

**BHARATI VIDYAPEETH  
(DEEMED TO BE UNIVERSITY), PUNE, INDIA  
PhD Entrance Test – 2020**

**SECTION-II: Environment Science and Technology - 50 Marks**

**The syllabus for the entrance test for Ph.D. in Environment Science and Technology is based on the syllabus for the Masters in Environment Science and Technology course conducted by Bharati Vidyapeeth University. The entrance exam will be based on the following topics.**

Unit -1	<p><b>Biosciences and Natural Resources</b></p> <p>Basic ecological concepts and ecosystems: types, functions and structure; Biodiversity-levels, values, threats, conservation measures; Natural resources and associated problems; Planning conservation areas-criteria for conservation, approaches for conservation, tools for conservation and design criteria; Integrated watershed management-watershed management strategy, ecological assessment, Ecosystem Services</p>	Two 5 marks questions
Unit -2	<p><b>Urban Planning</b></p> <p>Introduction; Urbanization and its impacts; Urban climatology; Disasters and urbanization; Housing; Slums; Urban traffic; Urban utility planning; Open space provisions; Planning laws and environment; Planning Agencies</p>	One 5 marks question
Unit- 3	<p><b>Fundamentals of Geographic Information Systems</b></p> <p>Introduction to GIS; Geographic data and data measurement map basics, basic geographic concepts; data models, data structures and data input; Global Positioning Systems; Database management; Data Analysis; GIS Project Design and Management</p>	One 5 marks question
Unit- 4	<p><b>Applications of geospatial technologies</b></p> <p>Remote sensing and GIS applications in ecosystem studies and conservation, agricultural applications, urban applications, water resources and related applications, health studies, Remote sensing and GIS applications in forest studies, marine sciences, urban mapping, disaster management.</p>	One 5 marks question
Unit-5	<p><b>Statistics</b></p> <p>Data in ecology and environmental sciences; Statistical techniques; Basic elements and tools of statistical analysis; Concepts of probability ; Distribution; Contingency tables and <math>\chi^2</math> ; <math>\chi^2</math> - test of goodness – of – fit and homogeneity ; Correlation of measurement; Regression analysis; Introductory multivariate statistics and Partial correlation; geostatistics.</p>	One 5 marks question
Unit-6	<p><b>Sustainable Development</b></p> <p>Basic concepts of sustainable development, challenges for sustainable development, tools for sustainable development, education for sustainable development, change management</p>	One 5 marks question

Unit-7	<b>Technology for Pollution Control and Management</b> Basics of water and waste water treatment-process;Air and noise pollution control-metrology and air pollution dispersion, air quality measurement and monitoring, air pollution control; Units is water and waste water treatment;Solid and hazardous waste management-source reduction, recycling, integrated solid waste management, e-waste management; Environment Impact Assessment-integrated impact assessment –tools and techniques, biodiversity inclusive impact assessment, strategic impact assessment.	Two 5 marks questions
Unit-8	<b>Environmental Law</b> Overview and key components of Indian Environment laws-forest laws, pollution control laws, conservation laws.	One 5 marks question

### Reference Books

1. Margules, C., S. Sarkar, and C. R. Margules. Systematic Conservation Planning. Cambridge University Press, 2007.
2. Bawa, Kamaljit S., Richard B. Primack, and Meera Anna Oommen. Conservation Biology: A Primer for South Asia. Universities Press (India), 2011.
3. Heywood I., S. Cornelius, S. Carrer, An Introduction to Geographical Information Systems, Pearson Education Pvt. Ltd, 2002.
4. Bass, Stephen, and Barry Dalal-Clayton. Sustainable Development Strategies: A Resource Book. Routledge, 2012.
5. Dytham, Calvin. Choosing and Using Statistics: A Biologist's Guide. John Wiley & Sons, 2011.
6. Metcalf and Eddy, Wastewater engineering treatment and reuse, Tata Mc-Grawhill Publishing Company Ltd, 4<sup>th</sup> edition, 2003.
7. Ramchandra T.V, Management of Municipal Solid Waste, Capital Publishing Company, 2006.
8. Wathern, Peter. Environmental Impact Assessment: Theory and Practice. Routledge, 2013.
9. Leelakrishnan P, Environmental Law in India, Butterworths, 2000.