

3 hours

(100 Marks)

Instructions: Please check that you have received the correct question paper.

- (i) All questions are compulsory.
- (ii) Choice is internal
- (iii) Figures to the right indicate full marks.
- (iv) Draw structures and diagrams wherever necessary.

Q1 A) State true or false:

(04)

- (i) The process of using microorganisms to remove environmental pollutant is referred to as bioreclamation.
- (ii) CPV can grow in the nucleus of the host cell.
- (iii) Chloroform is not a recalcitrant xenobiotic
- (iv) *Bacillus thuringiensis* controls *Lepidoptera*

Q1 B) Answer any three of the following:

(09)

- (i) Differentiate between *In situ* and *Ex situ* bioremediation
- (ii) Write a note on advantages of biopesticides.
- (iii) Enlist ideal characteristics of bioherbicides.
- (iv) Differentiate between inundation and importation.
- (v) Schematically only, represent the creation of superbug.
- (vi) Justify: 'Biofertilizers have many benefits'

Q1 C) Answer any two of the following:

(12)

- (i) With the help of a diagram explain different techniques of bioremediation of ground water.
- (ii) Justify-“Viruses can be considered as biopesticides”
- (iii) Explain environment friendly alternative for fixing nutrients to increase the yield of crop.
- (iv) Give an account of phytoremediation.

Q2 A) State True or False:

(04)

- (i) Buccal route has the fastest rate of absorption.
- (ii) Chemical names of drugs are easy to remember.
- (iii) Non-therapeutic drugs are included in pharmacopieas.
- (iv) ADME deals with absorption, distribution, metabolism and entry.

Q2 B) Differentiate between any three with examples:

(09)

- (i) Tablet and Capsule
- (ii) API and Excipients
- (iii) Intravenous and Intramuscular injection
- (iv) Topical and transdermal
- (v) Loading dose and Maintenance dose
- (vi) LD₅₀ and ED₅₀

Q2 C) Answer any two of the following:

(12)

- (i) List **any three** factors that determine the selection of a route for drug administration. Discuss the enteral route of drug administration.

- (ii) 'Dosage forms are needed to provide optimal drug action'. Describe the different dosage forms for external administration.
- (iii) 'Various factors affect drug dose.' Explain the different factors affecting drug dose.
- (iv) Write about the design and types of nanoparticulate drug delivery systems.

Q3 A) Match the following:**(04)**

Column A	Column B
(i) Preliminary treatment	a) Sedimentation tank
(ii) Primary treatment	b) Coagulant aids
(iii) Secondary treatment	c) Skimming tank
(iv) Tertiary treatment	d) Grit chamber
	e) Phosphate removal
	f) Trickling filter

Q3 B) State true or false giving reasons: (Any three)**(09)**

- (i) Landfilling is the best way for disposal of solid wastes.
- (ii) Flocculation is a chemical phenomenon for aggregating suspended solids.
- (iii) Reduction of BOD is the main aim of secondary treatment.
- (iv) Activated carbon is most suitable material for removal of dissolved solids.
- (v) Calcium sulphate is used for sludge stabilization.
- (vi) For optimal methane production carbon- nitrogen ratio should be 10:1.

Q3 C) Answer any two of the following:**(12)**

- (i) Elaborate on the sources and utilization of biomass.
- (ii) Write a detailed account of composting mentioning the mechanism involved. Add a note on factors affecting it.
- (iii) Discuss in detail pond treatment processes used for waste water treatment.
- (iv) Give a detailed account of disinfection used for tertiary treatment of waste water. Add note on characteristics of an ideal disinfectant.

Q4 A) Define any five of the following terms:**(10)**

- (i) Half-life (ii) Ampules (iii) Biodisc (iv) Cation exchanger (v) Detoxification
- (vi) Consortia of microbes (viii) Xenobiotics

Q4 B) Answer any three of the following:**(15)**

- (i) Write an elaborate note on drug nomenclature.
- (ii) Elaborate on the following statement, with suitable examples: "Drugs can be obtained from diverse sources."
- (iii) Describe the phases of biogas production and add a note on its uses.
- (iv) State True or False giving reasons: 'Incineration is the mostly adapted process of disposing solid wastes in developing countries.'
- (v) Elaborate on biostimulation and bioaugmentation in soil bioremediation.
- (vi) Give an account of biological pathogens used against herbs.