



MAX-003-1014014 Seat No. _____

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

March / April - 2018

BT - 401 : Environmental Biotechnology & Biostatistics
(New Course)

Faculty Code : 003

Subject Code : 1014014

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

[Total Marks : 70

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

- 1 (A) Objective type questions : 4
- (1) Give a name of nitrogen fixing bacteria useful in preparation of biofertilizer.
 - (2) Asiatic Lions found in Gir National forest are listed under _____ category of RED DATA BOOK?
 - (3) Give an example of any root associated fungi used as biofertilizer.
 - (4) Define amensalism.
- (B) Answer in brief : (Any 1 out of 2) 2
- (1) What is symbiotic association?
 - (2) What is insitu conservation?
- (C) Answer in brief : (Any 1 out of 2) 3
- (1) Describe carbon cycle briefly.
 - (2) Describe Simpson's Diversity index.
- (D) Answer in brief : (Any 1 out of 2) 5
- (1) What is biogeochemical cycle? Describe about nitrogen cycle briefly.
 - (2) Briefly explain the characteristics of population.

- 2** (A) Objective type questions : **4**
- (1) Which bacteria is involve in oxidation of metal sulfide during acid mine drainage?
 - (2) Define Bioremediation.
 - (3) Which metabolic pathway is useful in degradation of "Carboxylic acids" produced in hydrocarbon degradation?
 - (4) Orthocleavage is catalysed by _____ enzyme.
- (B) Answer in brief : (Any 1 out of 2) **2**
- (1) What are xenobiotic compounds?
 - (2) Write down the source and effect of carbon monoxide (CO) as air pollutant.
- (C) Answer in brief : (Any 1 out of 2) **3**
- (1) Describe various important chemical reactions involve in hydrolytic reaction.
 - (2) Write down the chemical reaction involve in acid rain formation.
- (D) Answer in brief : (Any 1 out of 2) **5**
- (1) Describe various important chemical reactions involve in biodegradation of oxidative reactions.
 - (2) Classify air pollutants and describe the effects of air pollution briefly.
- 3** (A) Objective type questions : **4**
- (1) The filtering medium of trickling filters is coated with microbial flora, known as _____
 - (2) Color of sewage water is usually black. Specify the reason.
 - (3) What is the economic benefit of anaerobic sludge digestion?
 - (4) Define bioplastic.
- (B) Answer in brief : (Any 1 out of 2) **2**
- (1) A microbiologist studying the microbial activity in a lake finds a sudden rapid increase in growth of algae. Specify the reason.
 - (2) Write the name of any two tertiary treatment processes which can remove minerals from waste water.

- (C) Answer in brief : (Any 1 out of 2) 3
- (1) Differentiate between BOD and COD.
 - (2) What is Bioleaching? Explain Ex-situ & In- situ bioleaching.
- (D) Answer in brief : (Any 1 out of 2) 5
- (1) What is secondary waste water treatment? Explain trickling filter process in brief
 - (2) What is biofertilizer? Explain production of biofertilizer with appropriate example
- 4 (A) Objective type questions : 4
- (1) Define Primary Data
 - (2) Explain Type-I error
 - (3) Write down the name of Father of Biostatistics
 - (4) Calculate the mode from the given data : 3, 5, 6, 9, 3, 2, 2, 3, 3, 3, 4, 6, 5.
- (B) Answer in brief : (Any 1 out of 2) 2
- (1) Differentiate between Statistic and Parameter.
 - (2) Define Level of Significance
- (C) Answer in brief : (Any 1 out of 2) 3
- (1) Define primary data. Give the various ways of collecting primary data and discuss their merits and demerits
 - (2) The monthly salaries of 5 people are shown below, Calculate the standard deviation 3000, 4000, 4200, 4500, 5000
- (D) Answer in brief : (Any 1 out of 2) 5
- (1) Explain various way of presentation of data?
 - (2) What are the difference between arithmetic, harmonic and geometric mean? Explain with suitable example.
- 5 (A) Objective type questions : 4
- (1) What symbol is used to represent chi-square?
 - (2) In practice, the level of significance is generally taken as....

- (3) The heights of the girls and boys entering in college are to be compared. Write down the name of suitable statistical test?
- (4) _____ regression is used to examine the relationship between one dependent and one independent variable

(B) Answer in brief : (Any 1 out of 2) **2**

- (1) What is significance level?
(2) What is parametric test?

(C) Answer in brief : (Any 1 out of 2) **3**

- (1) What are the applications of analysis of variance?
(2) Differentiate between Null and alternative hypothesis.

(D) Answer in brief : (Any 1 out of 2) **5**

- (1) What is chi-square test? Write down its application in biology.
(2) Write down the steps to for test statistics.
