

**C****DF-3045**

**B. Sc. (Sem. III) (Environment Science) Examination**  
**March / April - 2016**  
**302 : Soil Sciences**

Time : 2 Hours]

[Total Marks : 50

સૂચના/Instructions :

(1)

નીચે દર્શાવેલ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
<input type="text" value="B. SC. (SEM. III) (ENVIRONMENT SCIENCE)"/>	<input type="text"/>
Name of the Subject :	<input type="text"/>
<input type="text" value="302 : SOIL SCIENCES"/>	<input type="text"/>
Subject Code No. : <input type="text" value="3"/> <input type="text" value="0"/> <input type="text" value="4"/> <input type="text" value="5"/>	Section No. (1, 2,.....): <input type="text" value="Nil"/>
	<input type="text" value="Student's Signature"/>

- (2) પ્રશ્નપત્રમાં કુલ ૫૦ પ્રશ્નો છે, બધા જ ફરજિયાત છે. દરેક પ્રશ્નનો (૧) એક ગુણ છે.  
There are 50 questions and each question carries one (1) mark and all are compulsory.
- (3) દરેક પ્રશ્નનો કાળજીપૂર્વક અભ્યાસ કરી સાચો વિકલ્પ પસંદ કરો.  
Read the question carefully before selecting the correct option.

***O.M.R. Sheet ભરવા અંગેની અગત્યની સૂચનાઓ આપેલ  
O.M.R. Sheet-ની પાછળ છાપેલ છે.  
Important instructions to fillup O.M.R. Sheet  
is given on back side of the provided O.M.R. Sheet.***

- 1 Isotopes used in CFE methods is :  
 (A)  $^{15}\text{N}$ ,  $^{32}\text{P}$ ,  $^{35}\text{S}$ ,  $^{32}\text{C}$  (B)  $^{15}\text{C}$ ,  $^{32}\text{P}$ ,  $^{35}\text{S}$ ,  $^{14}\text{C}$   
 (C)  $^{14}\text{C}$ ,  $^{13}\text{C}$ ,  $^{15}\text{N}$ ,  $^{32}\text{P}$ ,  $^{35}\text{S}$  (D)  $^{14}\text{C}$ ,  $^{13}\text{C}$ ,  $^{15}\text{C}$
- 2 Isotopes labeled analysis require instrument like :  
 (A) Isotope ratio mass spectrometer  
 (B) Infrared mass spectrometer  
 (C) UV spectrometer  
 (D) Fluroscent microscope
- 3 Lucifer Enzyme require cofactor to activate :  
 (A)  $\text{Cl}^-$  (B)  $\text{OH}^-$   
 (C)  $\text{Ca}^{+2}$  (D)  $\text{Mg}^{+2}$
- 4 Application of scintillation counter is :  
 (A) To measure isotopes  
 (B) To measure organic matter  
 (C) To measure nucleic acid  
 (D) To measure ATP content
- 5 What is the role of landscape scale analysis ?  
 (A) Tools to identify Microbial population and its biomass  
 (B) Tool to measure population dynamics  
 (C) Soil composition and population relationship  
 (D) Tools to identify and explain spatial relationship between physico - chemical properties
- 6 The buffer reaction occur in soil due to :  
 (A) Soil microbiota  
 (B) Decrease in soil biota  
 (C) Soil erosion  
 (D) Plant nutrient absorlation
- 7 Soil nutrients are utilized by plants as a reaction of :  
 (A) Immobilization (B) All of these  
 (C) Ion exchange (D) Mineralization
- 8 Microbial activity of soil depends on :  
 (A) Soil fertilization  
 (B) Concentration of chemicals  
 (C) Ratio of C:N  
 (D) Adequate energy supply from OH
- 9 Cation and Anion exchange in soil occurs between :  
 (A) Microbiota of soil, soil particles and water  
 (B) Water, Chemical bonds, soil particles  
 (C) Clay minerals, inorganic compound and Plant roots  
 (D) Chemical compounds present in soil
- 10 Cation exchange in soil comprises of \_\_\_\_\_ volume.  
 (A) 50% (B) 100%  
 (C) 10% (D) 30%

- 11 The solid portion in soil comprises of :  
 (A) Soil particles and water  
 (B) WHC and FC  
 (C) Inorganic minerals and OM  
 (D) Salts and water
- 12 Primary elements present in clay fraction are :  
 (A) Silicatetrahedra and aluminiumoctahedra  
 (B) Salts and miner  
 (C) Nitrates and Nitrites  
 (D)  $\text{CaCO}_3$  and  $\text{MgCO}_3$
- 13 CEC abbreviation stands for :  
 (A) Cation Exchangable Chemicals  
 (B) Cation Exchange Capacity  
 (C) Cobalt Electron Compound  
 (D) Chemicals Exchange Capacity
- 14 AEC abbreviation stands for :  
 (A) Air Exchangaable Chemicals  
 (B) Anion Exchange Chemicals  
 (C) Atomic Exchange Chemicals  
 (D) Anion Exchange Capacity
- 15 Microbe—Plant interactions are known as:  
 (A) Endophytes (B) none of the these  
 (C) Epiphytes (D) Epiphytes and Endophytes both
- 16 During photosynthesis, carbon is :  
 (A) converted by organisms from a gas to carbohydrates  
 (B) released by organisms as carbon dioxide  
 (C) released from wood as carbon dioxide when wood is burned  
 (D) broken down and released from the remains of living organism
- 17 Plants capture and transfer solar energy in a process called :  
 (A) Transpiration. (B) Photosynthesis  
 (C) Oikos. (D) Ecology.
- 18 Carbon is stored as a type of rock called carbonate in the :  
 (A) hydrosphere. (B) Geosphere.  
 (C) biosphere. (D) Atmosphere.
- 19 Which of these could increase average global temperatures ?  
 (A) Decreased carbon dioxide emissions  
 (B) Increased number of animal species  
 (C) Increased use of fossil fuels  
 (D) Increased ocean algal blooms
- 20 Permanent deforestation can contribute to potential global warming by :  
 (A) Decreasing atmospheric  $\text{N}_2$  levels.  
 (B) increasing atmospheric  $\text{N}_2$  levels.  
 (C) Decreasing atmospheric  $\text{CO}_2$  levels.  
 (D) Increasing atmospheric  $\text{CO}_2$  levels.

- 21 Carbon in the atmosphere is most often found as :
- (A) carbon monoxide
  - (B) carbon dioxide
  - (C) stratospheric ozone
  - (D) fossil fuel
- 22 The heating of the lower layer of the atmosphere from radiation absorbed by certain heat-absorbing gases is called :
- (A) The photosynthesis effect
  - (B) Smog
  - (C) The adiabatic effect
  - (D) The greenhouse effect
- 23 What is the purpose of a carbon sink ?
- (A) Keep CO<sub>2</sub> from accumulating at rapid rate in the atmosphere
  - (B) Both Create deposits for fossil fuels and Keep CO<sub>2</sub> from accumulating at rapid rate in the atmosphere
  - (C) Absorb CO<sub>2</sub> from the atmosphere
  - (D) Create deposits for fossil fuels
- 24 Energy flow depends on :
- (A) Consumers absorb solar energy
  - (B) Origin of energy
  - (C) Degradation rate
  - (D) Consumers decompose the substrate
- 25 Which of the following is contributing to an overload of the carbon cycle?
- (A) Deforestation
  - (B) All of these
  - (C) Photosynthesis
  - (D) Cellular respiration

- 26 Nitrogen that is used by plants is in the form of...
- (A) Ammonia
  - (B) Dinitrosomonas
  - (C) Nitrogen monoxides
  - (D) Nitrates
- 27 What do plants do with the nitrogen they absorb ?
- (A) For protein syntheses
  - (B) For nitrogen adsorption
  - (C) Kill other plants
  - (D) Use in photosynthesis
- 28 The conversion of nitrogen gas to nitrates by bacteria. is called;
- (A) Ammonification
  - (B) Nitrogen fixation
  - (C) Nitrification
  - (D) Denitrification
- 29 When is ammonia released ?
- (A) Dougs hair
  - (B) Burning of plant material
  - (C) During the break down of dead animals by fungi and bacteria.
  - (D) When the animals fart
- 30 What is the function of nitrifying bacteria ?
- (A) The conversion of nitrates into nitrogen monoxide
  - (B) All of these
  - (C) The conversion of nitrates into ammonia.
  - (D) The conversion of ammonia into nitrates.

- 31 Heterotrophic animals facilitates activity and diversity of \_\_\_\_\_.  
(A) Other carnivorous  
(B) Rodents and human  
(C) Plants  
(D) Bacteria and Fungi
- 32 Microbial flora works as a \_\_\_\_\_ in Macro and Microecosystem.  
(A) Both  
(B) None of the these  
(C) Link  
(D) Barrier
- 33 Description and exploration of Microarthropods among total microbial diversity available is :  
(A) 30%  
(B) 50%  
(C) 10%  
(D) 15%
- 34 Connections among species biodiversity show :  
(A) Pollution dynamics  
(B) All of these  
(C) Ecosystem functioning and Processes  
(D) Community development
- 35 Research focuses in soil ecosystem on :  
(A) Soil composition and Function  
(B) Cooperation of multiple disciplines and lumping of animals into functional group  
(C) Computer knowledge with soil texture  
(D) Soil awareness with pollution
- 36 Soil microflora plays role in ecosystem by :  
(A) Increase population  
(B) Process of metabolism  
(C) Degradation and Decomposition  
(D) Magnification
- 37 Following are temporary soil residents :  
(A) Cutworms, Dipterans  
(B) Mosquitoes, Tick  
(C) Actinomycetes, Fungi  
(D) Earthworms, Amoebae

- 38 Following are the Permanent resident of Ecosystem :
- (A) Cutworms
  - (B) Collembolans
  - (C) Velvet mites
  - (D) Gnats
- 39 Periodic residents of Soil Ecosystem are :
- (A) Cutworms
  - (B) Collembolans
  - (C) Gnats
  - (D) Velvet Mites
- 40 According to size soil fauna is classified as :
- (A) Bacteria, Fungi, Actinomycetes, Virus
  - (B) Big, Small, Large, Round.
  - (C) Bacilli, Cocci, Spirochetes, Coccobacilli
  - (D) Micro, Meso, Macro, Mega
- 41 Microfauna has size :
- (A) 1 – 100 cm
  - (B) 1 – 100 m
  - (C) 1 - 2 cm
  - (D) 0.1 – 0.2 inches
- 42 The ability to create own species through burrowing activity :
- (A) Mesofauna
  - (B) Microfauna
  - (C) Megafauna
  - (D) Macrofauna
- 43 Who inhibit water films ?
- (A) Mesofauna
  - (B) Microfauna
  - (C) Megafauna
  - (D) Macrofauna
- 44 Microbial biomass is measured to determine :
- (A) Site disturbance and soil pollution
  - (B) All the these
  - (C) Microbiota to management
  - (D) Environmental change

- 45 What is the role of nonfumigated soil during CFI ?
- (A) Control
  - (B) Nothing
  - (C) Test
  - (D) Blanket
- 46 Application of CFE is for :
- (A) Chemical composition and management
  - (B) Soil pollution and disturbance
  - (C) Quantification of microbial constituents
  - (D) Structural analysis of soil
- 47 Which method can be used for all type of soils ?
- (A) CIF
  - (B) CEF
  - (C) CFI
  - (D) CFE
- 48 The abbreviation SIR stands for :
- (A) Substrate Induced Reactions
  - (B) Sequential Induced Respiration
  - (C) Sequential Induced Reactions
  - (D) Substrate Induced Respiration
- 49 Significance of SIR method :
- (A) To measure relative biomass of soil microbial community
  - (B) all of these
  - (C) Estimate carbon in all heterotropic mass
  - (D) Measuring respiration by adding substrate
- 50 Isotopic composition of CFI methods is :
- (A)  $^{15}\text{N}$ ,  $^{32}\text{P}$ ,  $^{35}\text{S}$
  - (B)  $^{15}\text{C}$ ,  $^{32}\text{P}$ ,  $^{35}\text{S}$
  - (C)  $^{32}\text{C}$ ,  $^{35}\text{C}$ ,  $^{15}\text{C}$
  - (D)  $^{14}\text{C}$ ,  $^{13}\text{C}$ ,  $^{15}\text{C}$