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M.H.I.-8

History of Ecology and Environment in India

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By: Rajesh Kumar Yadav



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**Sample Preview
of the
Solved
Sample Question
Papers**

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QUESTION PAPER

June – 2023

(Solved)

HISTORY OF ECOLOGY AND ENVIRONMENT IN INDIA

M.H.I.-8

Time: 3 Hours]

[Maximum Marks: 100

Note: Answer any five questions. Attempt at least two questions from each section. All questions carry equal marks.

SECTION-A

Q. 1. Describe the features of human-nature interface during Paleolithic and Mesolithic cultures.

Ans. Ref.: See Chapter-1, Page No. 2, Q. No. 1.

Q. 2. Discuss the writings on environmental history in the pre-colonial India.

Ans. Ref.: See Chapter-3, Page No. 14, Q. No. 2.

Q. 3. "The beginning of settled agriculture marks a significant phase in resource use practice." Examine.

Ans. Ref.: See Chapter-7, Page No. 37, 'Early Agriculture and Environment' and Page No. 38, Q. No. 1.

Q. 4. Discuss the factors giving rise to pastoralism in early history.

Ans. Ref.: See Chapter-6, Page No. 34, Q. No. 1.

Q. 5. Write short notes on the following:

(a) Irrigation patterns in Early India

Ans. Ref.: See Chapter-9, Page No. 51, 'Early India: Irrigation Reclamation and Phased Formations'.

(b) Forms of Energy-Resources

Ans. Ref.: See Chapter-11, Page No. 65, 'Forms of Energy' and Page No. 66, Q. No. 1.

(c) Indian views on conservation

Ans. Ref.: See Chapter-16, Page No. 89, 'Indian View of Conservation'.

(d) Renewable resources

Ans. Ref.: See Chapter-4, Page No. 18, 'Renewable Resources' and Page No. 19, Q. No. 1.

SECTION-B

Q. 6. How did industrialism shape the colonial perception of environment? Discuss.

Ans. Ref.: See Chapter-18, Page No. 98, Q. No. 1.

Q. 7. Examine the main thrust of colonial forest policies.

Ans. Ref.: See Chapter-20, Page No. 105, Q. No. 1.

Q. 8. Critically examine inter-state water disputes in India.

Ans. Most of the major rivers in India are inter-state in character, having water sheds in two or more states. Interstate water disputes arise when there is a dispute between two or more states on the use, distribution and control of rivers flowing in two or more states. Often, water disputes arise amongst the basin states with regard to the use, distribution or control of the waters in respect of many inter-state rivers or river valleys or in the interpretation and implementation of the terms of any agreement relating to the use, distribution or control of such waters or in the levy of any water rate in contravention of various prohibitions. Therefore, the interests of other basin States may be impacted by the development of projects by one State on an interstate river. States often disagree about how unevenly the country's water supply is distributed and whether river water should be distributed equally. During the British period, inter-state disputes were settled by the central government. When the concerned states cannot resolve disputes through negotiations then the Central Government constitutes a water dispute tribunal for resolving the water dispute. All the major river basins and some among the medium river basins are of inter-state nature. As the development of projects

by one state on an inter-state river may affect the interests of other basin states, inter-state differences arise with regard to the use, distribution and control of waters of inter-state river basins.

Also Ref.: Chapter-21, Page No. 110, Q. No. 3 (i) and Q. No. 3 (ii).

Q. 9. Explain the views on development and environmental concerns.

Ans. Ref.: See Chapter-22, Page No. 112, 'Understanding Development and Environmental Concerns'.

Q. 10. Write short notes on the following:

(a) Deep Ecology

Ans. Ref.: See Chapter-22, Page No. 113, 'Deep Ecology' and Page No. 114, Q. No 2 (i).

(b) Significance of environmental conservation

Ans. Ref.: See Chapter-16, Page No. 90, Q. No. 1.

(c) TRIPS (Trade Related Aspects of Intellectual Property Rights)

Ans. Ref.: See Chapter-24, Page No. 118, 'Trade Related Aspects of Intellectual Property Rights (TRIPS)' and 'Contradiction and Conflicts'.

(d) Bio-diversity

Ans. Ref.: See Chapter-23, Page No. 116, Q. No. 1.



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HISTORY OF ECOLOGY AND ENVIRONMENT IN INDIA

*STUDYING ECOLOGY AND
ENVIRONMENT: AN INTRODUCTION*

1

Nature-Human Interface

INTRODUCTION

With the process of evolution, many living organisms came and went and nature too underwent many changes. There had always been a close relationship between life forms and the natural surrounding. Humans who appeared on earth at a much later stage during the process of evolution brought a qualitative change in this relationship. Nature-human interface has been a complex process. To understand it, a basic understanding of the different dimensions of nature and the unique ability of humans to influence and bring a change in nature is essential.

CHAPTER AT A GLANCE

DEFINING NATURE

Nature in general refers to environment and man is an integral component of nature. Nature-human relationship has been active at different levels for a long historical period. In the ancient age, the interface between man and nature was determined by nature. Initially man had to subsist on the resources conferred by nature. Later there was a change and man was successful in controlling rather making nature convenient to him. Therefore, there has been a great importance of ecology in the context of man and nature. It has determined the history of human development.

LOCATING MAN

In the 19th century, Charles Darwin propounded the theory of evolution of human beings. He explained that the adaptive capacity of the new species influenced

the chances of their survival. He termed it as the process of the 'survival of the fittest'. The process of human adaptation to environmental conditions can be seen on the basis of the tools used by the primitive man during the different ages.

A Maker of Artefacts

Like other animals, the initial mode of sustenance for man was hunting and gathering. The stone tools were mainly used for cutting trees, digging out roots crops, scrapping wood and obtaining honey. The primitive age is broadly divided into two ages—the first was the age of core tools which were related to the Palaeolithic age and the second was the age of flake tools which were related to the Mesolithic age. The stone tools are the clear evidence of the use of human brain to adapt to nature and making use of locally available resources for better functioning.

On this basis, it can be said that man had by that time become acutely aware of the animal world. Then, he began to show signs of seeking refuge in caves, rock-shelters, mounds and other natural sites. This should be considered a significant development in nature-human interface. However, man even then was at the mercy of his immediate environment. He was still dependent on the nature conferred gifts.

Social Animal

The transition of man from the hunter and gatherer stage to the stage of tilling land took a long time. In the early times, man was completely dependent on the natural resources. He did not have any control over it,

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but agriculture developed the ability and skill of man. Now, man could preserve cereals much longer than fruit and meat on the one hand. This property of the cereals enhanced the social stratification while on the other hand gave rise to the tendency to migrate to the rising population. In this way, the advent of agriculture brought a considerable change in the relationship between man and nature.

**NATURE-HUMAN INTERFACE:
CHANGING CONCERNS**

To fulfil the necessities of the increasing population of the agricultural society man began to exploit the natural resources systematically which gave rise to the emergence and subsequent growth of the socio-political-economic hierarchies. All these classes began to exploit nature differently in their own individual interest. In this way, the consequences of the deteriorating relationship between man and nature was to be borne by the contemporary settlements and civilizations. For example, there was an important role of ecological conditions in the decline of the Indus valley civilization. This fact makes it clear that the co-ordination between man and nature was breaking.

Despite this, the relationship between man and nature persisted rather friendly. But the qualitative and epoch-making shift in the nature-human relationship began with the onset of the industrial age. Now, instead of laying stress on the importance of co-existence with nature, human efforts were directed towards the complete exploitation of the natural resources. The increasing demands of the energy sources in the modern industrial age lead to the search of the newer forms of energy like coal, petroleum products etc. But the reckless use of the fossil of energy created a critical situation. The blind growth of industries of all kinds gave rise to problems of environmental pollution. As a result, today, we are facing serious environmental threats like the 'green house effect'.

Besides, the chemical revolution of the 1930s and 1940s developed an artificial material which was not biodegradable. Thus, the problem in the proper and cost effective decomposition of atomic fuel has been a proof of scientific and technical failure.

SELF-ASSESSMENT QUESTIONS

Q. 1. Describe the features of nature-human interface during Palaeolithic and Mesolithic Cultures.

Ans. The work done by man along with his fellow men with the help of the tools made by him, make him important in this world. He used pieces of stones and

other natural objects found around his as tools. These tools enabled the ancestors of man to transform the objects according to his needs and then to make different tools for different purposes.

Like other animals man has been dependent on hunting and gathering for his sustenance. He used the stone tools primarily for cutting plants, digging root crops, scrapping wood and obtaining honey. On the basis of the stone tools, the primitive age is broadly classified into two ages—the first was the age of core tools which were related to the Palaeolithic age and the second was the age of flake tools which were of the Mesolithic age. The most important tool of Palaeolithic age was hand-axe which was used for processing of meat and did reflect great physical dexterity.

These stone tools were a definite evidence of the beginning of man's attempt to adapt to the nature by applying his mind and making use of locally available material for better functioning. Though the appropriation of natural conditions was still confined to the most rudimentary stage, yet the act was very significant for it heralded the process of modification of natural conditions for better management of natural resources.

The tools found in the age after the Palaeolithic age were considerably different. These tools were sharp, small, light and more efficient. This age is termed as Mesolithic age. The quality of artefacts produced during this period is suggestive of an improved technological competence. Man had greater control over the tool-making industry. The tools now began to be made up of a variety of materials. Bone, animal horn, bamboo and wood were now used for making them. Later, these tools helped in clearing grasslands and forests.

Around this period, the early rock art specimens become available. On this basis it can be said that man had by this time become acutely aware of the animal world. He began to seek refuge under rock shelters, mounds and other natural sites. This can be considered a significant development in nature-human interface. In spite of these developments man was even now at the mercy of his environment. He was still dependent on the gifts conferred by nature for the fulfilment of his needs.

Q. 2. In what ways did the beginning of agriculture influence the man-nature relationship? Discuss.

Ans. The relationship between man and nature underwent a significant change with the advent of agriculture. In the early age, the life of man depended on the objects which were naturally available to him

and he had no control over these sources. But, agriculture enhanced his skills tremendously. Now, man could preserve cereals for longer time than fruit and meat. This property of cereals encouraged social stratification. At the same time, the growth of population gave birth to the tendency of migration.

In fact, it took a long time for man to shift from the hunter-gatherer stage to the agricultural stage. The development of technology and tools to increase the production was a gradual process. Food security and greater control over agriculture enabled man to have some spare time as agriculture had been a seasonal activity. But as a result of the increasing population, the demand for better tools for agriculture and technology for irrigation too increased. This gave rise to the use of metals and their extraction through metallurgy.

An important feature of metallurgy had been the requirement of highly specialized knowledge and expertise. This made metallurgy a full-time occupation. Such specialists could be sustained with the help of the available agricultural surplus. Therefore, there was an emergence of a section of population that was not directly involved with the process of food production, yet was able to sustain itself on the surplus produce of others. Thus, the societies based on agriculture could now be defined as complex social formations which had stratified social and occupational groups within.

In this way, the ability to manage nature for social needs allowed agricultural societies to exploit natural resources systematically. This in turn gave way to the rise of socio-political-economic hierarchies. This process was responsible for gradual alienation of man from the immediate environment. The deteriorating relationship between man and nature affected the human settlements and civilizations. For example, the down-cutting and lateral movements of the tributaries of Bolan are possibly “the outcome of the natural instability of the region”. Almost similar was the case of decline of the cities of the Indus civilization.

Finally, it can be said that the advent of agriculture and the surplus produce gave a multi-dimensional form to man and society. Nature favoured man as long as, his relationship with nature remained friendly, but his alienation from nature adversely affected the contemporary human society and civilization.

Q. 3. Why is the beginning of the industrial age considered as marking a major shift in nature-human interface? Elaborate.

Ans. Before the advent of agriculture, nature had been dominant in the relationship between man and

nature. Man had little power to change the form of nature. A qualitative and epoch-making shift in the nature-human interface becomes evident with the onset of industrial age. The main reason of this was the surplus agricultural produce, the development in science and technology along with sculpture and metallurgy. Now human efforts were towards the exploitation of the natural resources instead of developing a relationship of mutual co-existence with nature. Consequently, the problems of natural calamities and environmental pollution were on rise.

The level of technology of industrial age liberated man from physical labour and introduced the exploitation of abiotic source of energy as alternative energy source. Since the ancient past, thermal energy had been used in direct applications. But during industrial age it was used for conversion of thermal energy into mechanical energy. Thus giving rise to the possibility of its extensive use. The increasing demand of energy led to the discovery of the new sources of energy like coal and petroleum products. Unlike earlier renewable sources of energy, these are non-renewable. As a result, the concept of the conservation of natural resources came into existence, because there is a possibility of complete depletion of these energy sources.

Industrialization increased the capacity of production which coupled with the surplus availability of food resulted in tremendous increase in population. The increasing population and pressure on land both were the two sides of the same coin. This was clearly seen on the natural resources and forests. The ever increasing mechanization increased the demand for energy to new heights. The reckless use of energy sources of the fossilized form and blind growth of industries of all kinds gave rise to problems of environmental pollution. Thus, we are today facing serious environmental threats like the ‘green house effect’.

In addition to this, the chemical revolution of the 1930s and 1940s developed an artificial material which was non-biodegradable, thus difficult to destroy and decompose. Similarly, the question of the viability of nuclear fuel as a source of energy has been a major issue of debate because the decay or the proper and cost effective decomposition of residue of non-natural radioactive substance has been a major technological failure of the scientists.

The democratic resolutions of the later half of the 18th century including the American Revolution and

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the French Revolution gave the legitimate rights for exploitation of the natural resources to the society. This western system of environmental exploitation spread worldwide in the 19th century through colonialism. It became operational system even in areas where the basic philosophical view of man and nature was quite different.

In this way, we find that scientific knowledge along with technological development provided a world vision where technology was portrayed as a solution to all human problems. We however, forget that man's existence depends on his friendly relationship with ecology. The excessive exploitation of natural resources by man is causing threat to the existence of other animals. Some of them have become extinct while others are on the verge of extinction. Therefore, there is a need to delineate a careful relationship between man and nature.

ADDITIONAL IMPORTANT QUESTIONS

Q. 1. The process of man's development is helpful in understanding of ecology. How? Discuss.

Ans. Man-nature interface has been existing for a long historical period at two levels. At one level it left its effect as a continuous and extensive process while at the other level it determined the relationship of the specific human communities with their contemporary environment. Therefore, ecology had its own importance in the context of man and nature and it determined the progress of human history.

Till the 18th century, the concept of a divine origin of nature and man had been prevalent. But in the 19th century, Charles Darwin proposed new theories regarding the history of human evolution. In his work "The Origins of Species", he argued that different species had undergone the process of evolution. This evolution was the result of minor variations in the characteristics of the individual members of species. These features of variations were inherited by the successive generations and as a result, new species were able to evolve.

Darwin also proposed that the adaptive capacity of species influenced the chances of their survival. He termed it as the process of the 'Survival of the Fittest'.

This evolutionary model enriched our understanding of man as 'unique animal'. He can adapt to different natural conditions. Besides, it is the most important fact that, he can modify the environment for his survival.

The process of human adaptation to environment conditions was accompanied by the introduction of tools and their use by the primitive man. In this way, there is a great significance of tools in the study of the evolution of man. The process of human evolution can be classified on the basis of the quality of these tools and the nature and quality of material used in making the tools. On this basis, the earliest period in human history has been termed as Palaeolithic age. This was followed by Mesolithic, Neolithic, Chalcolithic and Iron Age and so on.

In this way, first animal rearing and then the advent of agriculture reflects the process of evolution of man. All these works could be possible only when man acquired knowledge about the environment and at the same time, the environment too underwent changes. However, there also began the reckless exploitation of nature by man and thereafter, the decline of civilization resulted. This is evident from the changes in the conditions of the environment of those ages. In this way, it can be said that the process of evolution of man helps in our understanding of ecology or nature. Besides, it enables us to plan for our future cautiously.

Q. 2. Describe the chronological changes in human-nature interface since prehistoric age.

Ans. In the initial phase of human development, the relationship between man and nature was being determined by nature. Before the advent of agriculture, the position of nature had been dominant in the determination of the relationship between man and nature. Man had been dependent at the mercy of nature but the Palaeolithic age brought a slight change in his condition. Now, man was able to manage nature and make it convenient to himself. Then the advent of animal rearing and agriculture set man free from his dependence on nature. Later, agricultural surplus and industrialization brought complexities in the human-nature interface.

In the primitive age, man was dependent on the natural resources for his sustenance. Man had little power to change the form of nature and affect its resources. In that age, man was hunter and gatherer but the introduction of stone tools in Palaeolithic age remarkably changed his condition. Now, he began to live in caves and hunted animals with these tools. Besides, these tools helped him in beginning the primitive type of agriculture. Yet, nature played dominant role in man's life and his style of living.