

Note:

1. All the questions are compulsory. Choice is internal.
2. Figures to the right indicate full marks.
3. All questions carry equal marks.
4. Draw flowcharts/diagrams wherever necessary.

Q.1A) State True or false:

(04)

- (i) Blowing air from the atmosphere into the contaminated soil is called bioventing.
- (ii) As temperature decreases, viscosity of oil increases.
- (iii) Bioremediation is a process where no microorganisms are used.
- (ii) Plants cannot be used for bioremediation of heavy metals.

Q.1B) Write short notes on: (Any three)

(09)

- (i) Xenobiotics
- (ii) Phytoremediation
- (iii) Classical biological control
- (iv) Phytoremediation
- (v) Minamata disease
- (vi) Bioaugmentation

Q.1C) Write elaborate notes on: (Any two)

(12)

- (i) Biodegradation of heavy metals.
- (ii) Genetically modified organisms in bioremediation.
- (iii) Types of bioremediations and types of reactions involved in bioremediation.
- (iv) Fungal, bacterial and protozoal biopesticides in detail.

Q.2A) State True or False:

(04)

- (i) Drugs can only be obtained from natural sources.
- (ii) Intramuscular injections are administered at 90° to the skin surface.
- (iii) Half life ($t_{1/2}$) doesn't depend on time of drug absorption.
- (iv) Aqueous solution contains one or more chemical substances.

Q.2B) Answer the following: (Any three)

(09)

- (i) Describe the significance of Therapeutic index.
- (ii) Pharmacokinetic factor affecting drug action.
- (iii) Elaborate on sweetening agents with an example.
- (iv) Describe parenteral route of drug administration.
- (v) Write a note on Extractive Preparation.
- (vi) What are dosage forms?

Q.2C) Answer the following: (Any two)

(12)

- (i) Elaborate on age and body weight factor that influence drug action with an example
- (ii) Write a note on the oral route of drug administration; and disadvantages related to certain drugs.
- (iii) Various types of injections used for parenteral administration.
- (iv) Elaborate on the following statement, with suitable examples: "Drugs can be obtained from diverse sources."

Q.3A) State True or False:

(04)

- (i) Municipal solid waste contains 60-80% organic matter.
- (ii) Selective destruction or inactivation of disease causing microorganism is called disinfection.
- (iii) Biomass is a good source of energy.
- (iv) Plants efficient in converting CO_2 into biomass are called energy rich crops.

Q.3B) Write short notes on: (Any three)

(09)

- (i) Types of sewage
- (ii) Vermicomposting
- (iii) Energy rich crops
- (iv) Biofuels
- (v) Trickling filters
- (vi) Incineration

Q.3C) Answer the following: (Any two)

(12)

- (i) Give a detailed account on types of solid waste and its treatment process.
- (ii) Describe in brief about the sludge treatment process.
- (iii) Write a brief note on composition, production and application of biogas.
- (iv) Describe the treatment process of wastewater.

Q.4A) Define and explain: (Any five)

(10)

- (i) Biostimulation
- (ii) Biofungicides
- (iii) Maintenance dose
- (iv) Oil spills
- (v) Biomass
- (vi) LD50
- (vii) Biotransformation

Q.4B) Write Short notes on: (Any three)

(15)

- (i) Aqueous suspension
- (ii) Alcoholic solutions
- (iii) Tertiary treatment of wastewater.
- (iv) Detection of pathogenic organisms in sewage.
- (v) Biofertilizers and its examples.
- (vi) Biodegradation of hydrocarbons.

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