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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.

Name of the Examination :

☛ B. SC. (SEM. III) (ENVIRONMENT SCIENCE)

Name of the Subject :

☛ 302 : SOIL SCIENCES

☛ Subject Code No. : 3 0 4 5 ☛ Section No. (1, 2,.....) : Nil

Seat No. :

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 Carbon in the atmosphere is most often found as :

(A) fossil fuel

(B) carbon monoxide

(C) carbon dioxide

(D) stratospheric ozone

2 The heating of the lower layer of the atmosphere from radiation absorbed by certain heat-absorbing gases is called :

(A) The greenhouse effect

(B) The photosynthesis effect

(C) Smog

(D) The adiabatic effect

3 What is the purpose of a carbon sink ?

(A) Create deposits for fossil fuels

(B) Keep CO_2 from accumulating at rapid rate in the atmosphere

(C) Both Create deposits for fossil fuels and Keep CO_2 from accumulating at rapid rate in the atmosphere

(D) Absorb CO_2 from the atmosphere

4 Energy flow depends on :

(A) Consumers decompose the substrate

(B) Consumers absorb solar energy

(C) Origin of energy

(D) Degradation rate

5 Which of the following is contributing to an overload of the carbon cycle?

(A) Cellular respiration

(B) Deforestation

(C) All of these

(D) Photosynthesis

6 Nitrogen that is used by plants is in the form of...

(A) Nitrates

(B) Ammonia

(C) Dinitrosomonas

(D) Nitrogen monoxides

7 What do plants do with the nitrogen they absorb ?

(A) Use in photosynthesis

(B) For protein synthesies

(C) For nitrogen adsorption

(D) Kill other plants

8 The conversion of nitrogen gas to nitrates by bacteria. is called;

(A) Denitrification

(B) Ammonification

(C) Nitrogen fixation

(D) Nitrification

9 When is ammonia released ?

(A) When the animals fart

(B) Dougs hair

(C) Burning of plant material

(D) During the break down of dead animals by fungi and bacteria.

10 What is the function of nitrifying bacteria ?

(A) The conversion of ammonia into nitrates.

(B) The conversion of nitrates into nitrogen monoxide

(C) All of these

(D) The conversion of nitrates into ammonia.

11 Heterotropic animals facilitates activity and diversity of _____.
(A) Bacteria and Fungi
(B) Other carnivorous
(C) Rodents and human
(D) Plants

12 Microbial flora works as a _____ in Macro and Microecosystem.
(A) Barrier
(B) Both
(C) None of the these
(D) Link

13 Description and exploration of Microarthropods among total microbial diversity available is :
(A) 15%
(B) 30%
(C) 50%
(D) 10%

14 Connections among species biodiversity show :
(A) Community development
(B) Pollution dynamics
(C) All of these
(D) Ecosystem functioning and Processes

15 Research focuses in soil ecosystem on :
(A) Soil awareness with pollution
(B) Soil composition and Function
(C) Cooperation of multiple disciplines and lumping of animals into functional group
(D) Computer knowledge with soil texture

16 Soil microflora playa role in ecosystem by :
(A) Magnification
(B) Increase population
(C) Process of metabolism
(D) Degradation and Decomposition

17 Following are temporary soil residents :
(A) Earthworms, Amoebae
(B) Cutworms, Dipterans
(C) Mosquitoes, Tick
(D) Actinomycetes, Fungi

18 Following are the Permanent resident of Ecosystem :
(A) Gnats
(B) Cutworms
(C) Collembolans
(D) Velvet mites

19 Periodic residents of Soil Ecosystem are :
(A) Velvet Mites
(B) Cutworms
(C) Collembolans
(D) Gnats

20 According to size soil fauna is classified as :
(A) Micro, Meso, Macro, Mega
(B) Bacteria, Fungi, Actinomyctes, Virus
(C) Big, Small, Large, Round.
(D) Bacilli, Cocci, Spirochetes, Coccobacilli

21 Microfauna has size :
(A) 0.1 – 0.2 inches
(B) 1 – 100 cm
(C) 1 – 100 m
(D) 1 - 2 cm

22 The ability to create own species through burrowing activity :
(A) Macrofauna
(B) Mesofauna
(C) Microfauna
(D) Megafauna

23 Who inhibit water films ?
(A) Macrofauna
(B) Mesofauna
(C) Microfauna
(D) Megafauna

24 Microbial biomass is measured to determine :
(A) Environmental change
(B) Site disturbance and soil pollution
(C) All the these
(D) Microbiota to management

25 What is the role of nonfumigated soil during CFI ?

(A) Blanket

(B) Control

(C) Nothing

(D) Test

26 Application of CFE is for :

(A) Structural analysis of soil

(B) Chemical composition and management

(C) Soil pollution and disturbance

(D) Quantification of microbial constituents

27 Which method can be used for all type of soils ?

(A) CFE

(B) CIF

(C) CEF

(D) CFI

28 The abbrevation SIR stands for :

(A) Substrate Induced Respiration

(B) Substrate Induced Reactions

(C) Sequential Induced Respiration

(D) Sequential Induced Reactions

29 Significance of SIR method :

(A) Measuring respiration by adding substrate

(B) To measure relative biomass of soil microbial community

(C) all of these

(D) Estimate carbon in all heterotropic mass

30 Isotopic composition of CFI methods is :

(A) ^{14}C, ^{13}C, ^{15}C

(B) ^{15}N, ^{32}P, ^{35}S

(C) ^{15}C, ^{32}P, ^{35}S

(D) ^{32}C, ^{35}C, ^{15}C

31 Isotopes used in CFE methods is :
(A) ^{14}C, ^{13}C, ^{15}C, (B) ^{15}N, ^{32}P, ^{35}S, ^{32}C
(C) ^{15}C, ^{32}P, ^{35}S, ^{14}C (D) ^{14}C, ^{13}C, ^{15}N, ^{32}P, ^{35}S

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

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

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

35 What is the role of landscape scale analysis ?
(A) Tools to identify and explain spatial relationship between physico - chemical properties
(B) Tools to identify Microbial population and its biomass
(C) Tool to measure population dynamics
(D) Soil composition and population relationship

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

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

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

39 Cation and Anion exchange in soil occurs between :
(A) Chemical compounds present in soil
(B) Microbiota of soil, soil particles and water
(C) Water, Chemical bonds, soil particles
(D) Clay minerals, inorganic compound and Plant roots

40 Cation exchange in soil comprises of _____ volume.
(A) 30% (B) 50%
(C) 100% (D) 10%

41 The solid portion in soil comprises of :
(A) Salts and water
(B) Soil particles and water
(C) WHC and FC
(D) Inorganic minerals and OM

42 Primary elements present in clay fraction are :
(A) $CaCO_3$ and $MgCO_3$
(B) Cilicatetrahedra and aluminiumoctahedra
(C) Salts and miner
(D) Nitrates and Nitrites

43 CEC abbrevation stands for :
(A) Chemicals Exchange Capacity
(B) Cation Exchangable Chemicals
(C) Cation Exchange Capacity
(D) Cobalt Electron Compound

44 AEC abbrevation stands for :
(A) Anion Exchange Capacity
(B) Air Exchangaable Chemicals
(C) Anion Exchange Chemicals
(D) Atomic Exchange Chemicals

45 Microbe—Plant interactions are known as:
(A) Epiphytes and Endophytes both (B) Endophytes
(C) none of the these (D) Epiphytes

46 During photosynthesis, carbon is :
(A) broken down and released from the remains of living organism
(B) converted by organisms from a gas to carbohydrates
(C) released by organisms as carbon dioxide
(D) released from wood as carbon dioxide when wood is burned

47 Plants capture and transfer solar energy in a process called :
(A) Ecology. (B) Transpiration.
(C) Photosynthesis (D) Oikos.

48 Carbon is stored as a type of rock called carbonate in the :
(A) Atmosphere. (B) hydrosphere.
(C) Geosphere. (D) biosphere.

49 Which of these could increase average global temperatures ?
(A) Increased ocean algal blooms
(B) Decreased carbon dioxide emissions
(C) Increased number of animal species
(D) Increased use of fossil fuels

50 Permanent deforestation can contribute to potential global warming by :
(A) Increasing atmospheric CO_2 levels.
(B) Decreasing atmospheric N_2 levels.
(C) increasing atmospheric N_2 levels.
(D) Decreasing atmospheric CO_2 levels.