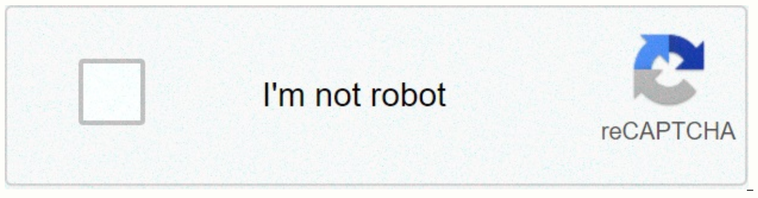

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Biogeography upsc pdf

Archive>> Prof S.Kannaiyan Indian ocean and its biodiversity is a major thrust area for countries bordering Indian Ocean for the developmental process. On this context the questions that need to be addressed start from basic questions like how many species are present in the region? What are they? What are their habitats? Are they useful or not? How many of them are threatened ones, etc. We also need to have answers for questions like, what will be the condition of corals reefs or mangroves after fifty years? What will be the status of marine turtles of Indian coast after 10 years? What was the status 20 year back?. Etc. These questions can only be answered with databases that have scientifically and systematically collated information from basic research. But what we know of the components of coastal and marine biodiversity or changes over time are highly scattered and are not often readily accessible to all. Although much research has been carried out, or is currently going on, many initiatives are unrelated, data are difficult to trace and even more difficult to integrate. What is available is often in non-interoperable formats, compounded by uncertain taxonomic identities that underscore the need for a scientific information system that enables to transfer marine biodiversity information. In the last two decades, study of the sea has leaped forward with the advancement in science and technology, improved sensors to observe the sea by direct measurements as well as remotely from space, and in particular with the progress in information technology. Remotely sensed and in situ observations are increasingly being made available through the Global Ocean Observing System (GOOS), creating an unprecedented amount of geo-referenced environmental and ecosystem data. Computer and communications capabilities permit rapid assembly, and meaningful analysis of immense volumes of diverse data. Moreover, earth and life scientists have developed highly capable systems for planning, coordinating, and executing coherent and effective programs on a global scale. Understanding the biodiversity in the context of global warming, biological invasion, IPR, etc. are need of the time. We need tools that are handy for formulating ecologically sound policies. It is heartening to see that in the recent time, some global initiatives have started for helping all the spectrum of people. Global initiatives are grouped mainly into two main categories viz.(a) Taxonomic databases readily available are Integrated Taxonomic Information System (IT IS), Species 2000, ETI bioinformatics, Animaldiversity Web, Taxonomic database working Group, etc. Some taxon specific databases are also available like Fishbase, Cephbase, Reefbase, and Algaebase. The main objectives of these databases are to create an easily accessible databse with reliable information on species name and their hierarchical classification. The IT IS includes documented taxonomic information of flora and fauna from both aquatic and terrestrial habitats. The goal of the species 2000 project is to create a validated checklist of all the world's species. In a group of georeferenced biological databases, Global Biodiversity Information Facility (GBIF) needs a special mention. It has 179 data providers and more than 100 millions records on it. It uses distributed computing platform specially developed for biological data transfer. It gives biological data of marine as well as land organisms. The special technologies developed for that includes DiGIR server, BioCASE, DarwinCore, etc. The geographically referenced data is useful for further scientific analysis. Some of the tools available for scientific analysis include Desktop GARP, BIOmapper, etc. The new technologies like Mobile computing, Distributed computing, Grid computing, neural networks, W3 consortium, etc. give immense scope for these georeferenced databases for further expansion. We have already distributed computing platform like ENVIS (Environmental Information System) and BTIS (Biotechnology Information System Network). Prof S.Kannaiyan Census of Marine Life (CoML) is a one such recent initiative in the marine context. CoML is a growing global network of researchers involving more than 70 countries engaged in a ten year initiative (2000 - 2010) to assess and explain the diversity, distribution and abundance of life in the ocean and the changes in it over time ( ). The Ocean Biogeographic Information System (OBIS) ( ) is the information component of the CoML and the marine component of Global Biodiversity Information Facility (. OBIS is a web based provider of global geo-referenced information on accurately identified marine organisms. OBIS contains species level and habitat level databases and provides a variety of spatial query tools for visualizing the relationships between species and their environment. To make it more effective and manageable, OBIS has established 7 regional nodes (RON). The Indian Ocean Biogeographic Information System (IndOBIS) is one of the seven regional nodes, which is responsible for the collection, collation , and dissemination of data and information about the biodiversity in the Indian Ocean region through the portal . IndOBIS will become the principal provider of biodiversity data of the Indian Ocean and make this information available in a multidimensional geographic context; promote communication and awareness to user groups at all levels, using the appropriate information tools; and enable informed decision making processes leading to sustainable use of natural resources. I am very happy to learn that the National Institute of Oceanography and the National Chemical Laboratory have been entrusted with the responsibility of managing the IndOBIS regional node and started functioning since 2005. India, being the largest country bordering the Indian Ocean, is primarily concerned about the Indian Ocean region and its biodiversity. Indian Ocean is the third largest Ocean in the world, occupying 21 % of the world's sea area, contributing to the production of living resources with an estimated annual yield of 8 million tons of capture fisheries. The biodiversity elements of Indian Ocean are relatively less known compared to other World Oceans. What we know of the contents of coastal and marine biodiversity of the Indian Ocean region or changes in them Over time are highly scattered and often are not readily accessible to all. I am given to understand that the major activities of the IndOBIS involve (a) collection and collation of taxonomic and geographic information on marine species of Indian Ocean origin from peer-reviewed literatures and (b) digitization of marine specimens and related information of Indian Ocean origin. These data will undergo validation and scrutiny of the respective taxonomic/ subject matter experts and make available through its web portal I am very pleased to know that the IndOBIS web portal now has more than 35000 species records with their common names, synonyms, taxonomical hierarchy, biogeography, etc. Now five museum data sets are a1so available on the portal. All this data are processed by infomatics infrstructure of IndOBIS. I am sure and confident in course of time IndOBIS would be able to provide authenticated data and information on biodiversity of Indian Ocean to user community. The IndOBIS also promises to deliver several tangible products by leveraging on the networking of potential custodians of the data and the proposed deliverables, which include: Electronic catalogue of known biota of Indian Ocean Digitised museum collections Digital literature bank Databank on taxonomic experts (DIOT) Database of datasets Also IndOBIS would initiate developing products, tools, and protocols for marine biodiversity informatics and help to evolve guidelines to encourage information and communication between technology and marine biological data management. They also have a proposal to make the database multilingual to suite the need of the coastal communities. I am happy to learn that this is the first workshop being organized by the IndOBIS for the potential data providers from India. It is also in the planning process similar types of data providers workshop in other Indian Ocean rim countries for the benefit of the data providers from those regions. The workshop is primarily aimed mostly in familiarizing the advancements made in the biodiversity of the Indian Ocean and to give a hands-on experience of the IndOBIS web portal, particularly in data inputs, validation and retrieval, digitizing of museum specimens, etc.. Another important goal of the workshop is to identify partners and evolve strategies so as to formulate viable projects on Indian Ocean biodiversity. I hope the workshop will strive to achieve all its objectives, particularly in identifying the potential data providers and finalise the project proposals that are strategically important for protecting and conserving the biodiversity of the Indian Ocean. I have great pleasure in presiding over the inaugural session of the workshop. Have interactive discussions and wish you for a successful scientific delebrations and grand success of the workshop. Biogeography Syllabus Paper I Genesis of soils Classification and distribution of soils Soil profile Soil erosion, Degradation and conservation Factors influencing world distribution of plants and animals Problems of deforestation and conservation measures Social forestry Agroforestry Wild life Major gene pool centres Paper II Natural vegetation Soil types and their distribution Deforestation Desertification Soil erosion Biotic, forest and wildlife resources and their conservation Land capability Agro and social forestry Sources and Resources NCERT, Class XI Physical Geography GC Leong Mcknight's Physical Geography Biosphere by K. Siddhartha Geography through Maps by K Siddhartha Any good reference Geography dictionary Physical Geography by Savinder Singh Atlas Issues of Geography and You Strategy Biogeography is relatively limited in scope and coverage. It has also got overlaps with paper II of the optional. Preparing this portion thoroughly gives you some added advantages. Not only you get few easy manageable questions in part A of paper I of Geography optional, the offshoots and applications of the knowledge gained by mastering this component are very rewarding for paper II of Geography. Also it shall help you in answering questions related to world biomes, distribution of flora and fauna, conservation measures etc asked in GS Paper I and III. Moreover, by preparing this portion comprehensively shall give you at least 6-8 marks in prelims. So, it means that cost benefit analysis of this portion of the syllabus highly favors a comprehensive preparation of Climatology. Focus Areas The soul of the syllabus of Biogeography lies in understanding the key concepts of ecosystems, biomes, Zoogeological regions etc. You must focus on their key characteristics and criteria of classification. You have to be specially prepared with the terms and terminologies of the subject. Questions asked in the previous year papers like short notes on Ethiopian realm or Zoogeological regions required awareness of such terms that are not usually there in Indian books. Moreover you need to thoroughly understand the factors that are play in the soil forming process. A parallel study of soil types in India can save your time and develop your understanding better. In fact you can make it a rule to think of all the concepts in the Indian context. UPSC has the habit of asking such questions in the past. You can be asked a question to classify and show the distribution of Indian soil types as per International Soil Taxonomy. The subject can be a bit factual sometimes particularly in topics of soil classification, biomes, floral and faunal distribution etc but regular revision and practice can let you master the concepts. Imperatives To answer the questions related to Biogeography, and for that matter any of the components of Physical Geography, you need to have some basic tools and equipments without which your answers shall be blunt in their impact. So our list of imperatives here shall be a mere reiteration of what we had already told you with respect to Climatology. While you prepare, your focus must be on the answer sheet that you you would write upon in the coming few months. Developing these tools now shall help you enormously then. So the imperatives that you must acquire during your course of preparation of climatology are as follows: Mind map of the topic Definition of all the terms and terminologies Knowing specific and relevant words that are used frequently for the topic Diagrams,figures and presentation to aid your presentation Examples of the phenomena; both at global and Indian levels Spatial distribution of the phenomena i.e. maps New developments if any Applications and exceptions Mind-map: This is to remind us of the scope of the topic i.e. what all we mean to cover. It happens many a times that we lose a tab of where we started, what we are reading and for what purpose after we have entered deep into the pages of any chapter. Mind-maps avoid this situation and we are always aware of our position. Later we shall also demonstrate as to how mind maps can be used for quick revision and to write quality answers. The mind map above gives you a fair understanding of the content of the topic. Now, you have to build upon this mind map and approach with our next step. Definition of all the terms and terminologies: While reading the chapter, jot down all the terms and terminologies on a separate piece of paper. After you are through with the chapter expand these terms and terminologies in not more than 30 words. Avoid describing the whole concept. Just a line or two shall suffice. Here is an exhaustive list of all such terms and terminologies related to the mentioned topic. These are in addition to the terms and terminologies used in the mind map. Biota Plankton Nekton Benthos Plant respiration Biomass Nitrogen fixation Denitrification Producers Consumers Autotrophs Heterotrophs Primary consumers Secondary consumers Food pyramid Decomposers Biological amplification Pioneer community Primary succession Secondary succession Photoperiodism Knowing specific and relevant words that are used frequently for the topic: Revise the terms and terminologies periodically and try to use them as much as possible in your answers. Diagrams,figures and presentation to aid your presentation: One must master these to improve the outcome of learning and more importantly to impart weight to one's answers in the paper. Although, Biogeography doesn't require too many diagrams to learn, few important ones like that of soil profile, food chain, food pyramid, energy flow, biogeochemical cycles etc have to be leartnt by heart. Examples of the phenomena; both at global and Indian levels: Your theoretical understanding is of no use if you don't supplement it with examples. Enumerate as many examples for the concept as it shall improve your understanding as well as the quality of your answers. For example if you have understood the concept of soil formation, you must be able to give examples from all over the globe as well as from India. Spatial distribution of the phenomena i.e. Maps: There is no substitute to Maps in Geography. Neither your knowledge is complete without maps nor your answers shall carry weight without them. Therefore, focus upon spatial distribution of phenomena. New developments if any: UPSC has the habit of asking questions regarding latest developments in the field. For example, last to last year UPSC asked a question on Man and Biosphere Programme. You are supposed to keep a tab on such developments through a cursory view of news papers and magazines. Incorporate such information in your notes for easy reference and revision. Applications and exceptions: The topics like agroforestry, soil erosion, conservation measures etc are application based topics. Moreover, they seem to be too generic and simple. However, in optional papers generic understanding won't help much. Try to apply the technical aspects lerant in the topic to these issues so as to impart that geography look in your answers. While you start with the strategy explained above, we assure you that you shall be getting some high quality questions in the coming few days. These questions have been designed to test your analytical skills and your ability to apply the knowledge that you have gained from your study. To help you further, we have prepared mind maps that covers the entire syllabus of Biogeography. You can think of devoting not more than 5 days to cover this component. The last few topics have not been covered in mind maps. It is because of their general nature. We shall come up with short synopsis to cover these topics as well. Moreover answer writing practice shall get you cover them in due course of time. Till then try to understand all the technical concepts given in the following mind maps. Terrestrial flora and fauna Share your thoughts and feedback. Form a community and let us proceed in this journey ☺ Join us and cement your preparation with the true guidance at your doorstep Best Wishes IASbaba