

M.Sc. (Sem.-IV) Examination

508

Environmental Science

April-2017

Time : 3 Hours]

[Max. Marks : 70

Note: Draw the diagram where ever required.

Q.1 Answer the following in detail:

- a) Explain the Dose-Response relationship. [7]
OR
a) Describe the active transport across the plasma membrane. [7]
b) Elaborate on teratogenesis, mutagenesis and carcinogenesis. [7]
OR
b) Explain the two important phases of toxicology. [7]

Q.2 Answer the following in detail:

- a) Describe the biochemical effects of benzene and other aromatic hydrocarbons. [7]
OR
a) Give an account on toxicity of various inorganic compounds. [7]
b) Give an account on toxicity of organometallic compounds. [7]
OR
b) Describe various organo-sulfur and phosphorus compounds with their toxic effects. [7]

Q.3 Answer the following in detail:

- a) Describe the adverse effects of Chromium and Mercury. [7]
OR
a) Explain the biochemical effects of Cadmium and Lead. [7]
b) Explain the major toxic elements with their biochemical effects. [7]
OR
b) Describe the major biochemical effects caused due to heavy metal overload. [7]

(P.T.O)

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Q.4 Answer the following in detail:

a) Describe the bioaccumulation and biomagnification process of DDT. [7]

OR

a) Define: Pesticide and give its broad classification. [7]

b) Explain the biochemical effects of various organophosphate and carbamate pesticides. [7]

OR

b) Justify the statement: "pesticides endanger life". [7]

Q.5 Answer the following in short (each carry one mark): [14]

a) Enlist the various sites of biotransformation.

b) Define: Ultimate Carcinogen.

c) Give the symptoms of Itai-Itai disease.

d) Give the full forms of: (i) DDD (ii) DDE.

e) Write about three kinds of enzyme specificity.

f) Which gas was used as a "recreational gas" in the late 1800s ?

g) Name the protein which binds with the Cd in the kidney.

h) What is Mydriasis ?

i) Explain the term: Antagonism.

j) Agent Orange is a mixture of which two herbicides ?

k) Name the antidote used for curing arsenic poisoning.

l) Give the full forms of: (i) 2,4 - D (ii) 2,4,5 - T.

m) Enlist the types of dose.

n) Define: Chronic Systemic Exposure.

Q.1 (A) Describe synthetic liners and composite liners (07)

OR

(A) Discuss cleaner bioprocesses for sustainable development.

(B) Explain materials and methods to control submicron air toxin particles after coal combustion using CMA and CMC. (07)

OR

(B) Write a detailed account on amended liners and state the factors affecting liners.

Q.2 (A) Discuss horizontal flow bed system for treatment of dirty water. (07)

OR

(A) Describe major techniques used for cell immobilization.

(B) Discuss use of aquatic macrophytes for treatment of waste-water in detail. (07)

OR

(B) Which are the major treatment parameters affected by Duckweed ?

Q.3 (A) Write an Essay on : "Biomass immobilization" (07)

OR

(A) Discuss various mechanisms by which microbes facilitate removal of soluble metal ions from solution.

(B) Discuss type of containment found in contaminated soil along with its physicochemical properties. (07)

OR

(B) Explain general strategies developed to increase bio-availability.

Q.4 (A) Write an Essay on : "Enzymatic bleaching process and advantages". (07)

OR

(A) Discuss clean microbial processes used in palm-oil industry alongwith their economic benefits.

(B) Discuss clean technologies based on microorganisms used in seafood industry. (07)

OR

(B) Discuss process of cellulose pulp production and explain the mechanism of conventional bleaching method. (P.T.O)

Q.5

Answer the followings very briefly as directed :- (14)

- (I) Write full forms of WCED and BTEX.
- (II) Explain the term: "Sustainable Development".
- (III) Define: Adsorption.
- (IV) Explain use of gravity separation method.
- (V) Enlist major greenhouse gases.
- (VI) What do you mean by lignin?
- (VII) Mention advantages of bioremediation.
- (VIII) Name the test used to calculate percentage of bentonite in soil mixture.
- (IX) Enlist the chemical sources of nitrogenous pollutant.
- (X) Give classification of NAPLs.
- (XI) Explain: Biostimulation.
- (XII) Mention carbon source for photoheterotrophs.
- (XIII) Which natural materials used as immobilization matrices?
- (XIV) Enlist the four genera of family Lemnaceae.

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