



AAP-003-001418 Seat No. _____

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

April / May - 2016

BT-401 : Environmental Biotechnology

Faculty Code : 003

Subject Code : 001418

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

[Total Marks : 70

Instruction : Q.1 MCQ Answers has to be written in the Answer sheets only.

1 MCQ type Questions : 20

- (1) Which of the following compound is serving as the FIRST active intermediate in biodegradation pathway of aromatic hydrocarbon ?
(A) Catechol (B) Muconate
(C) Carboxylic acid (D) Salicylic acid
- (2) The mortality rate of organisms following a type III survivorship curve is
(A) fairly constant throughout life
(B) higher in post-reproductive years
(C) lower after the organisms become established
(D) unrelated to age
- (3) Which of the following best describes biodegradation?
(A) A minor change in an organic molecule
(B) Fragmentation of a complex organic molecule
(C) Complete mineralization
(D) All of the above

- (4) What makes a plastic highly recalcitrant compound?
- (A) Complex polymeric structure
 - (B) Non solubility into water
 - (C) High molecular weight
 - (D) All of the above
- (5) How fermentation is different from anaerobic respiration?
- (A) In fermentation both, the electron donor and acceptor are of organic type
 - (B) Fermentation happens in presence of oxygen only
 - (C) Fermentation and anaerobic respiration both are same
 - (D) None of the above
- (6) 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 -
- (A) Biostimulation
 - (B) Sludge
 - (C) Activated sludge
 - (D) Bioaugmentation
- (7) Color of sewage water usually black due to _____
- (A) Fermentation of metallic sulfides
 - (B) Fermentation of nonmetallic oxides
 - (C) Fermentation of metallic chlorides
 - (D) Presence of suspended solids
- (8) Which of the following is responsible for bleaching of plant leaves?
- (A) SO_2
 - (B) Fly ash
 - (C) CO_2
 - (D) Ozone

- (9) Which of the following is acid do not contribute in acid rain formation?
- (A) Sulphuric acid
 - (B) Carboxylic acid
 - (C) Fusidic acid
 - (D) Nitric acid
- (10) Which of the following bacteria play major role in chemical reactions of acid mine?
- (A) Ferroplasma ferrooxidants
 - (B) Thiobacillus acidarmus
 - (C) Thiobacillus ferrooxidants
 - (D) Ferroplasma thiooxidants
- (11) The magnitude of BOD of wastewater is related to
- (A) bacterial count
 - (B) amount of inorganic material
 - (C) amount of organic material
 - (D) All of the above
- (12) The filtering medium of trickling filters is coated with microbial flora, known as
- (A) Geological film
 - (B) Zoological film
 - (C) Zoogloal film
 - (D) All of the above
- (13) In a terrestrial ecosystem, the trophic level that contains largest biomass would be.....
- (A) Producers
 - (B) Primary consumers
 - (C) Secondary consumers
 - (D) Decomposers

- (14) Sloth, the slowest mammal in the world is having compartmentalized stomach, to facilitate _____.
- (A) Water storage
 - (B) Cellulose digestion
 - (C) Degradation of waste
 - (D) Fasting ability
- (15) Asiatic Lions found in Gir National forest are categorised under which category of RED DATA BOOK?
- (A) Threatened Species
 - (B) Rare Species
 - (C) Endangered Species
 - (D) Extinct Species
- (16) "Superbug" was a name coined for organisms engineered for
- (A) Antibiotic production
 - (B) Probiotic production
 - (C) Hydrocarbon degradation
 - (D) Enzyme production
- (17) Which of the following are the most distantly related to one another?
- (A) Sunfish and dolphins.
 - (B) Tree frogs and snakes.
 - (C) Vampire bats and birds.
 - (D) Bears and whales.

- (18) Darwin's primary contribution to biological theory was the idea that
- (A) an important mechanism of biological evolution is natural selection
 - (B) new alleles arise through mutation
 - (C) evolution is the change in gene frequencies over time
 - (D) genes are the units of inheritance
- (19) Which of the following does NOT tend to promote speciation?
- (A) founder effect
 - (B) reproductive isolation
 - (C) natural selection
 - (D) gene flow
- (20) How common is genetic polymorphism in natural populations?
- (A) essentially all loci are polymorphic
 - (B) essentially no loci are polymorphic
 - (C) depending on the species, all loci are polymorphic or none are
 - (D) depending on the species, more or less than half the loci are polymorphic

- 2** (a) Answer any **three** : **3×2**
- (i) Explain : DDT.
 - (ii) What is population Ecology ?
 - (iii) Explain the chemical properties of water.
 - (iv) What is composting ?
 - (v) Define coacervates.
 - (vi) Define biogeochemical cycle.

(b) Answer any **three** : **3×3**

- (i) What is the difference between sympatric and parapatric speciation.
- (ii) Explain about anaerobic digestion.
- (iii) What is acid rain ? Explain the cause and its effects.
- (iv) What is PCB ? Explain
- (v) Define Desert.
- (vi) Write short note theory of Darwin.

(c) Answer any **two** : **2×5**

- (i) Write a detail note on biofertilizers.
- (ii) Explain : Biodegradation of Halogenated hydrocarbon with example.
- (iii) Explain the primary and secondary treatment ?
- (iv) Give a detail account of Nitrogen cycle.
- (v) Explain how chemically life originated on earth.

3 (a) Answer any **three** : **3×2**

- (i) What is freshwater ecosystem ?
- (ii) Define xenobiotic compounds.
- (iii) What are pollutants ?
- (iv) Explain about natural selection.
- (v) Define bioplastics.
- (vi) Give the physical properties of water.

(b) Answer any **three** : **3×3**

- (i) Explain the carbon cycle.
- (ii) Write a short note : "Marine ecosystem".
- (iii) Explain the overview of metabolism of organic matter among bacteria.
- (iv) Explain differences between BOD and COD.
- (v) What is bioleaching ?
- (vi) Give the contribution of Lamarck in evolution.

(c) Answer any **two** : **2×5**

- (i) Explain any two terrestrial biome in detail.
 - (ii) What is biomagnification ? Explain with 3 examples.
 - (iii) Explain the tertiary treatment process in detail.
 - (iv) Explain the theories of origin of organic evolution.
 - (v) Give a complete overview of phylogenetic studies.
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