ICAR AIEEA PG Soil Science 2024 Question Paper

Time Allowed :2 hours	**Maximum Marks :**120	**Total Questions :**120

1. Match List-I with List-II.

List-I (Characteristic)	**List-II (Law/Theory)**
(A) Saturated flow in soil	(II) Darcy's law
(B) Soil textural analysis	(IV) Stokes law
(C) Wavelength of emitted radiation-temperature relation	(I) Wien's law
(D) Diffusive flux of gas	(III) Fick's law

(1) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

(2) (A)-(II), (B)-(IV), (C)-(I), (D)-(III)

(3) (A)-(III), (B)-(IV), (C)-(I), (D)-(II)

(4) (A)-(III), (B)-(IV), (C)-(IV), (D)-(I)

---

2. Removal of finer materials down from upper to lower part of soil profile leads to the formation of ——

(1) Saline soils

(2) Regur

(3) Karsi soils

(4) Kankar

---

3. Assertion (A): Drainage increases the soil temperature.

Reason (R): Drainage decreases the heat capacity.

(1) Both (A) and (R) are correct and (R) is the correct explanation of (A).

(2) Both (A) and (R) are correct but (R) is NOT the correct explanation of (A).

(3) (A) is correct but (R) is not correct.

(4) (A) is not correct but (R) is correct.

---

4. Assertion (A): The effective rainfall erosion index of a given area is linearly proportional to the percentage of ground that is not covered by vegetation.
Reason (R): The rain erosion index includes both the kinetic energy of rain and the maximum 30-minute rain intensity.

(1) Both (A) and (R) are correct and (R) is the correct explanation of (A).

(2) Both (A) and (R) are correct but (R) is NOT the correct explanation of (A).

(3) (A) is correct but (R) is not correct.

(4) (A) is not correct but (R) is correct.

---

5. The O_a sub-horizon denotes-

(1) Organic horizon with highly decomposed organic matter

(2) Organic horizon with intermediately decomposed organic matter

(3) Organic horizon with least decomposed organic matter

(4) Organic horizon without decomposed organic matter

---

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---

6. Match List-I with List-II

List-I (Rock)	**List-II (Mineral)**
(A) Igneous rock	(II) Granite
(B) Marine sedimentary rock	(III) Limestone
(C) Metamorphic rock	(IV) Gneiss
(D) Terrestrial sedimentary rock	(I) Volcanic ash

(1) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

(2) (A)-(II), (B)-(III), (C)-(IV), (D)-(I)

(3) (A)-(I), (B)-(II), (C)-(IV), (D)-(III)

(4) (A)-(III), (B)-(IV), (C)-(I), (D)-(II)

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7. Saturated hydraulic conductivity in situ is measured by

(1) Guelph permeameter

(2) Neutron probe

(3) Infiltrometer

(4) Piezometer

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8. Original design of tensiometer was first proposed by

(1) Willard Gardner

(2) L. A. Richards

(3) B. E. Livingstom

(4) Henry Darcy

---

9. The comprehensive system of soil classification is based on

(1) Soil colour and vegetation

(2) Soil environmental factors

(3) Measurable soil properties

(4) Intrinsic properties of soil

---

10. Given below are two statements:

Statement (I): The surface of a 'Pedon' is roughly polygonal.

Statement (II): The surface area of a pedon ranges from 1 m^2 to 10 m^2.

(1) Both Statement (I) and Statement (II) are true.

(2) Both Statement (I) and Statement (II) are false.

(3) Statement (I) is true but Statement (II) is false.

(4) Statement (I) is false but Statement (II) is true.

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11. Which of the following statement is not true for chloroplast

(1) It contains DNA as its genetic material

(2) It produces ATP

(3) It has an electron transport chain

(4) It contains transcriptional but no translational apparatus

---

12. Colchicine treated cells are arrested in

(1) S phase

(2) Prophase

(3) G1 phase

(4) Metaphase

---

13. Arrange the following consequences of submergence in the soil in the correct sequence:

(A). Depletion of soil oxygen,

(B). Accumulation of toxic substances like hydrogen sulfide,

(C). Loss of beneficial soil organisms,

(D). Increased soil pH in acidic soil.

(1) (A), (C), (B), (D)

(2) (A), (B), (C), (D)

(3) (B), (A), (D), (C)

(4) (C), (B), (D), (A)

---

14. Match List-I with List-II:

List-I (Reaction)	**List-II (Occurrence)**
(A) Dark acidification	(II) CAM plants
(B) Fatty acid synthesis	(I) Smooth endoplasmic reticulum
(C) Hill reaction	(IV) Oxygen evolution
(D) Rubisco	(V) Photorespiration
(E) Calvin cycle	(III) Regeneration of RUBP

(1) (A)-(III), (B)-(I), (C)-(I), (D)-(IV), (E)-(V)

(2) (A)-(II), (B)-(I), (C)-(IV), (D)-(V), (E)-(III)

(3) (A)-(II), (B)-(I), (C)-(IV), (D)-(V), (E)-(III)

(4) (A)-(II), (B)-(V), (C)-(I), (D)-(III), (E)-(V)

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15. Arrange the following forms of soil consistencies with decreasing soil wetness:

(A) Hard

(B) Friable/Soft

(C) Plastic

(D) Viscous

(E) Sticky

(1) (A), (B), (C), (D), (E)

(2) (A), (B), (C), (E), (D)

(3) (B), (A), (E), (D), (C)

(4) (D), (E), (C), (B), (A)

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16. Weed not found in rice crop is:

(1) Echinochloa spp.

(2) Cyperus iria

(3) Chenopodium album

(4) Eleusine indica

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17. A stem nodulating plant:

(1) Glyricidia maculata

(2) Sesbania rostrata

(3) Pongamia pinnata

(4) Sesbania aculeata

---

18. The pF range of soft or friable consistency of soil is:

(1) More than 4.5

(2) 2.8–4.5

(3) 0.5–2.8

(4) Less than 0.5

---

19. The Indian Remote Sensing Satellite (IRS):

(A) Look over a fixed point at the same local time

(B) Are at a low altitude ($<$1000 km)

(C) Are used for weathering forecasting?

(D) Have large agricultural and natural resources application

(E) Provide service to telecommunications

(1) (A), (B), and (D) only

(2) (A), (B), and (C) only

(3) (A), (B), (C), and (D)

(4) (A), (D), and (E) only

---

20. Choose the correct sequence:

(1) Chrysanthemum cinerariaefolium $\rightarrow$ Pyrethrins $\rightarrow$ Insecticide

(2) Streptomyces griseus $\rightarrow$ Streptomycin $\rightarrow$ Nematicide

(3) Streptomyces griseochromogenes $\rightarrow$ Blasticidin $\rightarrow$ Insecticide

(4) Streptomyces griseochromogenes $\rightarrow$ Blasticidin $\rightarrow$ Herbicide

21. Model is an example of

(1) Display type of visual aid

(2) Attractive type of visual aid

(3) Design type of visual aid

(4) Presentation type of visual aid

---

22. Arrange the following in decreasing order according to the number of linkages among silicon tetrahedra of soil particles:

(A) Nesosilicates

(B) Phyllosilicates

(C) Tectosilicates

(D) Inosilicates

Choose the **correct** answer from the options given below:

(1) (A), (B), (C), (D)

(2) (C), (B), (D), (A)

(3) (B), (A), (D), (C)

(4) (A), (B), (D), (C)

---

23. The organic certificate of an organic farm is valid for

(1) One year

(2) Two year

(3) Three years

(4) Four year

---

24. Organic nutrients in water bodies promote

(1) Growth of the natural population of aquatic bacteria

(2) BOD

(3) Eutrophication

(4) Growth of the natural population of aquatic bacteria, BOD and Eutrophication

---

25. Assertion (A): Gypsum is commonly used for the reclamation of sodic soil.

Reason (R): Reclamation process involves reduction in exchangeable sodium with calcium and its removal from soil solution through leaching.

(1) Both (A) and (R) are true and (R) is the correct explanation of (A).

(2) Both (A) and (R) are true but (R) is NOT the correct explanation of (A).

(3) (A) is true but (R) is false.

(4) (A) is false but (R) is true.

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26. Statement (I): Single superphosphate, double superphosphate, triple superphosphate are mono-calcium phosphate.

Statement (II): Mono calcium phosphates are water soluble and thus have high leaching losses.

(1) Both Statement (I) and Statement (II) are true.

(2) Both Statement (I) and Statement (II) are false.

(3) Statement (I) is true but Statement (II) is false.

(4) Statement (I) is false but Statement (II) is true.

---

27. Laterite soil is rich in

(1) Ca

(2) Fe

(3) C

(4) Cu

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28. The amount of organic matter in a soil with 'Value 0' according to Munsell colour system is–

(1) High

(2) Medium

(3) Low

(4) Does not depend.

---

29. The parameters of N use efficiency are

(A) Apparent N. recovery

(B) Agronomic efficiency

(C) Production efficiency

(D) Physiological N efficiency

Choose the **correct** answer from the options given below:

(1) (A), (B) and (D) only.

(2) (A), (B) and (C) only.

(3) (A), (B), (C) and (D).

(4) (B), (C) and (D) only.

---

30. Which of the following nutrient is related with deficiency symptoms like discoloration of leaf buds, breaking and dropping of buds?

(1) Boron

(2) Molybdenum

(3) Iron

(4) Magnesium

---

31. The steady-state soil infiltration rate is

(1) Soil Surface controlled

(2) Soil profile controlled

(3) Water supply controlled

(4) Ground water controlled

---

32. Dolomite is a source of

(A) Calcium

(B) Magnesium

(C) Iron

(D) Sulphur

Choose the **correct** answer from the options given below:

(1) (A), (B) and (D) only.

(2) (A) and (B) only.

(3) (A), (B), (C) and (D).

(4) (B), (C) and (D) only.

---

33. Assertion (A): Equilibrium water content in soil at a certain matric potential is higher when the soil is under the drying process (desorption) compared to when the soil is under the wetting process (sorption).

Reason (R): The contact angle between water and the soil solid phase is greater during the imbibition of water than during drainage.

(1) Both (A) and (R) are correct and (R) is the correct explanation of (A).

(2) Both (A) and (R) are correct but (R) is NOT the correct explanation of (A).

(3) (A) is correct but (R) is not correct.

(4) (A) is not correct but (R) is correct.

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34. Elements associated with nitrogenase enzyme in biological nitrogen fixation

(A) Molybdenum

(B) Iron

(C) Copper

(D) Nickel

Choose the **correct** answer from the options given below:

(1) (A), (B) and (D) only

(2) (A) and (B) only

(3) (A), (B), (C) and (D)

(4) (B), (C) and (D) only

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35. Mottle leaf of citrus is caused by the deficiency of

(1) Mo

(2) B

(3) Zn

(4) Cu

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36. Bray No. 1 is

(1) 0.5M $NaHCO_3$ at pH 8.5

(2) 0.5N $NaHCO_3$ at pH 8.5

(3) 0.03M NH_4F + 0.025N HCl

(4) 0.03N NH_4F + 0.025N HCl

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37. Microorganisms that oxidise ammonia to nitrite

(A) Nitrosomonas

(B) Thiobacillus

(C) Nitrobacter

(D) Nitrosolobus

Choose the **correct** answer from the options given below:

(1) (A), (B) and (D) only.

(2) (A) and (D) only.

(3) (A), (B), (C) and (D).

(4) (B), (C) and (D) only.

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38. According to Bray's Nutrient Mobility concept, which among following element is mobile in plants but immobile in soil?

(1) Nitrogen

(2) Phosphorus

(3) Boron

(4) Zinc

---

39. Arrange the following in decreasing order of Basal Spacing:

(A) Kaolinite

(B) Montmorillonite

(C) Illite

(D) Vermiculite

Choose the **correct** answer from the options given below:

(1) (A), (B), (D), (C)

(2) (A), (B), (C), (D)

(3) (B), (A), (D), (C)

(4) (B), (D), (C), (A)

---

40. Match List-I with List-II

List-I (Activity)	List-II (Plant Direction)
(A) Phototropism	(III) Bending towards light
(B) Geotropism	(I) Bend towards soil
(C) Thigmotropism	(IV) Response to touch or movement
(D) Photoperiodism	(II) Response to day length

Choose the **correct** answer from the options given below:

(1) (A)-(III), (B)-(I), (C)-(IV), (D)-(II)

(2) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

(3) (A)-(I), (B)-(III), (C)-(IV), (D)-(II)

(4) (A)-(III), (B)-(IV), (C)-(I), (D)-(II)

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41. The term oligotrophic refers to

(1) Higher nutrients in the water

(2) High aquatic productivity

(3) Algal blooms

(4) Low nutrients and low productivity

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42. Which of the following is/are the example of nitrifying bacteria?

(1) Nitrosomonas

(2) Nitrobacter

(3) Nitrospira

(4) Nitrosomonas, Nitrobacter, Nitrospira

---

43. Match List-I with List-II

List-I (Event)	List-II (Observation)
(A) Harvest Planning	(III) Planning optimal routes for harvesting equipment to maximize efficiency
(B) Soil Sampling	(II) Collecting soil samples at precise locations for analysis and management decisions
(C) Boundary Mapping	(I) Determining field boundaries and property lines accurately
(D) Pest Management	(IV) Tracking pest populations and movements to inform control strategies

Choose the **correct** answer from the options given below:

(1) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

(2) (A)-(III), (B)-(I), (C)-(IV), (D)-(II)

(3) (A)-(III), (B)-(II), (C)-(I), (D)-(IV)

(4) (A)-(III), (B)-(IV), (C)-(I), (D)-(II)

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44. The height of the capillary rise of water in the soil is

(A) Inversely proportional to the radius of the tube

(B) Inversely proportional to the density of water

(C) Directly proportional to the radius of the tube

(D) Inversely proportional to the surface tension of water

Choose the **correct** answer from the options given below:

(1) (A), (B) and (D) only

(2) (A) only

(3) (A) and (B) only

(4) (D) only

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45. Statement (I): Hue is a measure of the chromatic composition of light.

Statement (II): The Munsell colour system is based on five principal hues.

(1) Both Statement (I) and Statement (II) are true.

(2) Both Statement (I) and Statement (II) are false.

(3) Statement (I) is true but Statement (II) is false.

(4) Statement (I) is false but Statement (II) is true.

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46. Assertion (A): Cations adsorbed on soil colloids determine aggregate formation.

Reason (R): Cations form electropositive links between electronegative soil particles.

(1) Both (A) and (R) are correct and (R) is the correct explanation of (A)

(2) Both (A) and (R) are correct but (R) is NOT the correct explanation of (A)

(3) (A) is correct but (R) is not correct

(4) (A) is not correct but (R) is correct

---

47. The pF curve is same as

(1) Moisture - density relation

(2) Soil temperature - water relation

(3) Soil pH - base saturation relation

(4) Soil water content - matric potential relation

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48. Assertion (A): Implementing agroforestry practices helps in soil conservation.

Reason (R): Agroforestry combines the cultivation of trees and crops on the same land, which reduces soil erosion by providing ground cover and enhancing soil structure through the roots of trees.

(1) Both (A) and (R) are correct and (R) is the correct explanation of (A)

(2) Both (A) and (R) are correct but (R) is NOT the correct explanation of (A)

(3) (A) is correct but (R) is not correct

(4) (A) is not correct but (R) is correct

---

49. Arrange the following factors affecting irrigation water quality in agriculture in the correct sequence:

(A) Salinity

(B) pH

(C) Sediment content

(D) Chemical contaminants

(1) (A), (B), (C), (D)

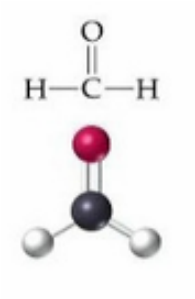
(2) (A), (C), (D), (B)

(3) (B), (A), (D), (C)

(4) (C), (B), (D), (A)

---

50. Which group is this?



(1) Ketone

(2) Carboxylic acid

(3) Aldehyde

(4) Amide

---

51. Match List-I with List-II (Crops with water requirement)

Crop	Water Requirement (cm)
(A) Sugar cane	(I) 200
(B) Rice	(II) 100
(C) Wheat	(III) 35
(D) Spinach leafy vegetable	(IV) 15

(1) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

(2) (A)-(IV), (B)-(I), (C)-(III), (D)-(II)

(3) (A)-(I), (B)-(III), (C)-(IV), (D)-(II)

(4) (A)-(III), (B)-(IV), (C)-(I), (D)-(II)

---

52. Match List-I with List-II (Acts and their year of enactment)

Act	Year
(A) The Environment Protection Act	(II) 1986
(B) The Forest Conservation Act	(I) 1980
(C) The Water (Prevention and Control of Pollution) Act	(III) 1974
(D) The Wildlife Protection Act	(IV) 1972

(1) (A)-(III), (B)-(I), (C)-(IV), (D)-(II)

(2) (A)-(II), (B)-(I), (C)-(III), (D)-(IV)

(3) (A)-(IV), (B)-(III), (C)-(I), (D)-(II)

(4) (A)-(III), (B)-(IV), (C)-(I), (D)-(II)

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53. Which one of the following is an aromatic amino acid?

(1) Histidine

(2) Proline

(3) Tyrosine

(4) Lysine

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54. Match List-I with List-II (Physical Parameters and their Units)

Physical Parameter	Unit
(A) Surface tension	(II) Newton per meter
(B) Viscosity	(IV) Pascal-second
(C) Soil permeability	(III) Meter per hour
(D) Particle density	(I) Kilogram per cubic meter

(1) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

(2) (A)-(I), (B)-(IV), (C)-(III), (D)-(II)

(3) (A)-(II), (B)-(IV), (C)-(III), (D)-(I)

(4) (A)-(III), (B)-(IV), (C)-(I), (D)-(II)

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55. Dichloral urea is used as a

(1) Soil herbicide for pre emergence treatment

(2) Soil herbicide for post-emergence treatment

(3) Soil nematicide for pre emergence treatment

(4) Soil fungicide for post emergence treatment

---

56. Mass media channels are relatively more important than interpersonal channels for

(1) Laggard

(2) Late Adopters

(3) Early adopters

(4) Early Majority

---

57. Assertion (A): The break of monsoon at critical stages for soil moisture stress leads to a reduction in yield.

Reason (R): Only when the break of monsoon exceeds 15 days duration or more.

(1) Both (A) and (R) are correct and (R) is the correct explanation of (A)

(2) Both (A) and (R) are correct but (R) is NOT the correct explanation of (A)

(3) (A) is correct but (R) is not correct

(4) (A) is not correct but (R) is correct

---

58. Assertion (A): Darc's law is valid for a steady and stationary flow process in the soil.

Reason (R): In a steady flow condition, potential and gradient at every point in the flow path remain constant.

(1) Both (A) and (R) are correct and (R) is the correct explanation of (A)

(2) Both (A) and (R) are correct but (R) is NOT the correct explanation of (A)

(3) (A) is correct but (R) is not correct

(4) (A) is not correct but (R) is correct

---

59. The most common 1:1 type of clay mineral in soil is–

(1) Montmorillonite

(2) Kaolinite

(3) Vermiculite

(4) Halloysite

---

60. Stable compound formed during urea hydrolysis

(1) Ammonium hydroxide

(2) Ammonium carbamate

(3) Ammonia

(4) Ammonium carbonate

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61. The form of phosphorus in rock phosphate is:

(1) $Ca(H_2PO_4)_2$

(2) $CaHPO_4$

(3) $Ca_3(PO_4)_2$

(4) $3(Ca_3(PO_4)_2)\cdot Ca(OH)_2$

---

62. Humic substances are composed of:

(1) (A), (B) and (D) only

(2) (A), (B) and (C) only

(3) (A), (B), (C) and (D)

(4) (B), (C) and (D) only

---

63. Assertion (A): Waterlogged soil typically displays a grayish color due to reduced oxygen levels.

Reason (R): Upland soil usually maintains a reddish or brownish hue due to its well-aerated nature.

(1) Both (A) and (R) are correct and (R) is the correct explanation of (A).

(2) Both (A) and (R) are correct but (R) is NOT the correct explanation of (A).

(3) (A) is correct but (R) is not correct.

(4) (A) is not correct but (R) is correct.

---

64. Match List-I with List-II and select the correct answer from the options given below:

List-I (Event)	**List-II (Function)**
(A) Thermal Imaging	(I) Monitoring crop water stress and irrigation management
(B) Radar Remote Sensing	(II) Identifying crop types and crop health
(C) Normalized Difference Vegetation Index (NDVI)	(III) Mapping soil moisture content

and terrain elevation

(D) Multispectral Imaging (IV) Detecting temperature variations in crops for stress detection

(1) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

(2) (A)-(I), (B)-(III), (C)-(IV), (D)-(II)

(3) (A)-(I), (B)-(III), (C)-(II), (D)-(IV)

(4) (A)-(III), (B)-(IV), (C)-(I), (D)-(II)

---

65. Certified Organic logo in India is –

(1) India organic

(2) India green

(3) India Healthy

(4) India Fresh

---

66. Which covalent bond is present in nucleic acid?

(1) Peptide bond

(2) Phosphodiester bond

(3) Glycosidic bond

(4) Thymine bond

---

67. Match List-I with List-II and choose the correct answer:

List-I (Event)	**List-II (Occurrence)**
(A) Carcinogenic	(I) Promoting cancer
(B) Pollution	(II) Photochemical smog
(C) Eutrophication	(III) Over application of fertilizer
(D) Gene	(IV) Cell

(1) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

(2) (A)-(I), (B)-(III), (C)-(I), (D)-(IV)

(3) (A)-(I), (B)-(II), (C)-(IV), (D)-(III)

(4) (A)-(III), (B)-(IV), (C)-(I), (D)-(II)

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68. Arrange the following in increasing order of Water Use Efficiency:

(A) Drip Irrigation

(B) Pitcher pot Irrigation

(C) Surface Irrigation

(D) Sprinkler Irrigation

(1) (A), (B), (C), (D)

(2) (D), (C), (B), (A)

(3) (B), (A), (D), (C)

(4) (C), (D), (A), (B)

---

69. Chemical weathering involving complete disintegration or modification in structure and composition of primary minerals is –

(1) Hydration

(2) Oxidation

(3) Hydrolysis

(4) Carbonation

---

70. Certification is essential for authenticating organic products because:

(A) A third-party certification agency monitoring the organic production system

(B) Organic products are produced by following NPOP guidelines

(C) Organic farmers are dedicated in cultivation practices

(D) Potentiality of marketing of organic products are increasing

(1) (A), (B) and (D) only

(2) (A), (C) and (D) only

(3) (A) and (B) only

(4) (B), (C) and (D) only

---

71. Natural Farming is associated with

(1) John Howard

(2) Nicholas Lampkin

(3) Lord Northbourne

(4) Masanobu Fukuoka

---

72. Match List-I with List-II:

List-I (Method) **List-II (Determination)**

(A) Kjeldahl method (III) Determines the total nitrogen content in the soil

(B) Bray P1 test (I) Primarily assesses the available phosphorus content in the soil

(C) Ammonium acetate extraction (II) Measures the potassium content in the soil solution

(D) Flame photometry (IV) Quantifies the exchangeable ammonium and potassium content in the soil

(1) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

(2) (A)-(III), (B)-(I), (C)-(IV), (D)-(II)

(3) (A)-(III), (B)-(I), (C)-(II), (D)-(IV)

(4) (A)-(III), (B)-(I), (C)-(IV), (D)-(II)

---

73. The different pools of potassium in soils are

(A) Soil solution K

(B) Fixed K

(C) Exchangeable K

(D) Lattice K

(1) (A), (B) and (D) only

(2) (A), (B) and (C) only

(3) (A), (B), (C) and (D)

(4) (B), (C) and (D) only

---

74. Match List-I with List-II:

List-I (Theory proposed) **List-II (Name of Theory)**

(A) Hydrodynamics (I) Daniel Bernoulli

(B) Acoustics (II) Johannes Kepler

(C) Mechanics (III) Hermann Von Helmholtz

(D) Aerodynamics (IV) Ludwig Prandtl

(1) (A)-(I), (B)-(III), (C)-(II), (D)-(IV)

(2) (A)-(IV), (B)-(I), (C)-(III), (D)-(I)

(3) (A)-(I), (B)-(III), (C)-(IV), (D)-(III)

(4) (A)-(I), (B)-(III), (C)-(II), (D)-(IV)

---

75. The process by which neutrons lose their kinetic energy through elastic collisions in the soil is known as

(1) Normalization

(2) Cooling

(3) Radiation

(4) Thermalization

---

76. Given below are two statements:

Statement (I): Nitrobacteria are obligate autotrophic aerobes

Statement (II): Nitrate will not be produced from NH_4^+ in the absence of oxygen

(1) Both Statement (I) and Statement (II) are correct

(2) Both Statement (I) and Statement (II) are incorrect

(3) Statement (I) is correct but Statement (II) is incorrect

(4) Statement (I) is incorrect but Statement (II) is correct

---

77. Assertion (A): Ammonium-based fertilisers are the major contributors to soil acidification.

Reason (R): Especially the non-leachable nitrogen ions which have been taken up by plants contribute to the soil acidity

(1) Both (A) and (R) are true and (R) is the correct explanation of (A).

(2) Both (A) and (R) are true but (R) is NOT the correct explanation of (A).

(3) (A) is true but (R) is false.

(4) (A) is false but (R) is true.

---

78. Parent material transported by wind is called

(1) Aeolian

(2) Colluvium

(3) Loess

(4) Alluvium

---

79. Nutrient supply in organic farming is based on feeding the soil not feeding the crop - Justify

(1) (A), (B) and (D) only.

(2) (A), (C) and (D) only.

(3) (B), (C) and (D) only.

(4) (B), (A) and (D) only.

---

80. Given below are two statements: Statement (I): Application of nitrogenous fertilizer leads to N_2O emission from the soil.

Statement (II): Nitrous oxide is present in large quantities compared to methane in the atmosphere and therefore possesses higher potent danger.

(1) Both Statement (I) and Statement (II) are true.

(2) Both Statement (I) and Statement (II) are false.

(3) Statement (I) is true but Statement (II) is false.

(4) Statement (I) is false but Statement (II) is true.

---

81. The term 'Organic farming' was first coined by

(1) Lord Northbourne

(2) Bill Mollison

(3) Rudolf Stainer

(4) Masanobu Fukuoka

---

82. Statement (I): The capacitance method measures soil moisture content by analyzing changes in electrical capacitance.

Statement (II): The finger-licking method estimates soil moisture content based on tactile sensations.

(1) Both Statement (I) and Statement (II) are true.

(2) Both Statement (I) and Statement (II) are false.

(3) Statement (I) is true but Statement (II) is false.

(4) Statement (I) is false but Statement (II) is true.

---

83. Match List-I (Parent rock) with List-II (Metamorphic rock)

List-I	List-II
(A) Conglomerate	(IV) Quartzite
(B) Slate	(II) Phyllite
(C) Coal	(I) Graphite
(D) Sandstone	(III) Gneiss

(1) (A) - (I), (B) - (II), (C) - (III), (D) - (IV)

(2) (A) - (III), (B) - (II), (C) - (I), (D) - (IV)

(3) (A) - (I), (B) - (III), (C) - (IV), (D) - (II)

(4) (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

---

84. Assertion (A): Organic farming promotes environmental sustainability.

Reason (R): Organic farming avoids the use of synthetic pesticides and fertilizers, which helps preserve soil health, conserve water resources, and reduce pollution of air and water bodies.

(1) Both (A) and (R) are correct and (R) is the correct explanation of (A).

(2) Both (A) and (R) are correct but (R) is NOT the correct explanation of (A).

(3) (A) is correct but (R) is not correct.

(4) (A) is not correct but (R) is correct.

---

85. Match List-I with List-II

List-I (Year): **List-II (Milestone):**

(A) 1952 (I) Agricultural Technology Management Agency (ATMA)

(B) 1964 (II) Community Development Program

(C) 1998 (III) Intensive Agricultural District Program

(D) 1960 (IV) Intensive Agricultural Area Program

(1) (A) - (III), (B) - (II), (C) - (I), (D) - (IV)

(2) (A) - (II), (B) - (III), (C) - (IV), (D) - (I)

(3) (A) - (IV), (B) - (II), (C) - (I), (D) - (III)

(4) (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

---

86. Conversion period of an organic farm is generally (for perennial crop):

(1) One year

(2) Two year

(3) Three year

(4) Four year

---

87. Bone meal is a source of:

(A) Ca

(B) N

(C) P

(D) Mo

(1) (A), (B) and (D) only.

(2) (A), (B) and (C) only.

(3) (A), (B), (C) and (D).

(4) (B), (C) and (D) only.

---

88. Match List-I with List-II

List-I (Name of Gas) **List-II (Chemical Formula)**

(A) Methane (I) C_3H_8

(B) Ethane (II) CH_4

(C) Propane (III) C_4H_{10}

(D) Butane (IV) C_2H_6

(1) (A) - (I), (B) - (II), (C) - (III), (D) - (IV)

(2) (A) - (II), (B) - (IV), (C) - (I), (D) - (III)

(3) (A) - (IV), (B) - (II), (C) - (I), (D) - (III)

(4) (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

---

89. K fixing power of clay minerals follows the order:

(A) Illite

(B) Montmorillonite

(C) Kaolinite

(D) Vermiculite

(1) (A), (B), (C), (D)

(2) (D), (A), (B), (C)

(3) (B), (A), (D), (C)

(4) (C), (B), (D), (A)

---

90. Release of iron from primary minerals and their dispersal as coatings on soil particles to impart brown to red colour to soil particles is called:

(A) Braunification

(B) Ferruginisation

(C) Rubification

(D) Laterisation

(1) (A), (B) and (D) only.

(2) (B), (C) and (D) only.

(3) (A), (B) and (C) only.

(4) (A), (C) and (D) only.

---

91. Trace elements that show affinity for sulphide minerals are called

(1) Siderophile

(2) Chalcophile

(3) Lithophile

(4) Hydrophile

---

92. Mixing of soil matrix within a pedon resulting in irregular or broken horizons over permafrost is called

(1) Eluviation

(2) Pedoturbation

(3) Illuviation

(4) Cryoturbation

---

93. Given below are two statements:

Statement (I): 2:1 layer silicates consist of two tetrahedral sheets bound to either side of an

octahedral sheet

Statement (II): Two tetrahedral sheets of 2:1 layer silicates is bound to one side of an octahedral sheet in 2:1 layer silicates

(1) Both Statement (I) and Statement (II) are correct.

(2) Both Statement (I) and Statement (II) are incorrect.

(3) Statement (I) is correct but Statement (II) is incorrect.

(4) Statement (I) is incorrect but Statement (II) is correct.

---

94. Assertion (A): Organic mulch conserves soil moisture.

Reason (R): Organic mulches cut off solar radiation falling on the soil surface and reduce evaporation.

(1) Both (A) and (R) are true and (R) is the correct explanation of (A).

(2) Both (A) and (R) are true but (R) is NOT the correct explanation of (A).

(3) (A) is true but (R) is false.

(4) (A) is false but (R) is true.

---

95. When rainfall is inadequate to meet the evapotranspiration losses, usually occurring in humid regions, it is called

(1) Invisible drought

(2) Contingent drought

(3) Meteorological drought

(4) Permanent drought

---

96. In the International Union of Soil Science classification system, fine sand has a size range of

(1) 0.2 - 2.0 mm

(2) 0.02 - 0.2 mm

(3) 0.002 - 0.02 mm

(4) ¡0.002 mm

---

97. Ecological races are also known as

(1) Ecards

(2) Ecotone

(3) Ecophens

(4) Ecotypes

---

98. Match List-I with List-II

List-I (Soil Order)	**List-II (Characteristics)**
(A) Ultisols	(III) Base saturation <35% with argillic or kandic horizon.
(B) Vertisols	(II) Clay-rich soils with swelling shrinkage properties according to soil moisture content.
(C) Mollisols	(I) Deep soils with high organic matter content and more than 50% base saturation.
(D) Alfisols	(IV) Soils that have argillic, kandic, or nitric horizon and a base saturation of 35% or greater with ochric epipedon, but may have an umbric epipedon.

---

99. Which sugar is present in DNA?

(1) Ribose

(2) Arabinose

(3) Deoxyribose

(4) Glucose

---

100. The soil hydraulic head is expressed by

(1) Potential energy per unit mass of soil water.

(2) Potential energy per unit volume of soil water.

(3) Potential energy per unit weight of soil water.

(4) Height of standing water on the soil surface.

---

101. Assertion (A): Cover cropping is a common practice in organic farming systems. Reason (R): Cover crops help to improve soil health, suppress weeds, and enhance biodiversity, aligning with the principles of organic agriculture.

(1) Both (A) and (R) are correct and (R) is the correct explanation of (A).

(2) Both (A) and (R) are correct but (R) is NOT the correct explanation of (A).

(3) (A) is correct but (R) is not correct.

(4) (A) is not correct but (R) is correct.

---

102. Father of Modern Organic Agriculture is

(1) John Howard

(2) Nicholas Lampkin

(3) Lord Northbourne

(4) Masanobu Fukuoka

---

103. Which one of the following is not a monosaccharide?

(1) Glucose

(2) Fructose

(3) Rhamnose

(4) Maltose

---

104. The characteristic of Saline-Alkali soil are

(1) pH $>$ 8.5, EC$<$ 4 dSm^{-1}, ESP $>$ 15

(2) pH $>$ 8.5, ESP $<$ 15, EC $>$ 4 dSm^{-1}

(3) pH $<$ 8.5, ESP $>$ 15, EC $<$ 4 dSm^{-1}

(4) pH $>$ 8.5, ESP $>$ 15, EC $<$ 4 dSm^{-1}

---

105. Which of the following statement(s) is/are true for tensiometer?

(A). It measures soil water potential.

(B). It is simple in operation and very useful for scheduling irrigation.

(C). It can also be used for measuring soil water flux.

(D). Although limited to < 1 bar matric potential, this range can be increased by increasing the permeability of its porous cup.

1. (A), (B) and (C) only.
2. (A), (B) and (D) only.
3. (A) and (D) only.
4. (D) only.

---

106. The most dominant exchangeable cation in the earth's crust

(1) Aluminium

(2) Calcium

(3) Sodium

(4) Magnesium

---

107. Who first observed that legumes can utilize atmospheric nitrogen?

(1) M. W. Beijerinck

(2) J. B. Boussingault

(3) A. I. Virtanen

(4) G. S. Sekhon

---

108. Element associated with urease activity

(1) Ni

(2) Mo

(3) Fe

(4) Co

---

109. Arrange the following in increasing the amount of nitrogen in the fertilizers:

(A) Ammonium sulphate

(B) Ammonium nitrate

(C) Ammonium chloride

(D) Calcium ammonium nitrate

1. (A), (B), (C), (D)

2. (A), (C), (B), (D)

3. (B), (A), (D), (C)

4. (A), (C), (D), (B)

---

110. Given below are two statements:

Statement (I): Acid sulfate soils can release harmful concentrations of heavy metals such as aluminum, iron, and manganese into the environment under acidic conditions.

Statement (II): Acid sulfate soils are typically characterized by their high organic matter content, which contributes to their fertility and ability to support diverse plant life.

(1) Both Statement (I) and Statement (II) are true.

(2) Both Statement (I) and Statement (II) are false.

(3) Statement (I) is true but Statement (II) is false.

(4) Statement (I) is false but Statement (II) is true.

---

111. Assertion (A): Manganese deficiency in plants primarily affects the photosynthetic process.

Reason (R): Manganese is a cofactor for several enzymes involved in the photosynthetic electron transport chain, facilitating electron transfer reactions within chloroplasts.

(1) Both (A) and (R) are correct and (R) is the correct explanation of (A).

(2) Both (A) and (R) are correct but (R) is NOT the correct explanation of (A).

(3) (A) is correct but (R) is not correct.

(4) (A) is not correct but (R) is correct.

---

112. Match List-I with List-II:

List-I (Element)	**List-II (Occurrence)**
(A) Chloride	(III) Splitting of water
(B) Zinc	(I) Little leaf disease
(C) Sodium	(V) Interveinal chlorosis
(D) Manganese	(II) Regeneration of PEP
(E) Molybdenum	(IV) Nitrogen metabolism

(1) (A)-(III), (B)-(I), (C)-(V), (D)-(II), (E)-(IV)

(2) (A)-(III), (B)-(I), (C)-(II), (D)-(V), (E)-(IV)

(3) (A)-(III), (B)-(I), (C)-(IV), (D)-(III), (E)-(V)

(4) (A)-(III), (B)-(IV), (C)-(V), (D)-(V), (E)-(I)

---

113. Assertion (A): Liming should not be done along with ammoniacal fertilizer application.

Reason (R): Liming leads to volatilisation loss of ammonia.

(1) Both (A) and (R) are true and (R) is the correct explanation of (A).

(2) Both (A) and (R) are true but (R) is NOT the correct explanation of (A).

(3) (A) is true but (R) is false.

(4) (A) is false but (R) is true.

---

114. Match List-I with List-II:

List-I (Type of pollution)	**List-II (Effect)**
(A) Point source pollution	(I) From a specific source (e.g., factory)
(B) Non-point source pollution	(II) Diffuse sources like runoff
(C) Groundwater pollution	(III) Contamination of underground water
(D) Surface water pollution	(IV) Lakes, rivers affected by multiple sources

(1) (A)-(I), (B)-(II), (C)-(III), (D)-(IV)

(2) (A)-(I), (B)-(III), (C)-(IV), (D)-(II)

(3) (A)-(I), (B)-(II), (C)-(IV), (D)-(III)

(4) (A)-(III), (B)-(IV), (C)-(I), (D)-(II)

---

115. Assertion (A): Free silica occurs in soil's quartz and opal.

Reason (R): Quartz consists of a continuous framework of silica tetrahedra.

(1) Both (A) and (R) are true and (R) is the correct explanation of (A).

(2) Both (A) and (R) are true but (R) is NOT the correct explanation of (A).

(3) (A) is true but (R) is false.

(4) (A) is false but (R) is true.

---

116. A personnel who because of special interest and fitness is selected to serve as a leader in advancing some phase of local extension programme is called

(1) Project leader

(2) Cooperator

(3) Administrator

(4) Community leader

---

117. Assertion (A): Intense weathering of soil shifts its Zero Point Charge towards higher pH owing to greater accumulation of iron and aluminium oxides.
Reason (R): The application of organic matter in soil also pushes the soil Zero Point Charge towards higher pH.

(1) Both (A) and (R) are correct and (R) is the correct explanation of (A).

(2) Both (A) and (R) are correct but (R) is NOT the correct explanation of (A).

(3) (A) is correct but (R) is not correct.

(4) (A) is not correct but (R) is correct.

---

118. Following are four stages of group development. Arrange them in order:

(A) Healing stage

(B) Development stage

(C) Stabilisation stage

(D) Formation stage

(1) (A), (B), (C), (D)

(2) (D), (B), (A), (C)

(3) (B), (A), (D), (C)

(4) (C), (B), (D), (A)

---

119. Water erosion follows the sequence:

(A) Ravine

(B) Sheet

(C) Splash

(D) Rill

(E) Gully

(1) (A), (B), (C), (D), (E)

(2) (C), (B), (D), (E), (A)

(3) (B), (A), (D), (C), (E)

(4) (C), (B), (A), (E), (D)

---

120. Laterisation involves the following:

(1) Removal of Fe and Al complexed with humus from upper to lower horizon

(2) Removal of silica from soil

(3) Removal of silica and accumulation of sesquioxides in soil

(4) Accumulation of sesquioxides in soil
