Q.P. Code:- 65962

Model answer key
S.Y.biotechnology Semester IV choice based
Environmental Biotechnology USBT404

Q 1 Do as directed (Any fifteen) **15**

1. Removal of fairly uniform layer of surface by rainfall and runoff water.
2. Wastes that are toxic ,reactive,corrosive or ignitable
3. True
4. Mixture of pollutant formed when NOx and volatile organic compounds in presence of sunlight.
5. smoke,dust,fumes,mist,spray
6. Point
7. Oxides of sulphur are referred to as SOx
8. Intergovernmental Panel on Climate Change
9. Chlorofluorocarbons & Hydrocarbons
10. Adaptation
11. Sustainable and efficient management of water resources
12. Area of Antarctic stratosphere in which recent ozone levels have dropped to as low as 33% of pre 1975 values.
13. Halocarbons.
14. Ozone
15. In bio augmentation adapted and genetically engineered microorganisms are added where as in Biostimulation necessary nutrients are added to stimulate growth of indigenous microorganisms
16. Biosparging is a process to increase the biological activity of soil by increasing supply of air or oxygen into soil.
17. Autumn Olive (Elaeagnus angustifolia), Scotch Pine (Pinus sylvestris), Red Pine (Pinus resinosa), White Pine (Pinus strobus), Black Locust (Robinia pseudoacacia), Virginia Pine (Pinus virginiana) and Short Leaf Pine (Pinus echinata), Alfalfa (Medicago sativa), Bird's foot trefoil (Lotus

corniculatus), Tall Fescue (Festuca arundinacea), Sericea Lespedeza (Lespedeza cuneata), Crown Vetch (Securigera varia) syn (Coronilla varia), Flat Pea (Lathyrus sylvestris) , Sweet Clover (Melilotus albus), Red Clover (Trifolium pratense), Red Top , switchgrass (Panicum virgatum), Big Blue Stem (Andropogon gerardii) , Little Blue Stem (Schizachyrium scoparius), Bermudagrass (Cynodon dactylon), Deer tongue, and Bahiagrass (Paspalum notatum)

18. Bioavailability
19. False
20. Identification of those conditions at site that pose imminent threat to human health and environment

Q. 2 A Mechanism of conversion of substrate by microorganisms(4M) **08**
3 types of biological water purification system (explain any 1 in detail)(4M)

Q. 2 B Def: water pollution(1M) **07**
Types of water pollution: Physical ,Biological,chemical (2M each)

OR

Q. 2 C 3 steps in water quality assessment :1) Presumptive test: media procedure ,positive test(3M) **08**
2) confirmed test : media ,procedure ,positive test(3M)
3) completed test (2M)

Q. 2 D Definition :eutrophication 1M **07**
Control Methods (any 6) 1 Mark each

Q. 3A Explanation of Greenhouse effect (3M) **08**
Greenhouse gases (3M)
Factors causing greenhouse effect (2M)

Q. 3 B Explanation of Kyoto protocol (2M) **07**

2

Objectives of the protocol for prevention of climate change (3M)

Explanation of Implementation of the protocol (2M)

OR

Q. 3 C Brief explanation of effects of climate change on various ecosystems(2M) **08**

Adaptation strategies with respect to ecosystems (5M)

Each explanation (1)

Q. 3 D CFC family (3M) **07**

How are they Produced (2M)

Uses (2M)

Q. 4 A Indu Shekhar Thakur **08**

1. Definition: 1M
2. Process using stirred tank bioreactor with diagram 4M
3. Examples *Flavobacterium, Arthrobacter*, SRB and MPB in UASB. 3M

Alan Scragg

(Any 4 in short (4x2 M) or any 2 (2x4 M)in detail)

1. Bioremediation on land
2. Land farming
3. Bioventing
4. Biosparging
5. Bioaugmentation

Q. 4 B In situ physical and chemical method: 3M **07**

Only enlisting the methods under the process, no details

Biological treatment:2M

Only enlisting the methods under the process, no details

Phytoremediation: 2M

OR

(4)

Q. 4 C Indu Shekhar Thakur **08**

1. Definition:1M
2. Pump and treat system with diagram of ex-situ remediation: 5M
3. Example: PCB bioremediation (2M)

Alan Scragg (4 in short (4x2 M) or any 2 (2x4 M)in detail)

1. Composting
2. Biopile process
3. Bioreactor
4. Novel techniques

Q. 4 D 1. Phytoextraction: 2M **07**

2. Rhizofiltration:1M
3. Phytostimulation:2M
4. Phytostabilization: 2M

Q. 5 Write Short notes on **any three** of the following **15**

a. What is soil erosion-1M, Causes of erosion -2M, Effect of erosion - 2M

b. Explanation of Antarctic Conditions favouring ozone depletion (2M)
Formation of ozone hole (3M)

c. Explanation of effects of Global Warming - each point (1M)

d.
1. Definition : 1M
2. Diagram and process :3M
3. Factors influencing the process: 1M

e.
1. Traditional method of bacterial enumeration (insufficient) (1M)
2. Use of biosensors, in-situ development of models (1M)
3. Biofilm, microcosm and mesocosm studies (1M)
4. Quantification and measurement of dissipation of pollutant (1M)
5. Field based studies and research. (1M)