic chemical in the water that killed all of the animal life
- invasive fishes
- oil spills
- introduction of cichlids in to the lake

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Alum is added to water to facilitate the process of:-

- Melting
- Sedimentation
- Evaporation
- Condensation

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Only a fraction of energy is transferred from one trophic level to the one above:-

- Entropy is higher at higher levels
- There are more consumers than producers
- There are more producers than consumers
- Most of the energy is used for life processes

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A fisherman catches fish in the Bay of Bengal and sells it for a living is:-

- Regulatory use Value
- Cultural Value
- Productive use Value
- Consumptive use value

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Carbon mono oxide is a pollutant because:-

- Reacts with hemoglobin

- It reacts with O_2
- It makes nervous system inactive
- It inhibits glycolysis

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What effect increases as the population increases in size?

- Population growth
- Carrying capacity
- Density dependent effect
- Density independent effect

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A circle is divided into sectors whose areas are proportional to the frequency of data is called:-

- Histogram
- Bar diagram
- Box whisker plot
- Pie chart

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Which field of genetics is the oldest?

- Mendelian genetics
- Population genetics
- Developmental genetics
- Molecular genetics

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A 1 rupee coin issued by India is believed to be distributed normally with a mean of 10gm and s.d. of 1 gm. A roll of 50 coins would have:-

- 50 times the mean but only approximately 7 times the s.d
- The same mean and s.d. as a single coin
- 50 times the mean but double s.d.
- 50 times the mean and s.d. as a single coin

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A survey was conducted among 200 students from Pondicherry University selected at random. What is the population?

- The entire population of Pondicherry University
- The 200 selected students
- All the students in the region
- All the students at Pondicherry University

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For testing the hypothesis that among humans the life expectancy is gender dependent using parametric statistics you would ideally need a data set that is: The temperature in Celsius scale is best described as a:-

- Randomly distributed
- Poisson distribution
- No requirement for any particular distribution
- Normally distributed

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A dihybrid cross will result in an offspring ratio of:-

- 3:1
- 1:3:1
- 4:4:2:2
- 9:3:3:1

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What is the median in the following numbers?

19, 21, 18, 17, 18, 22, 46.

- 21
- 15
- 22
- 19

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Confidence intervals in statistics:-

- Same as p values
- Define the likely range of a population value
- Calculated routinely by most stats packages
- Describe confidence in outcome

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Identify the correct organisation of genetic material from largest to smallest.

- Chromosome, genome, nucleotide, gene
- Chromosome, gene, genome, nucleotide
- Gene, chromosome, nucleotide, genome
- Genome, chromosome, gene, nucleotide

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How does habitat fragmentation affect species?

- Increases edge effect
- Increases dispersal
- Increases heterozygosity
- Increases relative humidity

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If we looked at the effect of gender and weight on athletic performance, what test would you use?

- ANCOVA
- Multiple regression
- ANOVA
- Unpaired t test

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Stable equilibrium for a system means that:-

- If disturbed it would return to the original state without any oscillations about it
- If disturbed it would return to the original state with oscillations about it
- If disturbed it would remain disturbed
- If disturbed it would return to the original state with or without oscillations about it

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Ecologist Robert May is credited with discovering the "bifurcation route to chaos". He did this while studying the population dynamics of:-

- filarial parasites
- lions of Africa
- mycobacteria

- insects that normally do not have overlapping generations

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If you crossed two heterozygous plants what proportion of the young will be heterozygous?

- Half
- 3/4
- All
- 1/4

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You toss a coin four times. Three times it comes out heads. What's the probability that it will be heads the fourth time?

- 1/2
- 1/4
- 1/3
- 1/5

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In Environmental Impact Assessment 'scoping' refers to:-

- Evaluating the economic impact
- Evaluating the social impact
- Evaluation of pollution
- Evaluating the issues that need to be analysed

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Where are lions found in India?

- Mudumalai
- Ranthambore
- Gir
- Kaziranga

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Which of the following is an alternate form of a gene?

- Allele
- Phenotype

- Gamete
- Genotype

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If you know two of the answers were incorrect and took a chance to pick one of the two remaining answers. What would be your probability of being correct?

- 3/4
- 1/4
- 1/2
- 0

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Is ozone good or bad for humans?

- Bad
- Neither
- Both
- Good

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Which of the following gases does not trap heat?

- Water vapour
- Methane
- Carbon dioxide
- Nitrogen

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Where are 99% of the earth's top glaciers found?

- The Himalayas
- The Andes
- The Alps
- The Rocky mountains

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El Nino is caused by:-

- It's a natural phenomenon

- Global warming
- Both are responsible
- Neither causes El Nino

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CO₂ levels in the atmosphere 10,000 years before the industrial revolution in 1751 rose by only 10%. Since then CO₂ levels risen by which of the below?

- 62%
- 43%
- 21%
- 75%

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Which of these oceans is the saltiest on earth?

- Pacific
- Indian
- Arctic
- Atlantic

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If humans stop using fossil fuels today, what would happen to the global temperature?

- Decrease
- Increase and then decrease
- Continue to increase
- Remain the same

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Which of these has a greater effect on global sea levels?

- Melting icebergs
- Melting land ice
- Melting sea ice
- Floods

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This can predict the possible genotypes in offspring in a cross:-

- Hardy Weinberg equation
- Punnett square
- Mendel
- Population model

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What role do oceans play in the carbon cycle?

- They are CO₂ sinks
- They are source of CO₂
- They are both
- They are neither

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Why is it difficult for Indian farmers to forecast water shortages?

- They rely heavily on ground water
- They grow water dependent crops
- Monsoon patterns are erratic
- Market demand increases yearly

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What are the conditions for evolutionary change to proceed?

- Inheritance of acquired characters
- Strong body size
- Good genes
- Genetic variation

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As the average global temperature rises:-

- Average rainfall decreases
- No change in rainfall
- Average rainfall increases and then decreases
- Average rainfall increases

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296 PU_2016_111_D

Which is the only country that has not ratified the Kyoto protocol yet?

- USA
- China
- Japan
- India

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What kind of pollution is not directly emitted by automobiles?

- Volatile organic compounds
- NO₂
- Ground level ozone
- CO

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Inbreeding depression in a population can be reduced by:-

- Genetic drift
- Gene flow
- Cryopreservation
- Cloning

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Some satellites use one sensor to measure soil moisture over land and another surface property over the ocean. What is this ocean surface property?

- Concentration of dissolved salts
- Chlorophyll concentration
- Ocean Currents
- NDVI

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Burning fossil fuels is the main source of greenhouse gases. Which is the second major source?

- Deforestation
- Methane from livestock industry
- Volcanic activity
- Chlorofluorocarbons

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What is the process by which species become better suited to the environment?

- Reproduction
- Inheritance
- Variation
- Adaptation

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What are aerosols?

- Greenhouse gases like CO₂ and Methane
- Rainfall
- Minute particles suspended in the atmosphere
- Ocean spray