



NAW-003-001418 Seat No. \_\_\_\_\_

**B. Sc. (Sem. IV) (CBCS) Examination**

**March / April - 2017**

**Biotechnology : BT - 401**

**(Environmental Biotechnology)**

**Faculty Code : 003**

**Subject Code : 001418**

Time :  $2\frac{1}{2}$  Hours ]

[ Total Marks : 70

- Instructions :** (1) All questions are compulsory.  
(2) Figures at right side indicates marks of the questions.

**1 Short questions : 20×1**

- (1) Which bacteria are responsible for return of nitrogen gas to the atmosphere?
- (2) Asiatic Lions found in Gir National forest are listed under \_\_\_\_\_ category of RED DATA BOOK?
- (3) Give a name of nitrogen fixing bacteria useful in preparation of biofertilizer.
- (4) Give an example of any root associated fungi used as biofertilizer.
- (5) Which metabolic -pathway is useful in degradation of "Carboxylic acids" produced in hydrocarbon degradation?
- (6) Give example of a pollutant degraded through Comatabolism.
- (7) Orthocleavage is catalysed by \_\_\_\_\_ enzyme.
- (8) Give any one example of recalcitrant compound.
- (9) True / False: Plastic compounds are non-biodegradable due to its high molecular weight.
- (10) A microbiologist studying the microbial activity in a lake finds a sudden rapid increase in growth of algae. Specify the reason

- (11) The process in sewage treatment in which air or oxygen is forced into sewage liquor to develop biological flocs which reduces the organic content of the sewage is known as \_\_\_\_\_.
- (12) The filtering medium of trickling filters is coated with microbial flora, known as \_\_\_\_\_.
- (13) Write the name of any two tertiary treatment processes which can remove minerals from waste water.
- (14) Color of sewage water is usually black. Specify the reason.
- (15) Bioaccumulated pollutants are stored in \_\_\_\_\_ tissues of Animal body.
- (16) Give example of any pollutant which can undergo biomagnifications.
- (17) What is the economic benefit of anaerobic sludge digestion?
- (18) \_\_\_\_\_ is evolutionary process by which biological populations evolve to become distinct species.
- (19) Write the name of chemicals used by Urey and Miller to prove formation of organic compounds under specified condition.
- (20) Define phylogeny.

- 2** (a) Answer any three out of six : **3×2**
- (a) Define anaerobic respiration
  - (b) Define eutrophication
  - (c) Give differences: Composting Vs Anaerobic Digestion
  - (d) Explain reverse osmosis
  - (e) Give names of the biochemical reactions involved in biodegradation.
  - (f) Give composition of biogas produced in anaerobic digestion.

- (b) Answer any three out of **six** : **3×3**
- (a) Explain "Carbon cycle" in brief.
  - (b) Write a short note "Fresh water ecosystem"
  - (c) Differentiate between BOD and COD.
  - (d) Explain the process of any three primary waste water treatments.
  - (e) Enlist the interaction among population and explain parasitism in brief.
  - (f) Explain briefly : Denitrification and its types.

- (c) Answer any two out of **five** : **2×5**
- (a) Explain Nitrogen cycle in detail.
  - (b) Explain: Biodegradation of aromatic hydrocarbon with example.
  - (c) What is secondary waste water treatment? Explain trickling filter process in brief.
  - (d) Explain Insitu bioremediation process.
  - (e) Explain in detail: "Methods for biodiversity conservation"

- 3** (a) Answer any three out of **six** : **3×2**
- (a) Define bioremediation.
  - (b) Which bacteria is associated with acid mine drainage?
  - (c) Briefly explain acid rain.
  - (d) Define coacervates.
  - (e) What is sympatric speciation?
  - (f) What is the difference between pair wise alignment and multiple sequence alignment?

(b) Answer any three out of **six** : **3×3**

- (a) Explain biological species concept in brief.
- (b) Explain the benefits of biodiversity conservation.
- (c) Explain Urey-Miller experiment for organic evolution.
- (d) What are the postulates of Darwinism?
- (e) Explain briefly: Composting and its application
- (f) Write the name of primary air pollutant and their effect on human being.

(c) Answer any two out of **five** : **2×5**

- (a) Briefly explain the mechanism of reproductive isolation.
  - (b) Explain in detail: Bioplastics and its advantages.
  - (c) What is Bioleaching? Explain Ex-situ & In-situ bioleaching in detail.
  - (d) Explain prezygotic reproductive isolation mechanism.
  - (e) Explain any one method for construction of phylogenetic tree.
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