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Program Name B.Sc. Environmental Science.....

...V.... Semester/ III Year Examination

Subject Code-B150502T

Subject Name- Environmental Microbiology and
Biotechnology

[Time : 03:00 Hours]

[Max. Marks : 75]

Note : 1. Attempt all the questions as per given instructions.

1. Multiple Choice Questions (MCQs) [01×15=15]

I The microorganisms that can survive in extremely hot environments are known as:

- (a) Psychrophiles (b) Thermophiles
(c) Mesophiles (d) Halophiles

II Which of the following microbes is barophilic?

- (a) *Thermus aquaticus* (b) *Deinococcus radiodurans*
(c) *Shewanella benthica* (d) *Bacillus subtilis*

III Which process involves microbial degradation of pollutants?

- (a) Bioremediation (b) Fermentation
(c) Photosynthesis (d) Denitrification

IV Indicator organisms in water analysis include:

- (a) *Vibrio cholerae* (b) *E. coli*
(c) *Aspergillus* (d) *Pseudomonas fluorescens*

V The process of converting organic waste into compost using worms is:

- (a) Biomining (b) Vermiculture
(c) Bioreactor (d) Bioremediation

VI Biogas is mainly composed of:

- (a) Carbon dioxide (b) Hydrogen (c) Methane (d) Ammonia

VII The first genetically engineered bacterium was:

- (a) *E. coli* (b) *Pseudomonas putida*
(c) *Streptomyces* (d) *Rhizobium*

VIII GM foods are associated with concerns of:

- (a) Biosafety (b) Economic growth
(c) High yield only (d) None of these

IX Biowarfare involves the use of:

- (a) Vaccines (b) Pathogenic microorganisms
(c) Drugs (d) Plants

- X** A microbe used in biopolymer production:
 (a) *Azotobacter* (b) *Alcaligenes eutrophus*
 (c) *Clostridium botulinum* (d) *Aspergillus niger*
- XI** Biosensors are used for:
 (a) Disease diagnosis (b) Pollution detection
 (c) Food spoilage testing (d) All of these
- XII** The microorganism responsible for yogurt fermentation is:
 (a) *Saccharomyces cerevisiae* (b) *Lactobacillus bulgaricus*
 (c) *Aspergillus niger* (d) *Penicillium notatum*
- XIII** The study of microorganisms in their natural habitats is called:
 (a) Microbial Ecology (b) Biotechnology
 (c) Pathology (d) Mycology
- XIV** Biosafety Level 4 (BSL-4) is required for:
 (a) Influenza virus (b) Ebola virus
 (c) Adenovirus (d) Herpes virus
- XV** IPR refers to:
 (a) Internal Property Rights
 (b) International Protection Rights
 (c) Intellectual Property Rights
 (d) Industrial Patent Regulation
- 2. Answer in long (any three) [10×3=30]**
- I** Explain the concept, scope, and importance of Environmental Microbiology.
- II** Discuss the methods of wastewater treatment and the role of microbes in the process
- III** Explain the production and applications of biogas, vaccines, and biopolymers.
- IV** Describe the ethical and biosafety concerns related to GM organisms.
- 3. Answer in short (any six) [6×5=30]**
- I** Define extremophiles with examples.
- II** Write a note on microbial pathogens affecting plants.
- III** What is fermentation? Give one example of fermented food.
- IV** What is bioremediation?
- V** Write short note on biofertilizers.
- VI** Define IPR and its importance in biotechnology
- VII** Mention any two applications of biotechnology in industry.

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C (SVSU:2025-26/R)

Enrollment No.

Program Name B.Sc. Environmental Science

V Semester / III Year Examination

Subject Name-Natural Resources and its Management

[Time : 03:00 Hours]

[Max. Marks : 75]

Note : Attempt all the questions as per given instructions.

1. Multiple Choice Questions (MCQs)**[01×15=15]****I** Source of energy in the biosphere is—

- (a) Producer (b) Decomposer (c) Sunlight (d) Heat of earth

II This is an example of non-polluting renewable type of energy:

- (a) tidal (b) wind (c) solar (d) all of these

III The major non-renewable energy usage in India is _____

- (a) Coal (b) Petroleum and other liquids
-
- (c) Natural gas (d) Nuclear

IV Which of these is an example of sustainable development in order to conserve natural resources for future generations?

- (a) Cleaning water resources (b) Finding alternate fuel reservoirs
-
- (c) Clearing forests to set up new industries
-
- (d) Planning for safe disposal of wastes after mining

V Which one of the following is the Biosphere Reserve of India?

- (a) Gir (b) Nilgiri (c) Kanheri (d) None of the above

VI Which one of the following movement was carried out for the conservation of forests and the environment?

- (a) Forest movement (b) Ganaga Action Plan
-
- (c) Tehri Andolan (d) Chipko Andolan

VII The species which are in danger of extinction are called:

- (a) Endangered species (b) Normal species
-
- (c) Vulnerable species (d) Rare species

VIII Which of the following is not the source of fresh water resources?

- (a) Ground water (b) Ice sheet (c) River (d) Oceans

IX Name the river on which Bhakra – Nangal project is situated:

- (a) Krishna (b) Satluj (c) Godavari (d) Mahanadi

X Which one of the following soils is not suitable to cultivate crops?

- (a) Alluvial soil (b) Black soil (c) Red soil (d) Sandy soil

- XI** Contour cultivation is an example of _____
 (a) Economic measure (b) Agronomic measure
 (c) Biological measure (d) Irrigation measure
- XII** Growing two or more crops simultaneously in strips wide enough to permit independent cultivation but narrow enough for the crops to interact agronomically is _____
 (a) Strip cropping (b) Vertical Cropping
 (c) Field cropping (d) Contour cropping
- XIII** India is one of the chief producers of which of the following ores?
 (a) Gold (b) Diamond (c) Manganese (d) Lead-zinc
- XIV** Blue sheep, Asiatic elephants, and Gangetic dolphins are examples of _____.
 (a) Vulnerable species (b) Rare species
 (c) Endemic species (d) Extinct species
- XV** Which of these practices will help to conserve the forest?
 (a) Practice of deforestation (b) Putting a ban on deforestation
 (c) An increase in the use of firewood by local people
 (d) An increase in the use of forest products by industries

2. Answer in long (any three) [10×3=30]

- I** What do you understand by water resource? Explain the quality and quantity of water resource and its causes of depletion.
- II** Give a deep comprehension on forest resources. Enlighten the factors responsible for its depletion.
- III** Write an essay on soil types and soil profile? Explain the soil conservation strategies.
- IV** What do you mean by remote sensing? Explain the principle, history and types of remote sensing.

3. Answer in short (any five) [6×5=30]

- I** What are grasslands? Write a note on their types and management.
- II** Write a note on biogas.
- III** Write a note on overexploitation of non-renewable energy resources.
- IV** What are the basic resources of agriculture? Explain it.
- V** Give a note on soil erosion and its role in loss of soil fertility.
- VI** What are the major causes of water resource depletion.
- VII** Explain desertification.