DF-3045
B. Sc. (Sem. III) (Environment Science) Examination
March/April - 2016
302 : Soil Sciences

Time : 2 Hours] [Total Marks : 50

सूचनाएँ/Instructions :

(1) Fill up strictly the details of ** pregunta** signs on your answer book.

(2) There are 50 questions and each question carries one (1) mark and all are compulsory.

(3) Read the question carefully before selecting the correct option.

O.M.R. Sheet का अनेक अनेक सूचनाओं से आकर्षित है। O.M.R. Sheet का प्रश्न का अंत है।

Important instructions to fill up O.M.R. Sheet is given on back side of the provided O.M.R. Sheet.
Isotopes used in CFE methods is:
(A) $^{13}$N, $^{32}$P, $^{35}$S, $^{32}$C (B) $^{15}$C, $^{32}$P, $^{35}$S, $^{14}$C
(C) $^{14}$C, $^{13}$C, $^{15}$N, $^{32}$P, $^{35}$S (D) $^{14}$C, $^{13}$C, $^{15}$C

Isotopes labeled analysis require instrument like:
(A) Isotope ratio mass spectrometer
(B) Infrared mass spectrometer
(C) UV spectrometer
(D) Fluorescent microscope

Lucifer Enzyme require cofactor to activate:
(A) Cl$^-$ (B) OH$^-$
(C) Ca$^{+2}$ (D) Mg$^{+2}$

Application of scintillation counter is:
(A) To measure isotopes
(B) To measure organic matter
(C) To measure nucleic acid
(D) To measure ATP content

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

The buffer reaction occur in soil due to:
(A) Soil microbiota
(B) Decrease in soil biota
(C) Soil erosion
(D) Plant nutrient absorption

Soil nutrients are utilized by plants as a reaction of:
(A) Immobilization (B) All of these
(C) Ion exchange (D) Mineralization

Microbial activity of soil depends on:
(A) Soil fertilization
(B) Concentration of chemicals
(C) Ratio of C:N
(D) Adequate energy supply from OH

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

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) Cilicate tetrahedra and aluminium octahedra
   (B) Salts and miner
   (C) Nitrates and Nitrites
   (D) CaCO₃ and MgCO₃

13 CEC abbreviation stands for:
   (A) Cation Exchangeable Chemicals
   (B) Cation Exchange Capacity
   (C) Cobalt Electron Compound
   (D) Chemicals Exchange Capacity

14 AEC abbreviation stands for:
   (A) Air Exchangeable 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 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 N₂ levels.
   (B) increasing atmospheric N₂ levels.
   (C) Decreasing atmospheric CO₂ levels.
   (D) Increasing atmospheric CO₂ 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 CO₂ from accumulating at rapid rate in the atmosphere
(B) Both Create deposits for fossil fuels and Keep CO₂ from accumulating at rapid rate in the atmosphere
(C) Absorb CO₂ 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 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 play 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, Actinomyctes, 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 heterotrophic 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) $^{14}\text{C}, ^{13}\text{C}, ^{15}\text{C}$