

JK Lakshmipat University Jaipur
INSTITUTE OF ENGINEERING AND TECHNOLOGY

End Term Examination, December 2023

B. Tech. (CSE+ME), Semester VII

Roll No.....

ME1227: Fundamental of Sustainable Development

Time: 2.5 hours

Max. Marks: 30

Instructions to students:

1. Do not write anything other than your roll number on question paper.
2. Mention all the assumptions for your answers clearly.

DATA SET-1

Environmental ethics considers the ethical relationship between people and the natural world and the kind of decisions people have to make about the environment. Most people recognise that our planet is in a bad way and we all seem to have an opinion on environmental issues, such as climate change or the use of four-wheel drive cars in cities. There has been a rapid growth in knowledge and technology, so that humans now face choices we have never had to face before that affect the continuation of humanity and the world within which we live. Environmental ethics simply tries to answer the questions of how humans should relate to their environment, how we should use the earth's resources and how we should treat other species, both plant and animal.

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| Q.1.1 How is people and nature related to each other? | 2.0
(LO1) |
| Q.1.2 Most people recognize that our planet is in a bad way. Give examples of any two problems that are present now, but not existed in the past. | 2.0
(LO1,2) |
| Q.1.3 Explain the significance of sustainable development with respect to the above passage | 2.0
(LO1,3) |

DATA SET-2

Sustainable farming practices have become widespread to counter the negative impact caused on the environment and to resource degradation. One such experience is the effort of Babu who has not used any pesticide on his farm. The one-hectare land held by this farmer is free of any disease and pests. No insecticide, fungicide, weedicide and nematicide were used on his farm. Also he observed the emergence of large number of predators and parasites of pathogenic farm organisms. Babu is thrilled seeing the increasing trend of yield from the farms. The crop failure in the neighbourhood villages has made him the promoter of sustainable agriculture practice in the entire region.

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| Q.2.1 Bring out how Babu has implemented three basic concepts of sustainability in his farming practice. | 2.0
(LO2) |
| Q.2.2 Identify a major negative environmental impact that Babu could claim to have arrested through his agricultural practice. | 2.0
(LO1,2) |
| Q.2.3 How the experiment of Babu is a better solution for our agricultural sector rather than improving/ protecting the yield by using chemicals like Endosulfan in places like Enmakaje Panchayat in Kasaragod. | 2.0
(LO2,3) |

DATA SET-3

India has a huge potential to move into a fully renewable electricity system by 2050, owing to an abundance of renewable resources. If only we can optimally leverage sophisticated technologies to harness proactive collaboration with the industry, academia and energy innovation ecosystem, the region can move straight to affordable renewable systems. Such renewable energy systems can work mainly on clean energy, solar energy, wind energy and other new age storage solutions. Solar photovoltaics is the most economical electricity source and batteries satisfy the night-time electricity demand. In addition to covering India's electricity demand for power, such system simulation can also, cover for seawater desalination and synthetic natural gas beyond other measures.

- Q.3.1 List out five reasons which hinder the development of renewable energy in India.** 3.0
(LO2,3)
- Q.3.2 Is it possible to generate electricity in India from oceans? Justify.** 3.0
(LO1,3)
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DATA SET-4

Shimla one of India's most popular summer retreats nearly ran out of water. The Himalayan city was the former summer capital of the British Raj and continues to be popular with Indians fleeing scorching summers on the Gangetic plain. Water supplies have been critically low for at least the past three years. Water channels in Shimla and its suburbs have dried up this summer owing to less snowfall in the past winter and less rains thereafter. The shortage has forced the city's 172,000 residents to line up for hours each day to collect water from tankers supplied by the government, to drink bottled water or to pay steep prices to the "tanker mafia".

- Q.4.1 The water scarcity problem of Shimla is a clear violation of the goal of sustainability. Substantiate the statement. Suggest measures to come out from the crisis.** 3.0
(LO1,4)
- Q.4.2 What are the impacts on social, economic and environmental spheres?** 3.0
(LO2,4)
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DATA SET-5

Kerala state with an area of 38,863 Sq. km is one of the densely populated regions of the world having limited land and non-renewable resource availability. On the other hand, increasing human requirements and economic developments impose immense pressure on the natural resource base. The hill as well as its soil apron has many beneficial natural functions. Soil is the end product of crustal weathering through thousands of years. It is the abode for many microorganisms that are essential for maintaining fertility of the ecosystem. The surface and subsurface flow of water is sustained by the soil profile in a hill ecosystem. Therefore, indiscriminate soil quarrying will lead to irreparable damages to the living environment. A study proposes the following measures, in case the quarrying is unavoidable. Soil quarrying, if permitted based on scientific studies, should be done under the strict vigilance and control as per the rules and regulations. The fertile top soil should be collected separately and used for refilling the area after completion of the quarrying process. Awareness campaign should be conducted among people about the various impacts of soil quarrying and levelling of hillocks, present state of hill ecosystems, finite character of the resource, use of alternative materials and immediate need for control measures.

- Q.5.1 Can we stop the soil quarrying from hills? Justify your arguments.** 3.0
(LO3,5)
- Q.5.2 Can such local environmental issue be an example also for resource degradation? Justify.** 3.0
(LO4,5)
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all the best!