

Doctoral Programme Admission Test - Sample Questions

These are only illustrative samples for general guidance and do not constitute or reflect the actual questions for the admissions test.

Part A: MCQ Questions

1. In the context of environmental economics, "ecosystem services" refer to:
 - a. The legal rights to access natural resources
 - b. The natural processes and functions of ecosystems that provide essential benefits to humans, including air and water purification, climate regulation, and nutrient cycling
 - c. Government subsidies for conservation efforts
 - d. The profits made from resource extraction
2. Which of the following is a key principle of the precautionary approach in environmental governance?
 - a. Prioritizing economic growth over environmental protection
 - b. Taking action in the face of uncertainty to prevent harm
 - c. Waiting for complete scientific proof before taking action
 - d. Allowing business interests to override environmental concerns
3. Which of the following best describes a keystone species?
 - a. A species that has a disproportionate effect on its ecosystem relative to its biomass
 - b. A species that is always at the top of the food chain
 - c. A species that migrates over long distances
 - d. A species that competes for the same resources as other species
4. Issues related to land, land rights and land tenure are part of which list as per the Seventh Schedule of the Constitution:
 - a. Union list
 - b. Concurrent list
 - c. State list
 - d. All of the above
5. Which of the following correctly represents the three recognized levels of biodiversity?
 - a. Genetic, species, and ecosystem
 - b. Species, ecosystem, and biome
 - c. Genetic, population, and community
 - d. Species, habitat, and niche
6. The environmental Kuznets Curve posits that:
 - a. Degradation of environment is due to human activities and due to higher consumption of resources
 - b. There is no relationship between income and environment
 - c. At lower income levels and lower GDP, the environment is degraded and environment quality is low, as GDP and income increases environment quality also increases and at

higher income levels, environmental quality is high due to investment in restoration and clean ups.

d. Supply and demand of environmental services depends on higher education levels and not on incomes

7. Mahatma Gandhi National Rural Employment Guarantee Act 2005 (MGNREGA) ensures that:
 - a. Urban workers are assured of minimum wages
 - b. Rural workers are entitled to full employment around the year
 - c. All workers are entitled to social protection including pensions and health insurance
 - d. 100 days of wage employment are provided to rural workers for unskilled work
8. An example of climate change mitigation is:
 - a. Moving from rural to urban
 - b. Building supercomputers
 - c. Planting trees
 - d. Use more groundwater
9. Which of these is **not** a major challenge with regard to fulfilling the goals of the Paris Climate Agreement for India:
 - a. Reducing dependence on coal and other fossil fuels
 - b. Finding land for afforestation
 - c. Training people to drive electric vehicles
 - d. Installation of large solar farms and mini hydropower dams without impacting ecology
10. Which of the following is not a fundamental right in India?
 - a. Right to Privacy
 - b. Right to Education
 - c. Right to Information
 - d. Right to Health
11. An example of social protection is:
 - a. Free public primary or secondary education
 - b. Health insurance
 - c. Cash transfers to Female-headed households
 - d. All of the above
12. A call inspired by Dr B R Ambedkar's writing asks one to:
 - a. Advocate, Educate, Organise
 - b. Educate, Agitate, Organise
 - c. Motivate, Organise, Elevate
 - d. Educate, Mobilise, Organise
13. Which of the following is a measure of multi-dimensional vulnerability?
 - a. Human Development Index
 - b. Gini Coefficient
 - c. Poverty Line

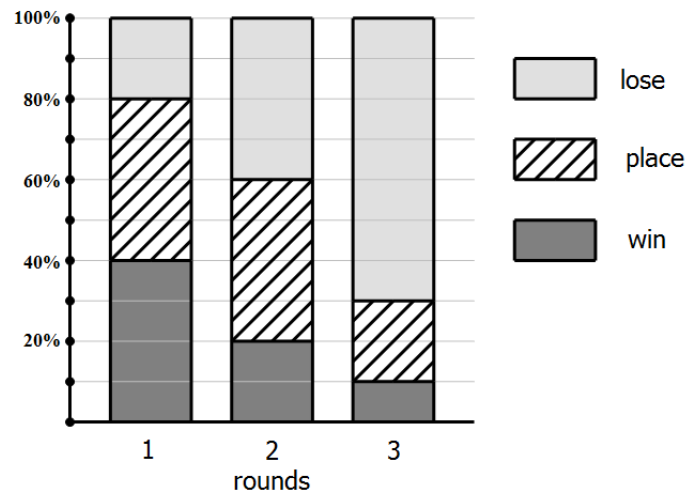
d. Per Capita Income

14. Which of the following is **NOT** true for workers in the informal economy?
- They lack written employment contracts
 - They are not entitled to paid leave
 - They are not entitled to maternity leave
 - Minimum wages do not apply to informal workers
15. What are Gram Sabhas?
- Gram Sabhas are village level forums where local festivals are celebrated
 - Gram Sabhas are village level courts of justice where trials are held
 - Gram Sabhas are held by the Panchayat with villagers to discuss local governance issues
 - Gram Sabhas are held by self-help groups to discuss loan and repayment issues
16. In Bayesian statistics, what does the posterior distribution represent?
- The distribution of the data given the parameter
 - The initial belief about the parameters before observing data
 - The updated belief about the parameters after observing data
 - The likelihood of observing the data under different models
17. How does climate change primarily affect freshwater availability?
- By increasing groundwater recharge rates
 - Through the uniform distribution of rainfall
 - By altering precipitation patterns and increasing evaporation
 - By stabilizing river flow regimes
18. What does the Gross Domestic Product (GDP) of an economy measure?
- The prevalence of multi-dimensional poverty in the economy
 - The level of health and education in the population, or human development index
 - The overall size of economic output in the economy
 - The level of capital investment in the economy
19. Which agricultural practice is most aligned with principles of sustainability?
- Monoculture farming with high pesticide use.
 - Slash-and-burn agriculture.
 - Crop rotation and integrated pest management.
 - Intensive livestock farming.
20. In qualitative research, which of the following best describes the principle of *theoretical saturation* in grounded theory?
- It is the point at which all participants have been interviewed at least twice.
 - It occurs when no new codes or themes emerge from the data despite continued data collection.
 - It refers to the statistical significance of thematic patterns.
 - It is the stage when the research questions are finalized and fixed.

21. What is the significance of public-private partnerships (PPPs) in infrastructure development projects in India?
- Attract private sector investment and expertise for faster project completion
 - Reduce the financial burden on the government for infrastructure development
 - Improve efficiency and innovation in the infrastructure sector
 - All of the above
22. Which of the following is **NOT** a characteristic of complex adaptive systems relevant to sustainability?
- Emergence
 - Linear causality
 - Self-organization
 - Adaptation
23. According to complexity theory, effective modelling of sustainability transitions requires:
- Deterministic frameworks with fixed outcomes.
 - Probabilistic, integrative, inclusive, and adaptive approaches.
 - Simplified models focusing on isolated variables.
 - Exclusive reliance on quantitative data.
24. Select the item(s) that are **NOT** stipulated as obligatory function(s) of the urban local bodies as per the 12th Schedule of the Indian Constitution:
- Urban poverty alleviation
 - Promotion of cultural, educational and aesthetic aspects
 - Special measures for disaster mitigation
 - Prevention of cruelty to animals
25. Which constitutional amendment in India provided a constitutional status to Urban Local Bodies and mandated the creation of Municipalities?
- 42nd Amendment
 - 73rd Amendment
 - 74th Amendment
 - 76th Amendment
26. What is the main focus of Transit-Oriented Development (TOD)?
- Building high-rise office buildings in city centres.
 - Encouraging high-density, mixed-use development near public transportation hubs.
 - Constructing wider highways to accommodate more traffic.
 - Promoting car-centric suburbs with single-family homes.

In a certain academic competition, there are three rounds, and three possible results in each round. The folks who “lose” acquire no commendations and do not advance to the next round. The folks who “place”, acquire a set of commendations for that round, but do not advance to the next round. The folks who “win” acquire a set of commendations for that round, and, in the case of the first two rounds, advance to the next round; in the case of the third round, the

“win” means winning the entire competition. The following chart shows, on average, the percentages of participants who achieve the three results in each of the three rounds.

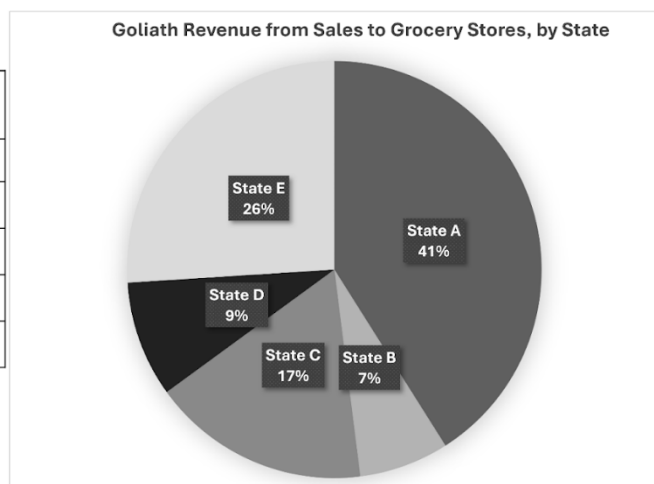


27. If 100,000 participant start this process, and if all the percentages in the chart are correct, _____ people of them would win the entire competition.
- a. 800
 - b. 3200
 - c. 7000
 - d. 10000

28. Exactly _____ % of participants who start acquire exactly two sets of commendations.
- a. 16
 - b. 16.8
 - c. 20
 - d. 21.6

The charts below show the breakdown for the 2010 revenues for Goliath Corporation, a major supplier of food and food preparation materials. The pie chart shows the breakdown of sales to grocery stores. Assume these two charts contain all the revenue for Goliath Corporation.

Source of Revenue	Thousands of Rupees
Sales to Hotels & Restaurants	1278
Sales to Grocery Stores	793
Foreign Export Sales	124
Government Contracts	67
TOTAL	2262



29. The revenue from foreign export sales is _____ the revenue from grocery stores in State E.

- a. Greater than
- b. Equal to
- c. Less than

30. Revenue from governmental contracts would have to increase by _____% to equal the revenue from grocery sales in State C.
- a. 68
 - b. 101
 - c. 135
 - d. 226

Part B: Short Answer Questions (100 words)

Please answer 1 question from each group.

Group 1

1. How are synergies and nexus between food security, water security, energy and ecology playing out in India? Give examples.
2. It is said that urbanisation modernises identity. Reflect on whether you think this holds true for caste, gender, or religion in the Indian contexts. How does the city shape these identities?
3. What are the dilemmas associated with resettlement colonies as an answer to India's housing problem?
4. In its report released in February 2020, the XV Finance Commission has recommended the development of eight new greenfield cities. In the context of this, reflect on if and how this recommendation can create more inclusive development pathways for urban residents?
5. Describe your understanding of an India centric urban energy system. Explore the dynamics of issues and challenges pertaining to the incumbent and archetype urban energy system.
6. What are Nature-based solutions for urban problems and how do they differ from blue and green infrastructure?

Group 2

1. What are the key differences between and comparative advantages of the Bayesian and Frequentist schools of statistics and methodology?
2. Reflect on the relative strengths of structured versus more open ended interviews.
3. What are fixed and random effects in mixed linear models in data analyses? Give an example.

4. Interview or questionnaire-based data differs from biophysical measurement data in a fundamental way in defining the population from which the sample is drawn. Could you describe this phenomenon and what problems it may pose?
5. In the design of studies with observations or measurements, what is a true replicate and what is a pseudo-replicate? Give an example of each.
6. A researcher's identity can impact a research process. Reflect on how a researcher's positionality shapes different kinds of methods.

Part C: Long Answer Questions (600-800 words)

There are two questions in this section. You must answer both in 600-800 words.

(Sample questions not available)