BNBUSBC4T3/01/2023

Duration: 2 hours **Total marks: 60**

N.B. All questions are compulsory
Numbers to the right indicate marks
Draw neat labelled diagram wherever necessary

Q.1 Answer any four of the following 16

a Explain In-situ bioremediation.

b Elaborate on viral biopesticides.

c What are the factors affecting bioremediation? explain in brief.

d Write a note on : a) Rhizobium. b) Azolla.

e Explain Biodegradation of uranium contaminated soil.

f Write a note on agricultural antibiotics.

g Write in brief the role of genetically engineered microbes in bioremediation

h How are pesticides degraded in wastewater?

Q.2 Answer any four of the following 16

a Explain any one physical method of nanoparticle synthesis in detail.

b Explain optical properties of nanomaterials.

c Elaborate colloidal route method of nanoparticle synthesis.

d Define Nanomaterials. Explain the electrical property of nanomaterials.

e Explain Nanotubes and Nanowires with their types.

f Explain the different approaches used for Nanoparticle synthesis.

g Give applications of nanotechnology in the field of Automobiles and Cosmetics.

h Describe bio-nanosensors with a suitable diagram.

Q.3 Answer any four of the following 16

a Explain the concept of septic tank.

b State and explain factors controlling the gas production by digestion.

c Write a note on the activated sludge process.

d Elaborate the mechanical process of synthesis of biofuels.

e Explain trickling filters in detail.

f Explain any two petrocrops as a source of energy.

g Discuss the factors affecting biogas productions in brief.

h Write a note on Biomass as a source of energy.

Q.4 Answer any six of the following 12

a Define bioaugmentation.

b Write down the applications of biofertilizers.

c What are recalcitrant xenobiotics?

d Mention aerobic & anaerobic reactions involved in bioremediation

e What are nanoparticles?

f Give two applications of bio-nanosensor.

g Define nanotechnology.

h Define Sol and Gels.

i Enlist the objectives of sewage treatment.

j Which type of fossil fuel produces the maximum amount of carbon dioxide?

k What is acidogenesis?

l What is sorption on activated carbon?

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