

“Science - Religion Dialogue and Ecology: An Asian Perspective”

Institution: Patna Women’s College

Instructor: Jose Kalapura

1.1 Student Participation and Evaluation

The course will be conducted using interactive lecture method eliciting active participation from the students. For each class, the students are expected to put in as much time as a class by way of reading and completing assignments.

Along with a course summary, a list of Essential and Suggested Readings on each topic will be given to the students. The students are free to choose any of the topics covered in each week for their weekly assignments. They are expected to hand over the home assignments of each course week, either in English or in Hindi, at the beginning of the following course week. Each student is required to write a short essay (2-3 pages) in a week, using the sources given in the ‘essential readings’ listed at the end of each theme covered in the course. If ‘suggested readings’ were also referred it would be considered better.

For creative or ingenious assignment, the students may focus on any of the themes for which some examples would be suggested. Though the course is in English, the students are at liberty to write articles for publication in Hindi, the local language. The students are expected to decide on this assignment by the middle of the course program.

The workshop participation will be either in the campus or outside the campus. We plan to have a half-a-day workshop within or outside the campus and a full-day workshop at Taru-Mitra (Friends of Trees) Bio-reserve (TMB), a center for student environment movement located at 8 kilometers away from Patna Women’s College, under the direction of course instructor, Father Robert Athickal, founder and director of TMB. The first workshop (2-4 hours) is designed to be a campaign to spread awareness among the public by way of demonstration, creating human chain by students, poster making, distributing handbills in market squares, etc.

The second (one-day) workshop is intended to expose the students to the variety and richness of the plant species in Bihar State. A significant number of plants are in the Bio-reserve. Another purpose of this exposure is to offer a case study of successful campaign for greener environment by students. Students are led through this workshop in which they learn to interact with trees and become friends of trees (Taru-Mitras) for life. The workshop will include lectures and practical exercises in horticulture, seedling and sapling care, planting of trees, gurukul system of learning (in the open, under a tree initiated by a guru-teacher) as done in ancient India and even today in some villages, eco-meditation and appreciation of nature and life. The TMB amply provides a green ambience in its 10-acre bio-reserve, which is located within a 50-acre green reserve, at Digha Ghat, suburban Patna. Besides, the Genetic Nursery and Eco-farm within the campus of PWC which can provide appropriate ambience for the students of this course. The purpose of this exposure is not only to have greater lived-in experience of greener

environment but also to learn to appreciate the gifts of Mother Nature. The spiritual exercises during the workshop are intended to create an eco-spirituality based on Asian traditions.

1.2 Student Evaluation

The performance of the students will be evaluated and graded by each of the instructors. Of the total 100 marks, attending class lecture (attendance compulsory) and participation in discussion (once a week) will be 10%; home assignment (once a week), 20%; workshop participation (twice in a semester), 15%; creative or ingenious performance during the entire course, 5%; and final written examination (end semester) will be 50%. Class discussion will be conducted either in groups or in the entire class. The topics will be on the themes of the respective week. Topics for discussion will be chosen during the course of a week. However, some topics will be suggested as examples. Student participation in the discussion will be graded as per the designed student evaluation or grading system.

1.3 Final Examination

The final examination will be a two-hour written examination for which questions from all the topics of the course will be selected. The students will have the freedom to select a required number of questions out of a maximum number of questions. The papers will be evaluated by the instructors and the final grades with certificates will be awarded to all successful students at the end of the semester.

Section 2 Pedagogical Resources

2.1 Essential Readings

Some books or parts thereof, are recommended as “essential readings” which should be read during the course. Though the medium of instruction will be English, a number of books are also in Hindi, the local language. The students are at liberty to choose any reading material given as both ‘essential readings’ at the end of each section of the outline and also as “recommended readings’ (see bibliography below). It may be noted that greater availability of books published in India in our libraries, has been a consideration while selecting the books for the course.

2.2 Recommended Readings

A large number of books in English and Hindi will be given as ‘recommended readings’ for each topic of the course. The specialized library of the center for Environmental Studies at PWC has 2000 books on Ecology and Environment. A good collection of books on various themes related to this course are also available at the library of TMB. Besides, the students will have access to the research and reference library at Bihar Social Institute, a center for research, training, development and action, located at 5 kilometers from PWC.

2.3 The other resources are the Genetic Nursery and Eco-Farm in PWC, the TMB and its collection of videos, the diverse plants and animals in the Botanical Garden in the city.

2.4 Course Instructors

A team of five instructors who are specialized in different disciplines and have rich teaching experience will engage the students following a thematic schedule. The team consists of the course director, Jose Kalapura, Ph.D. and co-instructors Job Kozhamthadam, Ph.D., Doris D'Souza, Ph.D., Joseph Vellaringatt, Ph.D., and Robert Athickal, environmental activist. Additional guest addresses by four learned and well-accepted religious specialists (gurus) of four religions will not only be revelatory but inspirational too. The responsibility for the continuity and arrangement of lectures will be with the course director. The allotment of the lecture days and of the class on each day will be worked out in collaboration with the authorities of PWC.

Section 3: Program and Lecture Schedule

July, 2002

Week 1: Lecture 1: Introducing the course (Jose Kalapura)

Lectures, 2-3: science and religion interface, environmental science and religion.

Week 2: lectures, 4-5-6; development of ecological science (Job Kozhamthadam), understanding ecology, concepts, our environment.

Week 3: lectures, 7-8-9; Aspects of Ecology, population ecology, dynamics, eco-system, habitat ecology (Doris D'Souza).

August, 2002

Week 4: lectures, 10-11-12; Environmental priorities in India, environmental management, population stabilization, conservation of bio-diversity, damage control.

Week 5: lectures, 13-14-15; Environmental pollution, pollutants, hazards, vehicular pollution, pollution of air, water, ocean, earth, etc.

Week 6: lectures, 16-17-18; Development measures, local, national, global, NGOs, Government, Industries, etc., (Athickal, D'Souza, Kalapura).

September 2002

Week 7: Campaign Workshop (3-4 hours) (D'Souza, Kalapura, Athickal)

Week 7: lectures, 19-20-21, Ecology and Asian Traditions.

Week 8: lectures, 22-23, Ecology and Hindu Traditions and Guru-exposure-24 (Joseph Vellaringatt).

October 2002

Week 9: One-day workshop/camp at TMB--8 hours including lectures 25-26, introducing other Asian religions (Athickal)

Week 10: lectures, 27-28, Ecology and Buddhist tradition, Guru exposure-29 (D'Souza).

November 2002

Week 12: lectures, 30-31, Ecology and Jain Tradition Guru-exposure-32, (D'Souza).

Week 13: lectures, 33-34, Ecology and Sikh Tradition, Guru exposure-35 (D'Souza), Tribal Tradition (Kalapura).

Week 14: lecture, 36-37 Tribal tradition, concluding lecture: summation (Kalapura).

Total 14 weeks, 37+4+6=47 hours (lectures and workshops)

Section 4: Course Syllabus and Summary

Part A: Our Environment: A Wonder that Was

Weeks 1-3, lectures 1-9

- a) Introducing the program to the students, bringing to fore its significance in the curriculum, laying out the themes and structure of the course.
- b) Lectures on the relation between science and religion, ancient Vedic science, development of modern science. Orientation of the ancient religions towards science and modern-day disengagement of science and religions.
- c) Basic scientific concepts of Ecology, the science of relationship between living organisms and their environment which is defined as the sum of all physical, chemical, biotic and cultural factors that affect life of organism in any way; All living organisms and their environment are mutually reactive, affecting each other in various ways. Animal population, flora, and vegetation are interdependent through the environment and are mutually reactive.
- d) Environment, a complex of several inter-related factors, is very dynamic. Each species tries to maintain its structure, function, reproduction, growth and development by preservation of its genetic pool. Organisms and environment mutually modify each other. The comprehensive understanding of ecosystem (the basic structural and functional units of nature): involves all the non-living and living factors working in a complex.
- e) Aspects of Ecology: The ecosystem, its kinds, structures and function, food chains in ecosystems, varieties of ecosystems (ocean, grassland, desert, cropland, etc). Habitat ecology: freshwater ecology, marine ecology, Estuarine ecology, Terrestrial ecology, desert ecology (detailed study of the Great Indian Thar Desert: its flora, fauna, human communities, biosphere reserve, etc).
- f) Population ecology and population dynamics
Community ecology, its characteristics, composition, structure, origin and development and dynamics.

Class discussion; focus questions:

- 1) Destruction of a particular species from the universe will affect the other species.
Comment.
- 2) Can the eco-system be bettered with human intervention?

Suggested Home Assignment:

- 1) Review articles on environmental problems
- 2) Essays on any relevant topics.

Essential Readings:

Bali Singh, Ram, *Studies in Environment*, Commonwealth Publishers, New Delhi, 1988.

Chapman, J. L. & Reiss, M. J., *Ecology: Principles and Applications*, Cambridge University Press, U.K., 1995, pp. 3-212.

Daubenmire, R. F., *Plants and Environment*, Third Edition, John Wiley, New York, 1974.

De, Anil Kumar, *Trees and Forest Resources*, Willey Eastern Ltd., New Delhi, 1988.

Goswami, Mukunda Dasa & Cremo, Michael A., *Divine Nature*, 1995

Granderg-Michaelson, Wesley, (Ed.), *Ecology and Life: Accepting Our Environmental Responsibility*, Tex: Word Books, Waco 1988.

Gregorios, Paulos, *The Human Presence: An Orthodox View of Nature*, W. C. C., Geneva, 1978.

Kendeigh, S. C., *Ecology With Special Reference to Animals and Man*, Prentice-Hall, New Kormondy Edward J., Concepts of Ecology, Prentice-Hall of India Pvt. Ltd., New Delhi, 1994, pp. 1-288. Arora, M. P., *Ecology*, Himalaya Publishing House, Delhi, 1992, pp 1-217.

Odeem, P. Eugene, *Fundamentals of Ecology*, Saunders College of Publishing, Philadelphia, Part I: pp. 3-274; Part II: pp. 293-378; Part III: pp. 405-467.

Pramod Singh (Ed.), *Ecology of Rural India*, Ashish Publishing House, New Delhi, 1987.

Sharma, P. D., *Ecology and Environment*, Rashtogi Publications, Meerut, 1991, pp 1-19, 43-46, 112-376, 425-448 (basic text book). Jersey, 1974.

Weeks 4-6, lectures 10-18

a) Environmental Priorities in India: Environmental management (environment has been defined as the “sum total of all conditions and influence that affect the development and life of organisms”. The central theme of environmental management is “the reduction or minimization of the impact of human activities on the environment, thus an endeavors to void the overuse, misuse and abuse of environmental resources”. This involves environmental planning, environmental status evaluation, environmental impact assessment and environmental legislation and administration.

b) Population Stabilization: Overpopulation is becoming a growing factor in the impoverishment and environmental deterioration of the developing world.

c) Water reserves, watershed management, river valley projects (case study of the Narmada Valley Project (NVP) and the Narmada Bachao Andolan (NBA), irrigation (waterlogging and Salinity), wastelands development, cropland, forest cover (woodland and vegetation), etc.

d) Conservation of Biological Diversity.

e) Environmental Pollution: Looking at the environment today, man is able to better understand what causes pollution, environmental damage, contamination of seas and rivers and health hazards. The consequence of widespread deforestation, the importance of the ozone layer in protecting life from solar radiation and the green house effect are increasingly the subject of debate and controversy. Other areas of awareness: phenomena of acid rain leading to forest damage, emission of carbon into the air, etc.

f) Formerly the basic needs of food, shelter and clothing, health and education were the uppermost in man's existence. But today he demands for fulfillment of more sophisticated needs such as leisure, entertainment, cleaner air, water and amenities in the form of places of natural beauty. But these have become rare and so dearer. On the other hand, the high standards of the rich countries are based on their consumption of other people's resources. They use their power to ensure the continuous supply of these resources. One example is oil. The poorer countries have little or no means to protect themselves against the consequences of ecological developments such as the widening of the holes in the ozone layer and the rising of the sea level due to the greenhouse effect caused by the irrational use of energy. Mother Earth is used and abused and polluted for man's selfish needs.

g) Types of pollution: Water pollution, noise pollution, air pollution, vehicular pollution, toxicants, soil pollution/soil effluents/garbage, and so on.

h) Scientific understanding of pollution, development of non-polluting, renewable energy systems, recycling of wastes and residues, human settlement and slum development, environmental education and awareness, updating environmental law, etc.

i) Technology for Eco-preservation: The GAIA Hypothesis (that the earth has its own mechanism to maintain itself), efficient and responsible use of energy resources, environmental action and development measures, educational means and awareness building, legislative measures, voluntary action, scientific research and technological application for energy conservation, application of appropriate technology, use of environment-friendly materials and so on.

j) Development measures: Sustained Development is the only answer for many of the environmental problems being faced by mankind today. This includes curbing consumerism and over-exploitation of natural resources to protect the fast-deteriorating

environment.

k) Concerted effort: At local level or grass root level, national level and international level. One of the easiest ways of communicating a message to grown-ups is through children. Education of children begins at home and continues in the school premises. If children are taught to appreciate and protect environment and fight pollution through campaigns, camps, and media, the message will easily reach the grown-ups.

l) Study of two cases, the green environment movement initiated by Taru-Mitra and the Eco-Task Force in Patna.

m) Contribution by industries: Many big industries have implemented environmental management plans by monitoring facilities for air, water and noise pollution, establishing effluent treatment plants, etc.

n) Contribution by industrial associations and Non-Governmental Organizations (NGOs): In many industries, associations have been formed to address environmental issues. So also many NGOs have been doing significant works in spreading awareness of the environment, protecting it and fighting environmental pollution and decay.

o) Government action: Pollution being a gigantic issue cannot be solved overnight even at the highest level. However, the government has a responsibility to protect the environment through appropriate action and legislation.

p) Global action: Assistance to developing countries by developed countries through additional funding and transfer of environment clean technologies in order to bridge the gap between the 'haves' and the 'have-nots'.

Over 25 years ago the nations of the world met in Stockholm and decided "to exert common efforts for the preservation and improvement of the human environment, for the benefit of all the people and for their prosperity." Stockholm put the environmental issue on the policy agenda for the first time, at both the national and international levels. A great deal has been achieved since then. Yet process of environment deterioration has not been brought to a halt. On the other hand, new threats, which are both global and far-reaching, have come up. The Rio de Janeiro (1992) Earth Summit proposed that environmental management cannot be secured without addressing the underlying causes of environmental deterioration, which lie in the nature and pattern of development. Equally, that the pursuit of development required systematic attention to the environmental base on which all production depends.

The World Bank, a major financial institution at the international level has also decided to bring environment concerns more systematically into the mainstream of its operations. Confessing its mistakes of the past, it said that the primary responsibility for global environmental problems continues to rest with the industrial countries; equally, it has warned that the developing countries will also contribute to global air and water pollution as their economies expand.

q) Conclusion: We owe it to ourselves and to future generations to protect our environment and to manage it in such a way as to support a sustainable program for economic growth and development which is crucial to our primary goal of eradicating poverty. While we recognize that growth of industry is needed for any viable economy, we have to learn to manage industry in an environmentally responsible and sustainable way. This can be achieved by a collaborative effort between governments, scientists, activists and the public.

Class discussion; focus questions:

- 1) Is pollution a byproduct of development?
- 2) Is consumerism related to environmental deterioration?
- 3) How is it that some developing countries suffer the brunt of ecological destruction even when they have no big industrial pollution?
- 4) The crucial question is will the earth survive?
- 5) The ethical question is how do we view our natural resources?
- 6) What do our religious traditions say about, say, earth, nature, air, and so on?

Prepare creative assignments (some suggestions):

- 1) Write an poem in praise of the resources of Nature,
- 2) Make a visit to the local Botanical Garden and make a classification of the plants there,
- 3) Document the articles or newspapers published in the local newspapers on environmental degradation.
- 4) List the medicinal plants in any of the bio-reserves in your city and find their technical names,
- 5) Plan an eco-campaign for high school students,
- 6) Write a play in which your domestic animals are characters,
- 7) Write an article to the local newspaper on the environmental degradation in the state,
- 8) Compile a dictionary of terms on environment and ecology, etc.
- 9) compiling a list of all trees or animals related to Hindu gods, or of medicinal plants in the campus,
- 10) interviewing the practitioners of each religion on their understanding of ecology and religion,

11) Describe some indigenous religious practices or rituals involving leaves, plants, fruits, animals, etc.

Suggested Home Assignments:

- 1) Write an essay on the richness of Nature in your city,
- 2) Essays on any relevant topics covered in the class.

Essential Readings:

Sections #a-b-c-d

Dayal, Maheshwar, *Renewable energy: Environment and Development*, Konark Publications, Delhi, 1989.

Khoshoo, T. N., *Environment Priorities in India and Sustainable Development*, Presidential Address, 73rd Session, Indian Science Congress Association, New Delhi, 1986.

Khoshoo, T. N., *Environmental Concerns and Strategies*, Natraj Publishers, Dehra Dun, 1984.

Ramanathan, N. L., (Eds.), *Education for Environmental Planning and Conservation*, Natraj Publishers, Dehra Dun, 1982.

Sharma, P. D., *Ecology and Environment*, Rashtogi Publications, Meerut, 1991, pp 377-424, 449-473 (basic text book).

Shiva, Vandana, and Others, *Ecology and the Politics of Survival: Conflicts Over Natural Resources in India*, Sage Publications, New Delhi, 1991.

Singh, Digvijay, *The Eco-vote: The People's Representatives and Global Environment*, Prentice-Hall of India, New Delhi, 1985.

Sections # e-f-g-h

Agrawal, Anil and Narian, Sunita, *Global Warming in an Unequal World: A Case of Environmental Colonialism*, Centre for Science and Environment, New Delhi, 1991.

Agrawal, Anil and Others, *The Wrath of Nature: The Impact of Environmental Destruction on Floods and Droughts*, Centre for Science and Environment, New Delhi, 1987.

Deforestation, Drought and Desertification, Studies in Ecology and Sustainable Development, 2, An INTACH Series, 1989.

D'Monte, Darryl, *Temples or Tombs? Industry Versus Environment-Three Controversies*,

Centre for Science and Environment, New Delhi, 1985.

D'Souza, Jude, *Pollution, Development Education Series-27*, Navdin Prakashan Kendra, Delhi, 1993.

Freudenberger, C., *Global Dust Bowl: Can We Stop the Destruction of the Land Before Its Too Late*, Minneapolis, Augsburg, 1990.

Gadgil, Madhav and Guha, Ramchandra, *This Fissured Land: An Ecological History of India*, Oxford University Press, Delhi, 1992.

Katyal, Timmy and Satake, M., *Environmental Pollution*, Anmol Publications, New Delhi, 1989.

Maurya, S. D., (Ed.), *Urbanization and Environmental Problems*, Chugh Publications, Allahabad 1989.

Ministry of Agriculture (India), *India's Forests and the War*, New Delhi, 1948.

Shanti, Sr. Margaret, "The Impact of Tanneries on Women Workers & Environment" in Andreas Nehring (Ed.) *Ecology: A Theological Response*, Gurukul Summer Institute, 1993, pp 272-78.

Srivastava, Yogendra N., *Environmental Pollution*, Ashish Publishing House, New Delhi, 1989.

Viegas, Philip and Menon, Geeta, *The Impact of Environmental Degradation on People*, Indian Social Institute, New Delhi, 1989.

Sections # i-j-k-l-m-n-o-p-q

Agrawal, Anil and Others, (Eds.), *To Fight for Survival: People's Action for Environment*, Centre for Science and Environment, New Delhi, 1987

Artfield, Robin, *The Ethics of Environmental Concern*, Columbia University Press, New York, 1983.

Athickal, Fr. Robert, "Taru Mitra: Students' Struggle for a Green Earth" in Andreas Nehring (Ed.) *Ecology: A Theological Response*, Gurukul Summer Institute, 1993, pp 268-72.

Blair, Harry W. and Olpadwala, Porus D., *Forestry in Development Planning: Lessons from the Rural Experience*, International Books Distributors, Dehra Dun, 1988.

Burman, B. K. Roy, "Indigenous Systems of Environmental Management" in Andreas Nehring (Ed.) *Ecology: A Theological Response*, Gurukul Summer Institute, 1993, pp

272-78.

Dattar, Chhaya, "Perspectives on Women and Ecology" pp 93-98; "Envisioning the Future: Women and Alternative Development," pp 98-107 in Andreas Nehring (Ed.) *Ecology: A Theological Response*, Gurukul Summer Institute, 1993.

Elder, John C., (Ed.), *Spirit and Nature: Why the Environment is a Religious Issue-an Interfaith Dialogue*, Beacon Press, Boston, 1992.

Fernandes, Walter & Kulkarni, Sharad, (Eds.), *Towards a New Forest Policy: People's Rights and Environmental Needs*, Indian Social Institute, New Delhi, 1983.

Gnanadason, Aruna, "Women, Economy and Ecology" in Andreas Nehring (Ed.) *Ecology: A Theological Response*, Gurukul Summer Institute, 1993, pp 113-123.

Guha, Ramachandra, *Social Ecology*, Oxford, Delhi, 1998, pp 27-248, 321-384.

Khosla, P. K. and Kohli, R. K., *Social Forestry for Rural Development*, Indian Society of Tree Scientists, Solan, 1987.

Nadkarni, M. V. and Others, *The Political Economy of Forest Use and Management*, Sage Publications, New Delhi, 1989.

Prasad, V. N., *Principles and Practices of Social-cum-community Forestry*, International Book Distributors, Dehra Dun, 1985.

Weber, Thomas, *Hugging the Trees: The Story of the Chipko Movement*, Viking Press, New Delhi, 1988.

Wolf, Christa, "Ecological Project of the CSI Diocese of Coimbatore—'Nilgiris Wood'" in Andreas Nehring (Ed.) *Ecology: A Theological Response*, Gurukul Summer Institute, 1993, pp 259-63.

Yohannan, Essow, "Ecology and the Fish-workers Struggle in India" in Andreas Nehring (Ed.) *Ecology: A Theological Response*, Gurukul Summer Institute, 1993, pp 264-67.

Zachariah, Mathew & Sooryamoorthy, R., *Science for Social Revolution?* Vistaar Publications, New Delhi, 1994, pp 16-30, 82-154.

Weeks 7-8, workshop campaign, lectures 19-23, guest lecture 24

Part B. Ecology and Asian Religious Perspective

I. General Introduction

The present ecological crisis is very much a religious and spiritual issue and demands a

befitting response through scientific outlook and Religious approach. It is here that the major Asian religions, each in its own way, have a crucial role through their set of moral and spiritual precepts and values to guide humankind's relationship with nature and the environment. We shall examine the Hindu, Buddhist, Jain, Sikh and Tribal religious traditions in order to understand the concepts on life in relation to cosmos in each of these traditions.

It may be noted that our focus on the philosophical and theological perspective of the Indian Traditions is to enable to students to perceive the basis for an ethical imperative for the need of nurturing a cordial relationship with Nature. That apart, the ancient Indian traditions had scientific study and meticulous calculations of the cosmic phenomena, which resulted in well-developed branches of science: astronomy, astrology, mathematics, etc. Science and religion were well wedded in the ancient Indian Traditions.

II. Ecology and Hindu Traditions

a) The value of life in the Hindu Traditions (Vedic, Upanishadic and the Orthodox Philosophical systems, especially the Vedanta). In general the Hindu traditions acknowledge life as a great reality, which enjoys close affinity with the sacred and the mysterious power underlying the material universe.

b) The life of the individual self is viewed as a reflection of the Divine animating the whole cosmos.

c) Summary: The Hindu view of the human is essentially linked up with its holistic view regarding the entire cosmos. Human being is the microcosm and has the macrocosm as its prototype. It is essentially the divine life, the life immanent in and, at the same time, transcending the universe. The sanctity and value of human life in the Hindu traditions consists not so much in a belief in the unique dignity of the human person as an individual and immortal being as in the belief that human life, like life immanent in all creation, is an expression of the divine, eternal, infinite life which is identified with the Brahman, or the Ultimate Reality.

1. Ecology and Vedic Tradition

a) Integrated View of Cosmos: The Vedic seers were greatly impressed by the scientific and philosophical bases of the phenomenal universe as well as the order of the events and things in the cosmos. They believed spontaneously that there exists a correlation between the cosmic order and the human order of ethical, social and religious life. The order of the human life depended on the maintenance of the cosmic order.

b) Micro and macro-cosmic Order: The Vedic man believed that the best way of ensuring the cosmic order and thereby the human order (that is, the macro and micro-cosmic levels) was by reproducing the cosmic order of things and events in his own thought forms and actions through sacrifices and other religious ceremonies.

The Vedic hymns indicate the primitive belief of the human in personified supernatural

powers that presided over the natural phenomena. Sacrifices were also attempts to please the deities and thus ensure the good order of the universe. The Rig-Veda presents Manu, the first human ancestor of human race, as the first sacrificer. Manu's sacrifice became the prototype and model of all other sacrifices.

Manu is also described as the progenitor of humankind. The divine origin of the human race is accounted for in so many ways. For example, Manu is said to have descended from heaven and earth, the great parents of all that exists. Elsewhere, it is described that Agni (Fire) is the begetter of all the humans.

The famous hymn of the Purushasukta (hymn of the cosmic person) traces the origin of all that exist in the universe, including the human, to Purusha, the Supreme Person. The creative act is symbolically presented as the sacrifice in which the Purusha was offered as the victim. During the course of the sacrifice Purusha was dismembered and, the entire universe came from the different parts of the Purusha victim. Thus creation is the product of a ritual sacrifice.

c) Maintenance of the Cosmos: Since creation is the result of a sacrifice, every religious sacrifice performed on earth is a repetition of the primordial Purusha sacrifice and can act as a renewal of the original creative act and thus contribute to the maintenance of the cosmic order.

d) Human is Divine: The individual human beings (microcosmic human), have their origin in the macro cosmic Purusha and hence is the image of the primeval human. This explains the divinity of the individual human being. In fact three fourths of the primeval human (the prototype) are said to be spiritual, immortal or divine, and only one fourth is mortal or material.

e) Creation is Spirit-filled: creation has two parts--asu (life) and manas (mind). Asu signifies the vital force, the principle at the basis of breath, even of animals. Manas is the seat of thought and emotions, and was believed to dwell in the heart (hrdya) of the human. In the Rig Veda we read a hymn addressed to Agni (Fire), praying that he (Agni god) may convey the 'unborn part' to the world of righteousness. This unborn part is understood as the inner human, devoid of birth and of psychosomatic parts. It is the same as the immortal soul, although the term 'atman' denoting the immortal soul was of a later origin.

f) Cosmic Process and Sacrifice: During the period of the Brahmanas, the sacrificial rites acquired cosmic significance: the rites were regarded no more as propitiatory acts but as something identical with the cosmic process. The supreme task of the human was to be a sacrificer so that he could maintain the order of the cosmic phenomena by timely and faithful performance of all prescribed sacrifices. In many Bhrahmana texts, Purusha, Prajapati, Narayana and Brahman are identified or associated and signify the primordial image or prototype of the human. It is Purusha that ensouls the cosmos and creates the universe and is the source of time and space.

g) Summary: Purusha consists of all the creation: one fourth of him is all creatures, and three fourths are the world of the immortals in heaven. Thus the individual human is at the same time an image of both the divine and the material world. Through human performance of the sacrifice on the microcosmic level he can ensure the continued and orderly existence of the universe where he himself finds his home.

2. Agricultural Ecology in the Vedas

a) Introduction: The Vedic seers had a very thorough acquaintance with Agricultural Ecology and purity of environment. Living in hermitages amidst the natural surrounding of forest, they acquired first hand knowledge of Nature. Thus Vedas deal with not only philosophy, worship, rituals but also fundamental principles of the natural phenomena and practical science and secular mantras. The material prosperity has not been ignored while engaged in spiritual activities.

b) The real meaning of Nature-worship in the Vedas is the prosperity of agriculture and protection of environment. Agriculture ensured prosperity and was hence considered the best profession and was glorified (adhyatmika purusharta: the spiritual goal of human life). The Vedic seer condemns gambling and recommends farming.

c) The earth has been proclaimed as the foster mother. Farming is the worship of Mother Earth who showers her children with all blessings such as all forms of food, fruits, drinking material, medicines, etc. Agriculture was a well-developed practical science.

d) Earth is also called a cow. A good cow gives milk which is nourishing and farming provides all things needed for human sustenance. The Vedas also refer to animal domesticity and cattle rearing. Domestic animals were considered faithful friends of human beings, who were supposed to pray for the safe return and welfare of the cattle, cows, horses, sheep, goats, etc. Among all the animals, the cow was revered as a pastoral deity.

e) The Vedas have several mantras devoted to agriculture and method of farming, irrigation systems and plantation.

f) The Vedas refer to nature and forms of land and its measurement and management. The Vedas also offer useful information on some farming equipment and domestic implements.

g) Housing is referred to as a home for the domestic animals too. The housewife plays an important part in Indian Eco-spirituality. Without wife there is no real home. She herself is the home: the home of her husband, the abode and bliss of the family.

3. Ecology and Upanishadic Tradition

a) Human Self and Universal Self: The Upanishadic seers continued to ask questions about the ultimate origin and nature of the universe and of the human. Through a process

of introspective meditation combined with rational speculation they arrived at a clear intuition that the self of the human is an expression of the universal self, or the world spirit, and is even identical with it.

b) Ultimate Ground of the World: The Svetasvetara Upanishad says that from Purusha, the supreme deity, the entire creation originates. In the Katha Upanishad we read that the Purusha abides in the individual self. Purusha is the highest metaphysical reality, the ultimate ground of the objective world. The same Purusha is the animating principle of the subjective structures of the human.

c) Universe is Manifestation of Brahman: The absolute, the Atman (world-soul) or Brahman has the universe as its body or manifestation. The multiplicity of objects of the world does not affect the inner unity of the absolute reality, albeit it is immanent in all forms of manifestations. Nevertheless, the human occupies a special place among the manifold manifestations of Brahman. The human can reach Brahman by entering into his own heart through intense meditation.

d) Features of the Human Body: The perishable human body is composed of sixteen parts, namely the five elements (bhuta), five organs of perception (buddhi, indriya), five organs of actions (karmendriya) and mind (manas).

e) Summary: The Purusha in the Upanishads has a very pervasive meaning: it stands for individual human person, cosmic person, the personal absolute or the impersonal ground of the whole phenomenal existence including human beings.

In brief, the vision of the human in classical Hinduism is that of a pure spiritual self (atman) without any intrinsic or substantial connection with the material body in which it is incarnated. The embodiment of the self is like an imprisonment necessitated by the law of karma that works itself out through the cycle of re-births (samsara). The nature with its three constitutive qualities (trigunic prakriti) binds the soul to the body and causes re-birth.

4. Ecology and Orthodox Traditions

a) Understanding Human self and Cosmos: The six orthodox systems of Hinduism differ considerably in their understanding of the human and environment. The Nyaya and Vaisheshika schools (systems) developed a pluralistic and theistic vision of reality and admitted the existence of a plurality of human souls, eternal, spiritual and distinct from one another. The Samkhya School developed a dualistic metaphysics that admits, along with the reality of nature (prakrti), a spiritual co-principle named self or Purusha.

b) Purusha is the Cause: The Purusha is all-pervasive, eternal and uncaused. It transmigrates in the samsara (world), in bodily form and temporality is acquired. Purusha is the final cause and end of the cosmic process. The plurality of selves will merge with the Purusha ultimately according to the Samkhya School and also the Yoga school.

c) Humans can Act: Similarly the Purva Mimamsaka School also admits the existence of the plurality of soul, which is eternal and an active agent which can act and enjoy the fruits of action performed according to Vedic prescriptions.

d) Summary: Soul is one of the eternal substances that make up the reality. Human souls are part of this eternal Soul and can create and re-create and change the material world, which is at one with the Soul.

5. Ecology and Vedanta Traditions: Advaita School

a) The human spirit is identified with the Divine Spirit. It is one and the same spirit who is present in human beings and the material universe. Sankara uses two terms to understand reality of life: jiva (that which breathes) or the biological aspect is part of the Purusha (that which dwells in the citadel of the heart), indicating the soul. The Sankara School accepts the plurality of selves (jiva) in the phenomenal level. But on the level of the noumenon, there is only one Self who is identical with the innermost self of the human being.

b) The Individual Self: It has five layers of structure: the material body (anna), the principle of breath (prana), principle of consciousness (manas), the seat of ego or individuality (buddhi or vijnana) and the principle of universal consciousness (Atman, corresponding to ananda) which serves as background for the whole structure.

c) The jiva (microcosm) and the universe (macrocosm) are only expressions of the objectivization of the Universal Self or the Ultimate Consciousness.

d) Summary: The human is part of the universe, through whom the whole universe seeks to reach up to the Divine. The point to be stressed here is that the whole of cosmos, the eco-sphere is related to human beings as both are parts of the One, Brahman, the Divine Self.

6. Ecology and Vedanta Traditions: Visishtadvaita School

a) Unity of Cosmos: Brahman is a synthetic whole in which both the plurality of individual souls and of the material world finds their place as real moments or modes. The individual self and the Supreme Self are intimately related like part and the whole, sparks and the fire, etc. The soul with its individual mode of existence is attached to the body during its bondage in samsara (physical life).

b) Individuality of Souls: The soul is indestructible, has consciousness as essential nature and maintains its identity through the process of births and deaths. It will retain its individuality throughout the samsaric (worldly) existence and also after death.

c) Summary: In brief, the souls and the world constitute the eternal and distinct but inseparable modes of the non-dual Brahman.

7. Conclusion

Hindu traditions acknowledge the reality of life, which is identified with the sacred and mysterious power behind matter and empirical experiences. The life of the individual self is viewed in general as a reflection of the divine life animating the entire cosmos.

The correspondence and correlation between the microcosm and the macrocosm remained a parameter for the Vedic thinking of life. The reflections are couched in religious categories. The Upanishadic seers intuited the life principle in the human as the Atman and identified it with the Brahman that animates the individual selves and the entire spectrum of beings in the cosmos. The final destiny of the human is to realize this truth of all truths. This has significant implications in our understanding of ecology and its relatedness to life in general and human life in particular.

In the Orthodox schools, except in the Advaita School, strong value is attached to the individual self. Definitely life is considered sacred and eternal. What is obvious in the Hindu traditions is the connection between life and matter in cosmos and its implication for the individual humans to preserve this unity.

Class discussion; focus questions:

- 1) Can science and religion meet on understanding the origin of the universe?
- 2) Discuss the notion of evolution and other theories on the origin of the universe
- 3) Can we reconcile the modern scientific theory of evolution with the concept of creation according to the Vedas?

Class discussion; focus questions:

- 1) Discuss the role of humans in maintaining eco-balance and cosmic integrity.
- 2) The material world is no mere matter: it is linked to the Spirit which infuses life in all beings.
- 3) Discuss: Reality is One. If so, what is the relation between humans and other living and non-living species?

Plan for the one-day exposure workshop

Suggested Home Assignments:

- 1) What is the responsibility of the humans in keeping eco-balance? What do you mean by 'rhythm of nature'?
- 2) Compile stories and myths on the origin and creation of the Universe, human being, earth, etc. (ex. The Hiranyagarbha myth).

- 3) Compile a list of gods associated with the basic elements in the Universe.
- 4) Compile a list of flowers, fruits, plants and animals associated with various gods.
- 5) Write a letter to the God of Nature on the deterioration of the environment.
- 6) Writes a short essay on the Upanishadic verse: “isa vasyam idam sarvam.”
- 7) Write a letter to the editor of a local newspaper on the Hindu perspective on Nature, or forest, lakes, animals, trees, plants, etc.

Essential Reading:

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Callicott, J. Baird & Roger T. Ames, (Eds.), *Nature in Asian Traditions of Thought*, Indian Books Centre, Delhi, 1991

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Coward, Harold (Ed.) *Studies in Indian Thought: Collected Papers of T. V. R. Murti*, Motilal Banarasidass, Delhi, 1983, pp 17-56, 57-126,

Deussen, Paul, *The System of the Vedanta*, Banarasi Dass and Co., New Delhi, 1979, Chs 15-18., pp 219-254

Dubois, Abbe J. A., *Hindu Manners, Customs and Ceremonies*, Asian Educational Services, New Delhi, 1992, pp 612-653.

Dwivedi, O. P., (Ed.), *World Religions and the Environment*, Gitanjali Publishing House, New Delhi, 1989.

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Iyengar, Tr., *Hindu Mythology*, Intellectual Publishing House, New Delhi, 1998.

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Maxwell, T. S., *The Gods of Asia: Image, Text, and Meaning*, Oxford, Delhi, 1998, pp 30-40.

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Monier Williams, *Religious Thought and Life in India*, K. P. Bagchi and Company, Calcutta, (1893), 1978, Ch. XII, pp 313-350.

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Ranade, Ramchandra Dattatreya, *Upanishad Darshan ka Rachanatmak Sarvekshan*, Rajasthan Hindi Granth Academy, Jaipur, 1972, pp 1-76

Saksena, S. K., *Nature of Consciousness in Hindu Philosophy*, Motilal Banarasidass, Delhi, 1971, pp 1-40.

Smith, Brian K., *Reflections on Resemblance, Ritual, and Religions*, Motilal Banarasidass, Delhi, 1998, pp 3-199.

Tagor, Rabindranath, *Sadhana: The Realisation of Life*, The Macmillan Company of India Limited, Madras, 1972, pp 3-22.

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The Upanishads (Tr.) Juan Mascaro, Penguin Books, 1975, pp 75-97.

Those, J. C., *Character of Ancient Religion*, Brother Publishing House, New Delhi, 1982.

Wilkins, W. J., *Hindu Mythology*, Rupa & Co., New Delhi, 1983, pp 432-435, 448-460.

Williams, Monier, *Religious Thought and Life in India*, K. P. Bagchi and Company, Calcutta, 1978.

Week 9, one-day workshop, lectures 25-26

Week 10, lectures 27-28, guest lecture 29

11. Ecology and Buddhist Tradition

1) Introduction

Buddhism is an ecological Religion. The relationship between Buddhist ideals and the natural world can be explored within three contexts.

a) Nature as teacher: Buddha taught that respect for life and the natural world is essential. By living simply one can be in harmony with other creatures and learn to appreciate the interconnectedness of all that lives. This simplicity of life involves developing openness

to our environment and relating to the world with awareness and responsive perception. It enables us to enjoy without possessing, and mutually benefit each other without manipulation.

b) Nature as a spiritual force: Buddhist teachers and masters have constantly reminded us of the importance of living in tune with nature, to respect all life, to make time for meditation, to live simply and use nature as a spiritual force. Buddha stressed the four boundless qualities: loving – kindness, compassion, sympathetic joy (delight in the well being of others) and equanimity (impartiality).

c) Nature as a way of life: Buddhism, however, takes us away from the ethos of the individual and its bondage to materialism and consumerism. When we try to conquer greed and desire we can begin to have inner peace and be at peace with those around us. The teachings of the Buddha, the reflections on Dharma relate to life as it actually is. To be mindful – receptive, open, sensitive and not fixed to any one thing, but able to fix on things according to what is needed in that time and at that place.

2) Buddhist Response: Global ecological crisis can be solved through Buddhist approach which has the following characteristics:

1) Compassion creates the foundation for a balanced view of the entire world and of the environment.

2) ‘Save and not waste’ life style. Nothing in nature should be spoiled or wasted for wanton destruction upsets the vital balance of life.

3) Philosophy of Sarvodaya (good of all): Through the philosophy of Sarvodaya (uplift of all), based on loving kindness, compassionate action, and altruistic joy, ecology can be rebuilt.

Class discussion and focus questions:

1) Panel discussion on ‘Buddhism and global environmental crisis’.

2) Does not the Buddhist ideal of renunciation lead to general apathy toward the material world and hence, by extension, to non-development?

Suggested Home Assignments:

1) To make a collection of tenets of Buddhism on ecology.

2) Briefly explain the significance of Bodhi tree in the life of Buddhists.

3) What can science learn from Buddhist philosophy of creation?

Essential Readings:

Batchelor, Martine & Brown, Kerry, *Buddhism and Ecology*, Motilal Banarasidass, Delhi, 1994.

Bapat, P. V., *2500 Years of Buddhism*, Publications Division, New Delhi, 1997, pp 134-155.

Buck, C. H., *Faiths, Fairs & Festivals of India*, Asian Publication Services, Delhi, 1977, pp 141-154.

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Chakravarti, Uma, *The Social Dimensions of Early Buddhism*, Munshiram Manoharlal Publishers Pvt. Ltd., New Delhi, 1996, pp 16-93.

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Raju, P. T., *Structural Depths of Indian Thought*, South Asian Publishers, New Delhi, 1985, Ch. 5, pp 146-191.

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Singh, Madan Mohan, *Buddhakaalin Samaj aur Dharma*, Delhi University Publications, 1972.

Week 12, lectures 30-31, guest lecture 32

III. Ecology and Jaina Tradition

a) Conservation is a characteristic of the Jain tradition. Let us examine the Jain beliefs and practices.

b) Ahimsa (non-violence): Non-violence involves in any form through word or deed not only to humans but also to all nature. It means reverence for life in every form including plants and animals. Jains practice the principle of compassion for all living beings (jiva – daya) at every step in daily life.

c) Anckantavada (non- one – sidedness): This philosophy states that no single perspective on any issue contains the whole truth. It emphasizes the concept of universal interdependence.

d) The Jain cosmology: There are five substances of ‘ajiva’: Dharma – the medium of motion, Adharma – the medium of rest, Akasha – space, Pudgala – matter, and Kala –

Time.

The 'Jiva' – all forms of life – is to be respected. As a highly evolved form of life, human beings have a great moral responsibility in their mutual dealings and in their mutual relationship with the rest of the Universe. It is this ethical responsibility that made the Jain tradition a cradle for the creed of environmental protection and harmony.

e) The Jain declaration on nature and cosmology.

Class discussion; focus questions:

- 1) Jains suggest compassion to living beings. Does this mean that one should not do cultivation which may involve killing of animals such as worms, insects, etc?
- 2) How do you view the method of dissection and experimentation on guinea pigs in the light of Jain ethics?
- 3) Does Jain way of life impose vegetarianism? If so, what do you say about those humans who feed on non-vegetarian food?

Suggested Home Assignments:

- 1) To get acquainted with Jain practices related to ecology and to list them.
- 2) To learn the teachings of various Tirthankaras. (Jain teachers).
- 3) To write down the Jain code of conduct.

Essential Readings:

Buck, C. H., *Faiths, Fairs & Festivals of India*, Asian Publication Services, Delhi, 1977, pp 155-162.

Chatterjee, Asim Kumar, *A Comprehensive History of Jainism*, Firma Klm Pvt. Ltd., Calcutta, 1978, pp 11-34, 227-320, 349-358.

Griffiths, Bede, *A New Vision of Reality: Western Science, Eastern Mysticism and Christian Faith*, HarperCollins, New Delhi, 1992, pp 128-175.

Maxwell, T. S., *The Gods of Asia: Image, Text, and Meaning*, Oxford, Delhi, 1998, pp 191-212.

Raju, P. T., *Structural Depths of Indian Thought*, South Asian Publishers, New Delhi, 1985, Ch. 4, pp 104-145

Sources of Indian Tradition, compiled by Theodore de Bary, Stephen Hay, Royal Weiler

and Andrew Yarrow, Motilal Banarasidass, Delhi, 1972, pp 37-92.

Tiwary, B. K., *History of Jainism in Bihar*, The Academic Press, Gurgaon, 1996, pp 18-61.

Week 13, lectures 33-34, guest lecture 35

IV. Ecology and Sikh Tradition

a) Introduction: Sikhism is one of the youngest living faiths and it has existed in its present form for about five hundred years. Founded by Guru Nanak who was born in 1469 it has had ten human gurus. The last, Guru Gobind Singh declared that the Holy Book, the Guru Granth Sahib, to be the world teacher of the Sikhs. The principal tenets in the Guru Granth Sahib and in the Sikh Traditions proclaim the glory of God in nature and in environment.

b) Sikhism has three postulates implicit in its teachings.

1) There is no essential duality between spirit and matter (Unity of Spirit and Matter and the interconnectedness of all creation).

2) Humans have the capacity to consciously participate in the process of spiritual profession. The ideal Sikh – someone who has an intense desire to do good.

3) The highest goal of spiritual progression is harmony with God, while remaining earth – conscious, so that the world itself may be transformed to a spiritual plane of existence.

c) Integrated Approach: Care of the Environment without Social Justice is not possible. Therefore community – based sharing of resources is advocated.

d) Sikh Ethics of Environment: Sikhs believe that an awareness of the sacred relationship between humans and the environment is necessary for the health of our planet, and for our survival. A new ‘environmental ethic’ dedicated to conservation and wise use of the resources provided by a bountiful nature can only arise from an honest understanding and dedicated application of our old, tried and true spiritual heritage.

e) Principles of the Sikh faith. The key principles of the faith are highly in tune with natural existence. They are the following:

1) Pray to God – remember him and his authority always,

2) Earn an honest living – do not take what does not belong to you, or more than you need – essential truths for a proper relationship with nature,

3) Share with others – this includes all creation, not just human beings.

f) Conclusion: If these principles were followed, then the exploitation of the natural world would cease. This is the known will of the wonderful Lord. We are the highest order in God's creation. To us He has spoken. We must now try to live in accord with His will and return to the balance that He established.

Class discussion; focus questions:

1) Generally Sikhs are industrious and do cultivate in fields. Do these professions go against the ideal of Jain concept of 'non-destruction' of living beings?

Suggested Home Assignments: Panel discussion on the teachings of Sikh Gurus.

Essential Readings:

Guru Nanak, Publications Division, Government of India, 1969.

McMullen Clarence O., *Religious Beliefs and Practices of the Sikhs in Rural Punjab*, Manohar, New Delhi, 1989, pp 17-77.

Puri, J. R., *Guru Nanak: His Mystic Teachings*, Radha Soami Satsang Beas, Punjab, 1993, pp 47-106, 111-154.

Sikh Dharm aur Sikh Itihas ka Prarambhik Parichaya, Delhi Sikh Gurudhwara Prabandhak Committee, 1990.

a) The tribal traditions though varied have some similar principles and uniform practices. We focus only on two large tribal groups in Bihar: the Santals and Oraons.

b) The Santals see the world as being inhabited by invisible supernatural beings and powers and regard themselves as living, moving, and having their being in such a world. The Santal society exists beyond, to the world of supernatural beings.

c) The Santals relate to their agrarian world from pragmatic perspective. Observing the processes of nature, they have designed the means to cultivate and protect nature.

d) They celebrate seasonal festivals and perform certain rites, in union with nature's cyclic changes.

e) They believe that Thakur Jiu, the Supreme Deity, is the creator and sustainer of the universe.

f) The Oraons believe in a Supreme Deity, Dharmes, symbolized by the Sun, who is the creator of the universe. The planets sun, moon and stars are considered gods and were propitiated. They also believe in other Nature spirits and deities.

g) They maintain harmony with Nature, especially trees and animals by performing

several agricultural rites such as Kararm, Hariari, etc.

Class discussion; focus questions:

- 1) Can science dialogue with the tribal religious worldview?
- 2) How do you reconcile your understanding of the solar and other systems with the tribal understanding of the same?

Suggested Home Assignments:

- 1) Collect some Santal or Oraon folk hymns on Nature.
- 2) Comment on the Oraon hymn:

V. Ecology and Tribal Tradition

“The life of buffaloes is as human life-as human life.
The life of cows is as the life of men-the life of men.”

Essential Readings:

Bompas, Cecil Henry, *Folk Lore of the Santal Parganas*, Ajay Book Service, New Delhi, 1981,

Guha, Ramachandra, *Social Ecology*, Oxford, Delhi, 1998, pp 247-274.

Minz, Nirmal, “The Adivasi Perspectives on Ecology”, pp 67-73; “Crisis in Indigenous Peoples Life in India,” pp 73-80; “Survival of Adivasis in India” pp 80-89; in Andreas Nehring (Ed.) *Ecology: A Theological Response*, Gurukul Summer Institute, 1993, pp 67-73.

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Verma, R. C., *Indian Tribes Through the Ages*, Publications Division, New Delhi, 1995, pp 66-87.

Part C. Suggested Readings for the Course

- Alper, Harvey P., (Ed.), *Understanding Mantras*, Motilal Banarsidass Publishers Pvt. Ltd., Delhi, 1991.
- Barnet, L. D., *Hindu Gods and Heroes*, London, 1923.
- Deshmukh, P. S., *Origin and Development of Religion in Vedic Literature*, London, 1933
- Dutt, Nalinaksha, *Buddhist Sects in India*, Indological Book House, Varanasi, Delhi, 1977.
- Fernandes, Walter and Others, *Forests, Environment and Tribal Economy: Deforestation, Impoverishment and Marginalisation in Orissa*, Indian Social Institute, New Delhi, 1988.
- Gahurkar, V. G., *The Vedic Priests of the Fire-Cult*, Viveka Publications, Aligarh, 1982.
- Ghurye, G. S., *Gods and Men*, Popular Press, Bombay, 1962
- Gonda, J., *The Vision of the Vedic Poets*, Munshiram Manoharlal Publishers Pvt. Ltd., New Delhi, 1984.
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- Kabir, Humayun, *The Indian Heritage*, Asia Publishing House, Bombay, 1970.
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- Majumdar, R. C., *The Vedic Age*, London, 1968.
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- Mohanty, P. K., *Cultural Heritage of Indian Tribals*, Rajat Publications, New Delhi, 1999.
- Nehring, Andreas, (Ed.), *Ecology A Theological Response*, The Gurukul Summer Institute, Madras, 1993.
- Ranganathananda, Swami, *Human Being in Depth*, Indian Books Centre, Delhi, 1995

Srivastava, A. R. N., *Changing Values and Tribal Societies*, M. C. Mittal, Inter-India Publications, New Delhi, 1992.

Additional input:

- 1) Information on Environmental Organizations and Agencies
- 2) Information on the Department of Environment, Forests and Wildlife, Government of India and Government of Bihar, and Patna Municipal Corporation's policy on protection of trees,
- 3) Information on Environmental Education in the universities in India.

Preparation for the final written examination