CCV-730 Seat No._____

B. Sc. (Sem. III) Examination

October - 2019

MIC - 202 : Microbiology

(Soil and Water Microbiology)

: $2\frac{1}{2}$ Hours] [Total Marks : **70**

(A) Answer the following questions in brief : **14**
(Any **two** out of four)
(1) Explain positive relationships between soil microbes
(2) Explain various methods to study soil microorganisms
(3) Write a detailed note on soil microflora
(4) Explain winogradsky column.

(B) Do as directed : (Any **four** out of six) **4**
(1) Mycorrhiza is the symbiotic association between _____
(A) Fungi and Algae
(B) Two bacteria
(C) Bacteria and root
(D) Fungi and root
(2) Azotobacter can be isolated from _____
(A) Rhizosphere (B) Root nodule
(C) Water (D) All of the above
(3) In soil profile, Horizon A consist of _____
(A) Organic Debris (B) Rocks
(C) Water (D) Bedrocks

(4) Which one of the following is not a negative type of association between soil microbes :
(A) Commensalism
(B) Antagonism
(C) Parasitism
(D) Competition
(5) Write contribution of Sergei Winogradsky.
(6) Define commensalism.

2 (A) Answer the following questions in brief : **14**
(Any **two** out of four)
(1) Nitrogen. cycle.
(2) Biochemical conversation in phosphorus cycle with regard to its significance in life.
(3) Biofertilizer.
(4) Explain Carbon cycle with photosynthesis and respiration.

(B) Do as directed : (Any **three** out of Five) **3**
(1) Conversion of ammonia to nitrate is known as :
(A) Nitrification
(B) Ammonification
(C) Nitrogen fixation
(D) Assimilation
(2) Which enzymes are associated with nitrogen fixation :
(A) Nitrogenase
(B) Nitrogenase reductase
(C) Nitrogen fixase
(D) Both (A) and (B)

(3) How many ATP are required for Fixation of one molecule of Nitrogen ?
(A) 2 ATP (B) 12 ATP
(C) 18 ATP (D) 36 ATP
(4) Define Assimilation of Phosphorous
(5) Give example of Sulphur containing amino acid

3 (A) Answer the following questions in brief : 14
(Any **two** out of four)
(1) Purification of drinking water
(2) Water borne disease and prevention
(3) Examination of drinking water
(4) Nuisance organism in water

(B) Do as directed : (Any **four** out of six) 4
(1) How many CFU/ml would be there in water for good quality
(A) 100 (B) 200
(C) 400 (D) 1600
(2) Water of Swimming pool is disinfected by _____
(A) Heating (B) Chlorination
(C) Sedimentation (D) Filtration
(3) Which bacteria is able to pass soil filtration
(A) Giardia (B) E.coli
(C) Pseudomonas (D) Salmonella
(4) Which bacteria survive in Elevated temperature test
(A) E. Coli
(B) Enterobacter
(C) Salmonella
(D) None of the above
(5) Define coliform
(6) Which substrate is used in Defined substrate test?

4 (A) Answer the following questions in brief : 14
(Any **two** out of four)
(1) Explain BOD as a measurement of impurities in water
(2) Biology of trickling filter
(3) Principles and role of microbes in Imhoff tank
(4) Anaerobic sludge digestion and composting.

(B) Do as directed : (Any **three** out of five) 3
(1) High BOD indicates higher level of _____in water sample
(A) Organic matter
(B) nondegradable impurities
(C) Various gas
(D) none of the above
(2) Zoogloeal film is associated with
(A) Septic tank
(B) Trickling filter
(C) Imhoff tank
(D) None of the above
(3) As water purification, Biological oxidation of nutrients is part of
(A) Activated sludge process
(B) Lagoon
(C) Trickling filter
(D) Imhoff tank
(4) Define TOD
(5) Write application of algae in oxidation pond.