

# I. Choosing the Right Answer Option

**Underline the most appropriate answer**

1. Tourmaline is a
  - (a) primary mineral
  - (b) secondary mineral
  - (c) clay mineral
  - (d) carbonate mineral
2. The objective of photointerpretation in imagery is
  - (a) identification of the objects
  - (b) recognition of the objects
  - (c) judging the significance of the objects
  - (d) all the three
3. Transporting agency involved in the formation of deltas are
  - (a) gravity
  - (b) wind
  - (c) ice
  - (d) streams and rivers
4. The diagnostic subsurface horizon (endopedon) that is light coloured and poor in silicate clays and oxides of iron and aluminum is
  - (a) Umbric
  - (b) Spodic
  - (c) Albic
  - (d) Sombric
5. In remote sensing,
  - (a) electromagnetic radiation interacts with the target
  - (b) electromagnetic radiation is emitted from the target
  - (c) both the two
  - (d) neither of the two
6. Clay particles have their diameter
  - (a) less than 0.002 mm
  - (b) 0.02 to 0.002 mm
  - (c) less than 0.005 mm
  - (d) 0.05 to 0.002 mm
7. The pF of soil water at field capacity is
  - (a) 0.33
  - (b) 2.53
  - (c) 4.1
  - (d) 4.5
8. Amount of water required to irrigate a land of 0.5 ha upto a depth of 5 cm is
  - (a) 250 L
  - (b) 2500 L
  - (c) 25000 L
  - (d) 250000 L
9. The mineral most resistant to chemical weathering is
  - (a) feldspar
  - (b) mica
  - (c) quartz
  - (d) olivine
10. The graduations of the axes of the triangular textural diagram used for assigning the textural class of soils are in increments of
  - (a) 5 per cent
  - (b) 7.5 per cent
  - (c) 10 per cent
  - (d) 12.5 per cent
11. The cation associated with the flocculation of soil colloids is
  - (a) calcium
  - (b) sodium
  - (c) potassium
  - (d) hydrogen

12. The availability of this micronutrient increases with increase in soil pH
  - (a) iron
  - (b) copper
  - (c) manganese
  - (d) molybdenum
13. Average optimum C:N ratio of cultivated soils is
  - (a) 5:1
  - (b) 10:1
  - (c) 100:1
  - (d) 200:1
14. The pF of soil water at hygroscopic point is
  - (a) 1
  - (b) 2.53
  - (c) 4.1
  - (d) 4.53
15. The bulb of a soil thermometer is kept molded at an angle of
  - (a)  $60^{\circ}$
  - (b)  $90^{\circ}$
  - (c)  $120^{\circ}$
  - (d)  $180^{\circ}$
16. The optical properties of a water body depend upon
  - (a) absorption of radiation by the dissolved substances
  - (b) absorption of radiation by the particulate matter in suspension
  - (c) scattering of radiation by the particulate matter in suspension
  - (d) all the three
17. Eutrophication refers to the pollution load of
  - (a) soil
  - (b) water bodies
  - (c) atmosphere
  - (d) lithosphere
18. The Cation Exchange Capacity of this clay mineral is the highest
  - (a) kaolinite
  - (b) vermiculite
  - (c) montmorillonite
  - (d) chlorite
19. The internal surface of this clay mineral is the highest
  - (a) halloysite
  - (b) illite
  - (c) montmorillonite
  - (d) chlorite
20. This mineral is a 2:1:1 type layer lattice clay mineral
  - (a) smectite
  - (b) illite
  - (c) montmorillonite
  - (d) chlorite
21. Amount of  $\text{Ca}^{2+}$  ions required for cation exchange with 2 mg of  $\text{H}^{+}$  ions is
  - (a) 2 mg
  - (b) 4 mg
  - (c) 40 mg
  - (d) 80 mg
22. Particle density of common mineral soils is in the range of
  - (a) 2.60 to 2.76  $\text{Mg m}^{-3}$
  - (b) 2.75 to 3.5  $\text{Mg m}^{-3}$
  - (c) 1.30 to 1.38  $\text{Mg m}^{-3}$
  - (d) 1.38 to 1.76  $\text{Mg m}^{-3}$
23. Tourmaline is a secondary mineral containing
  - (a) molybdenum
  - (b) boron
  - (c) manganese
  - (d) chlorine

24. This insecticide is nonpersistent in soil  
(a) DDT (b) malathion (c) BHC (d) aldrin
25. Application of this fungicide mitigates copper deficiency in soils  
(a) Blitox (b) Carbendazim  
(c) Dithane M45 (d) Dithane Z-78
26. Cathode rays are deflected by  
(a) electric field  
(b) magnetic field  
(c) both electric field and magnetic field  
(d) neither electric field nor magnetic field
27. This crop among the four is the most erosion resistant crop  
(a) rice (b) maize  
(c) soybean (d) green gram
28. The fertilizer that contains 20.6% nitrogen is  
(a) urea (b) ammonium sulphate  
(c) ammonium nitrate (d) calcium ammonium nitrate
29. Toxic substance dhurrin produced in sorghum is a/an  
(a) nonprotein amino acid (b) alkaloid  
(c) cyanogenic glycoside (d) phenolic substance
30. The ionic form of nitrogen preferred by rice in the early stages of crop growth is  
(a) ammonium (b) nitrate  
(c) nitrite (d) amide
31. The crop that ushered in Green Revolution in India in late seventies and early eighties is  
(a) rice (b) wheat (c) maize (d) millets
32. *Kharif* and *rabi* apart, the other crop season in India  
(a) Varsati (b) Sharadi  
(c) Zaid (d) Mousami
33. Release of mineral potassium is a major source of the nutrient in soils rich in  
(a) kaolinite (b) illite  
(c) montmorillonite (d) chlorite

34. With increase in soil aeration done through tillage, loss of gaseous nitrogen through denitrification
- (a) increases (b) decreases  
(c) remains unaltered (d) may increase or decrease
35. Actinomycetes are the most active microorganisms responsible for the decomposition of organic matter in the following stage
- (a) initial stage (b) mid stage  
(c) final stage (d) all stages
36. The bottom most category of soil classification in USDA Soil Taxonomy is
- (a) Family (b) Series  
(c) Subgroup (d) Suborder
37. The clay mineral that helps formation of cracks in black soils upon drying is
- (a) kaolinite (b) illite  
(c) montmorillonite (d) vermiculite
38. A phosphorus containing mineral is
- (a) apatite (b) sylvinite  
(c) kainite (d) brucite
39. Soils suitable for plantation crops are
- (a) laterite soils (b) black soils  
(c) alluvial soils (d) sandy soils
40. A brucite sheet is a structural component of the layer lattice structure of the clay mineral
- (a) chlorite (b) chlorapatite  
(c) montmorillonite (d) illite
41. Olsen's method is used for the determination of available phosphorus in soils that are
- (a) strongly acidic (b) acidic  
(c) saline (d) neutral to alkaline
42. The most abundant of all the minerals present in igneous rocks is
- (a) feldspars (b) micas  
(c) quartz (d) pyroxenes
43. Per cent CO<sub>2</sub> content of soil air is around
- (a) 0.04% (b) 0.15 (c) 0.4 (d) 1.45

44. Bedrock native to the soil is absent in  
(a) alluvial soils (b) black soils  
(c) red soils (d) forest soils
45. *Kari* is the local name for  
(a) alluvial soils (b) acid sulphate soils  
(c) red soils (d) black soils
46. An important chemical reaction taking place in puddled paddy soils is  
(a) conversion of  $\text{FeCl}_2$  to  $\text{FeCl}_3$   
(b) conversion of  $\text{FeCl}_2$  to  $\text{Fe}_2\text{S}_3$   
(c) conversion of  $\text{FeCl}_3$  to  $\text{Fe}_2\text{O}_3$   
(d) conversion of  $\text{FeCl}_3$  to  $\text{FeCl}_2$
47. A potassium containing mineral is  
(a) apatite (b) sylvanite (c) albite (d) sylvinite
48. According to FCO Specifications for Biofertilizers in India, the stipulated level for contamination is 'no contamination' at the following level of dilution  
(a)  $10^2$  (b)  $10^3$  (c)  $10^5$  (d)  $10^7$
49. Soils best suited for dryland agriculture are  
(a) laterite soils (b) black soils  
(c) alluvial soils (d) red soils
50. The bulk density and particle density of a soil are 1.4 and 2.8  $\text{g/cm}^3$ , respectively. Now, if the porosity of the soil is increased to 75%, the soil's bulk density is changed as follows  
(a) decreased to its half (b) increased by its half  
(c) doubled (d) increased by its one fourth
51. Black frost in plants occurs due to such temperature and Relative Humidity (RH)  
(a) temperature  $< 0^\circ\text{C}$  and low RH  
(b) temperature  $> 0^\circ\text{C}$  and low RH  
(c) temperature  $> 0^\circ\text{C}$  and high RH  
(d) temperature  $< 0^\circ\text{C}$  and high RH
52. Wavelength range of electromagnetic radiation apt for the process of photosynthesis in plants is  
(a) 400 to 760 nm (b) 760 to 1500 nm  
(c) 100 to 200 nm (d) 200 to 400 nm

53. The most abundant of all the minerals in the earth's crust are  
(a) feldspars (b) micas  
(c) quartz (d) pyroxenes
54. In Soil Taxonomy, a possible Order for the alluvial soils is  
(a) Ultisol (b) Alfisol  
(c) Entisol (d) Histosol
55. Saline soils are to be of common occurrence in  
(a) low rainfall areas (b) high rainfall areas  
(c) low temperature soils (d) high altitude areas
56. Acid soils are to be of common occurrence in  
(a) low rainfall areas  
(b) high rainfall areas  
(c) low temperature regions  
(d) soils with high depth water table
57. Hydraulic conductivity of soils follows the following order  
(a) Ca-soil > Na-soil > K- soil (b) Ca-soil < Na-soil < K- soil  
(c) Ca-soil > K-soil > Na- soil (d) K-soil > Ca-soil > Na- soil
58. Regur is the local name for  
(a) alluvial soils (b) acid sulphate soils  
(c) red soils (d) black soils
59. Chalka soil is the local name for  
(a) black soils (b) acid sulphate soils  
(c) red sandy loam soils (d) brown forest soils
60. Expanding type clay minerals are dominantly present in  
(a) black soils (b) red soils  
(c) lateritic soils (d) alluvial soils
61. Swelling shrinkage property is a prominent characteristic of  
(a) red soils (b) black soils  
(c) lateritic soils (d) alluvial soils
62. Amount of  $\text{CaCO}_3$  required for the neutralization of 4 milli equivalents of  $\text{H}^+$  is  
(a) 4 mg (b) 8 mg (c) 200 mg (d) 400 mg

63. Saline soils are characterized by these characteristics
- (a)  $\text{pH} < 8.5$ ,  $\text{EC} > 4 \text{ dS/m}$  at  $25^{\circ}\text{C}$ ,  $\text{ESP} < 15$
  - (b)  $\text{pH} > 8.5$ ,  $\text{EC} > 4 \text{ dS/m}$  at  $25^{\circ}\text{C}$ ,  $\text{ESP} > 15$
  - (c)  $\text{pH} > 8.5$ ,  $\text{EC} < 4 \text{ dS/m}$  at  $25^{\circ}\text{C}$ ,  $\text{ESP} > 15$
  - (d)  $\text{pH} > 8.5$ ,  $\text{EC} > 4 \text{ dS/m}$  at  $25^{\circ}\text{C}$ ,  $\text{ESP} < 15$
64. Chemical transformation of hematite to limonite involves the following chemical process
- (a) oxidation
  - (b) reduction
  - (c) hydrolysis
  - (d) hydration
65. The exchangeable sodium content of a soil is  $34.5 \text{ mg}/100 \text{ g}$  soil. Assuming that CEC of the soil is  $8 \text{ cmol } (p^+)/\text{kg}$  soil,  $\text{pH}$  is  $> 8.5$  and electrical conductivity is  $< 4 \text{ dS/m}$  at  $25^{\circ}\text{C}$ , the soil in question is
- (a) acid soil
  - (b) saline soil
  - (c) alkali soil
  - (d) saline alkali soil
66. The cation associated with the deflocculation and dispersion of soil colloids is
- (a) calcium
  - (b) sodium
  - (c) potassium
  - (d) hydrogen
67. Young and relatively immature soils belong to the following soil Order
- (a) Alfisol
  - (b) Mollisol
  - (c) Entisol
  - (d) Vertisol
68. Addition of this substance during collection and storage of farm yard manure helps decreasing the loss of nitrogen in gaseous form
- (a) ammonium sulphate
  - (b) limestone powder
  - (c) gypsum
  - (d) powdered basic slag
69. These igneous rocks are formed at considerable depth below the earth's surface
- (a) extrusive rocks
  - (b) plutonic rocks
  - (c) stratified rocks
  - (d) clastic rocks
70. A mineral that can be described by its perfect cleavage is
- (a) hematite
  - (b) quartz
  - (c) feldspar
  - (d) micas
71. At field capacity, moisture is held to the soil at a potential of
- (a) 1 atmosphere
  - (b)  $\frac{1}{3}$  atmosphere
  - (c) 15 atmospheres
  - (d) 31 atmospheres



72. According to FCO Specifications of Fertilizers, biuret content of fertilizer grade urea, per cent by weight, maximum, is  
(a) 1.0            (b) 1.5            (c) 2.0            (d) 0.5
73. The plant nutrient that is recycled in soil through atmosphere is  
(a) nitrogen                            (b) phosphorus  
(c) potassium                            (d) calcium
74. In soil, *Nitrosomonas* bacteria carry out the process of oxidation of  
(a) organic-N to amide-N            (b) organic-N to  $\text{NH}_4^+$   
(c)  $\text{NH}_4^+$  to  $\text{NO}_2^-$                     (d)  $\text{NO}_2^-$  to  $\text{NO}_3^-$
75. If in the ribbon behaviour test with a moist bolus, there is no coherence (ball formation) and single grains adhere to fingers, then the soil texture is  
(a) sand                                    (b) loamy sand  
(c) sandy loam                            (d) sandy clay loam
76. ICAR-National Bureau of Soil Survey and Land Use Planning is located at  
(a) New Delhi (b) Dehradun (c) Bhopal            (d) Nagpur
77. Two of the common factors that promote soil erosion are  
(a) contour bunding and overgrazing  
(b) contour bunding and mixed farming  
(c) shifting cultivation and overgrazing  
(d) contour bunding and shifting cultivation
78. The mobility of ammonium in soils with respect to that of nitrate is  
(a) lower                                    (b) higher  
(c) same                                    (d) lower or higher
79. Weathering of basaltic lava produces  
(a) alluvial soils  
(b) black soils  
(c) coarse textured sandy soils  
(d) soils poor in exchangeable bases
80. Soils suitable for growing cashew nut are  
(a) black soils                            (b) red laterite soils  
(c) peat soils                            (d) alluvial soils

81. 'Chroma' which defines the purity of soil colour does have a scale of  
(a) 0 to 5      (b) 0 to 10      (c) 0 to 20      (d) 0 to 100
82. Karewas, a unique soil/soil deposit is found in the state of  
(a) Assam      (b) Meghalaya  
(c) Jammu and Kashmir      (d) Chhattisgarh
83. The fertilizer that contains ammonium and nitrate nitrogen in 1:1 proportion is  
(a) ammonium sulphate nitrate  
(b) ammonium sulphate  
(c) ammonium phosphate  
(d) calcium ammonium nitrate
84. Toxic cyanogenic glycoside dhurrin is produced in  
(a) maize      (b) ragi      (c) bajra      (d) sorghum
85. International Institute of Rice Research is located in  
(a) New Delhi      (b) Cuttack  
(c) Philippines      (d) Mexico City
86. Whiptail disease in cauliflower is caused due to the deficiency of  
(a) manganese      (b) molybdenum  
(c) boron      (d) copper
87. Swelling shrinkage property is a prominent characteristic of the soils belonging to the Order  
(a) Alfisol      (b) Ultisol      (c) Spodosol      (d) Vertisol
88. Soils with good physical properties are  
(a) acid soils      (b) alkali soils  
(c) saline soils      (d) calcareous soils
89. The factor that is of no significance in determining the scale in aerial photography  
(a) focal length      (b) flying height  
(c) ground elevation      (d) none of the three
90. When an electromagnetic radiation falls upon a transparent medium,  
(a) angle of incidence = angle of reflection  
(b) angle of incidence = angle of refraction  
(c) angle of incidence = sum of angle of reflection and angle of refraction  
(d) angle of refraction = sum of angle of incidence and angle of reflection

91. The metallic cofactor associated with the enzyme urease is  
(a) cobalt (b) copper (c) nickel (d) manganese
92. The process of conversion of simple inorganic plant available forms of nutrients to their complex organic plant unavailable forms is called  
(a) mineralization (b) immobilization  
(c) assimilation (d) aminization
93. Potassium in its ionic form is fixed in the layer lattice structure of this clay mineral  
(a) kaolinite (b) montmorillonite  
(c) illite (d) chlorite
94. A farmer for his  $\frac{1}{2}$  ha field had to apply urea @ 250 kg/ha, but had to opt for CAN due to nonavailability of urea. The amount of CAN required is (N contents of CAN and urea are 25 and 46, respectively)  
(a) 115 kg (b) 230 kg (c) 345 kg (d) 460 kg
95. P to  $P_2O_5$  conversion factor is  
(a) 1.21 (b) 0.83 (c) 2.29 (d) 0.44
96. According to Stokes' law, the terminal velocity of a spherical particle falling in a viscous medium is inversely proportional to the  
(a) particle density of the falling particle  
(b) viscosity of the medium  
(c) radius of the falling particle  
(d) acceleration due to gravity
97. According to FCO Specifications for the standards for Biofertilizers, the total viable count in terms of colony forming units (CFU) per gram of powder, granules or carrier material of *Rhizobium* must be a minimum of  
(a)  $5 \times 10^3$  cells (b)  $5 \times 10^5$  cells  
(c)  $5 \times 10^7$  cells (d)  $5 \times 10^{10}$  cells
98. Soil consistence limits with varying levels of water in soil were proposed by  
(a) Marburt (b) Munsell (c) USDA (d) Atterberg
99. Bulk density of a soil increases with increase in  
(a) porosity (b) compaction  
(c) organic matter content (d) tillage
100. One millimicron is equal to  
(a)  $10^{-2}$  m (b)  $10^{-3}$  m (c)  $10^{-6}$  m (d)  $10^{-9}$  m

101. A field crop requires nitrogen @  $200 \text{ kg ha}^{-1}$  from two sources viz. neem cake (5% N) and urea (46% N), in the ratio of 1:3. The amounts of neem cake and urea to be applied to a field of 0.5 ha are
- (a) 200 kg neem cake and 100 kg urea
  - (b) 300 kg neem cake and 140 kg urea
  - (c) 500 kg neem cake and 163 kg urea
  - (d) 500 kg neem cake and 250 kg urea
102. Shifting cultivation practiced in North East India is called
- (a) Tehri cultivation
  - (b) Sawami cultivation
  - (c) Jhoom cultivation
  - (d) Harhi cultivation
103. The size of a micro watershed is
- (a) 100 to 1000 ha
  - (b) 1000 to 5000 ha
  - (c) 5000 to 10000 ha
  - (d)  $> 5000$  ha
104. World Soil Day is celebrated on
- (a) 5<sup>th</sup> June
  - (b) 5<sup>th</sup> September
  - (c) 14<sup>th</sup> October
  - (d) 5<sup>th</sup> December
105. The crop among the four that does have the minimum water requirement is
- (a) maize
  - (b) black gram
  - (c) sugarcane
  - (d) cotton
106. The method used for the determination of available phosphorus in acid soils is
- (a) Olsen's method
  - (b) Bray's 1 method
  - (c) DTPA method
  - (d) ammonium acetate method
107. The plant nutrient that imparts resistance to insect pests and diseases is
- (a) phosphorus
  - (b) potassium
  - (c) calcium
  - (d) magnesium
108. If the electrical conductivity of a soil is  $1.5 \text{ dS m}^{-1}$ , the soluble salt concentration of the soil may prove
- (a) critical only for germination
  - (b) sensitive only for the growth of salt sensitive crops
  - (c) likely to cause salt injury to many crops
  - (d) likely to cause salt injury to most crops

109. River transported delta soils of Mahanadi, Krishna and Godavari rivers are rich in  
(a) black soils (b) red soils  
(c) laterites (d) alluvium
110. According to the USDA Soil Classification system, the Order for the red soils is  
(a) Mollisol (b) Vertisol (c) Aridisol (d) Alfisol
111. Soils of the Order Vertisol that swell on wetting and shrink on drying are suitable for  
(a) barley (b) mustard  
(c) rye (d) plantation crops
112. All other factors remaining equal, the power of the divalent cations to replace the cations on the soil exchange complexes is in the following order  
(a)  $\text{Ca}^{2+} < \text{Mg}^{2+} < \text{Ba}^{2+} < \text{Sr}^{2+}$  (b)  $\text{Mg}^{2+} < \text{Ca}^{2+} < \text{Sr}^{2+} < \text{Ba}^{2+}$   
(c)  $\text{Ba}^{2+} < \text{Sr}^{2+} < \text{Ca}^{2+} < \text{Mg}^{2+}$  (d)  $\text{Ba}^{2+} < \text{Mg}^{2+} < \text{Ca}^{2+} < \text{Sr}^{2+}$
113. Direct use of finely ground rock phosphate is recommended as a phosphatic fertilizer in soils that are  
(a) neutral (b) strongly acidic  
(c) alkaline (d) strongly alkaline
114. Chromatography was discovered by  
(a) Mikhail Tswett (b) Kirchoff  
(c) Walsh and Alkermade (d) Frumkin
115. Stratification is often observed in the formation of this class of rocks  
(a) igneous (b) sedimentary  
(c) metamorphic (d) fire
116. The reference salt used in assigning the Salt Index of fertilizers for assessing the hazard of salt build up following their application in soils is  
(a) sodium nitrate (b) potassium nitrate  
(c) ammonium nitrate (d) calcium nitrate
117. In Soil Taxonomy, the Order for a soil under the Subgroup Thaptic Cryaquand is  
(a) Aridisol (b) Andisol (c) Gelisol (d) Alfisol
118. Nitrogen fixing organism Cyanobacteria were earlier known as  
(a) *Rhizobium* (b) *Azotobacter*  
(c) Blue green algae (d) *Azolla*

119. Diagnostic surface horizon (epipedon) that is primarily sandy is  
(a) Mollic (b) Umbric (c) Grossarenic (d) Histic
120. Oxygen Diffusion Rate (ODR) of soils is measured by  
(a) Neutron Scattering method  
(b) Pressure Plate Apparatus method  
(c) Robinson pipette method  
(d) Platinum microelectrode method
121. The seventeenth entrant in the list of essential plant nutrients is  
(a) cobalt (b) nickel (c) silicon (d) chlorine
122. The oxidizing agent used in the determination of available nitrogen content of soils by Subbaiah and Asija's method is  
(a) potassium dichromate (b) potassium permanganate  
(c) sodium hydroxide (d) hydrogen peroxide
123. The growth of plant roots ceases when ODR of the soil ( $\text{g}/\text{cm}^2/\text{min}$ ) drops to about (multiplied by  $10^{-8}$ )  
(a) 200 (b) 100 (c) 50 (d) 20
124. Humus is  
(a) crystalline in nature (b) amorphous in nature  
(c) inorganic soil colloid (d) layer lattice soil colloid
125. Substitution of  $\text{Si}^{4+}$  ion by  $\text{Al}^{3+}$  ion in silicate clays gives rise to  
(a) temporary charge (b) permanent charge  
(c) pH dependent charge (d) variable charge
126. Ion exchange process is  
(a) temperature independent (b) takes place on mass basis  
(c) reversible (d) irreversible
127. PBS of soils is expressed in terms of  
(a) m.e./100 g soil (b)  $\text{cmol}(p^+)/\text{kg}$  soil  
(c)  $\text{cmol}(e^-)/\text{kg}$  soil (d) it is a number with no unit
128. Soil microorganisms next only to bacteria in abundance are  
(a) fungi (b) algae  
(c) actinomycetes (d) protozoa
129. Diagnostic subsurface horizon (endopedon) that is thin and slowly permeable, and does have a reddish brown to black coloured iron or manganese pan is  
(a) Gypsic (b) Calcic (c) Placic (d) Folistic

130. This micronutrient is a component of the enzyme nitrogenase  
(a) manganese (b) molybdenum  
(c) boron (d) copper
131. The number of Orders in USDA system of Soil Classification is  
(a) eight (b) ten (c) twelve (d) fourteen
132. Ploughing of the land in hilly areas cutting across the slope is called  
(a) terracing (b) contour ploughing  
(c) ridge ploughing (d) bunding
133. The spectral region of the electromagnetic spectrum which passes through the atmosphere without much attenuation is known as  
(a) ozone window (b) ozone hole  
(c) black hole (d) atmospheric window
134. Diagnostic subsurface horizon (endopedon) that is intensely weathered, rich in sesquioxides and 1:1 type layer lattice clays is  
(a) Umbric (b) Spodic (c) Oxic (d) Sombric
135. Orthoclase through the process of carbonation is transformed to the mineral  
(a) kaolinite (b) microcline (c) albite (d) leucite
136. In agricultural chemistry, the term 'tankage' refers to a manure obtained from  
(a) carcasses of animals  
(b) residues of vegetable oil extracting plants  
(c) night soil  
(d) domestic urban wastes
137. Manufacture of ammonia by Haber Bosch process through the union of elemental nitrogen and hydrogen in 1:3 mole ratio is a process of the following kind  
(a) exothermic (b) endothermic  
(c) exergonic (d) spontaneous
138. Two of the common factors that deter soil erosion are  
(a) contour bunding and overgrazing  
(b) contour bunding and mixed farming  
(c) shifting cultivation and overgrazing  
(d) contour bunding and shifting cultivation

139. The microorganisms that are more important for the decomposition of lignin and other complex organic molecules and so play a more significant role in the later stages of decomposition of organic matter are
- (a) bacteria (b) fungi  
(c) actinomycetes (d) protozoa
140. In compact soils with no porosity, the process of nitrification stops at the following step
- (a) organic N  $\rightarrow$   $\text{NH}_4^+$  (b)  $\text{NH}_4^+ \rightarrow \text{NO}$   
(c)  $\text{NH}_4^+ \rightarrow \text{NO}_2^-$  (d)  $\text{NO}_2^- \rightarrow \text{NO}_3^-$
141. One of the followings processes is not involved in chemical weathering of rocks and minerals
- (a) hydration (b) hydrolysis  
(c) dehydration (d) hydrogenation
142. Some species of this genus of bacteria are leaf-residing nitrogen fixers in some plants
- (a) *Methylobacterium* (b) *Azotobacter*  
(c) *Frankia* (d) *Beijerinckia*
143.  $\text{N}^{13}$ ,  $\text{N}^{14}$  and  $\text{N}^{15}$  are atomic forms of the element nitrogen containing unequal number of
- (a) electrons (b) neutrons  
(c) protons (d) all the three
144. This microbe is a nonsymbiotic nitrogen fixer in soil
- (a) *Rhizobium* (b) *Azotobacter*  
(c) *Frankia* (d) *Anabaena*
145. The nutrient made available to plants by Vesicular Arbuscular Mycorrhizae is
- (a) nitrogen (b) phosphorus  
(c) potassium (d) sulphur
146. Organic materials in water bodies like lakes pollute the water due to
- (a) eutrophication  
(b) rise in BOD  
(c) growth of natural population of aquatic bacteria  
(d) all the three



147. One of the followings is not a direct agent of physical weathering of rocks and minerals  
(a) water (b) wind (c) vegetation (d) glaciers
148. The process of denitrification takes place more favourably in  
(a) submerged soils  
(b) compact soils  
(c) puddled soil  
(d) all the three
149. By definition, heavy metals are those metals which are heavier than water by  
(a) 2.9 times (b) 5 times (c) 10 times (d) 13.6 times
150. The total surface area of the clay minerals kaolinite, illite, montmorillonite and chlorite is in the following order  
(a) montmorillonite < chlorite < kaolinite < illite  
(b) chlorite < illite < montmorillonite < kaolinite  
(c) chlorite < montmorillonite < illite < kaolinite  
(d) kaolinite < illite < chlorite < montmorillonite
151. With an increase in soil  $p^H$ , the available pool of the micronutrient cations  
(a) decreases (b) increases  
(c) may increase or decrease (d) remains unaffected
152. The mobility of nitrate in soil system with respect to that of ammonium is  
(a) lower (b) higher  
(c) same (d) may be lower or higher
153. Diagnostic subsurface horizon (endopedon) that is characterized by accumulation of insoluble limestone and dolomite is  
(a) Gypsic (b) Salic (c) Natric (d) Calcic
154. The wavelength range of the entire electromagnetic spectrum is  
(a)  $10^{-10}$  to  $10^8$  m (b)  $10^{-15}$  to  $10^8$  m  
(c)  $10^{-9}$  to  $10^6$  m (d)  $10^{-8}$  to  $10^8$  m
155. A radio isotope of phosphorus (atomic number 15) of much use in soil research is  
(a)  $P^{29}$  (b)  $P^{30}$  (c)  $P^{31}$  (d)  $P^{32}$
156. Soil moisture potential expressed in terms of bars at field capacity is  
(a) 0.33 (b) 1 (c) -15 (d) -31

157. Advanced stage of sheet erosion is  
(a) Splash erosion (b) Gully erosion  
(c) Rill erosion (d) Tunnel erosion
158. According to the USDA Soil Classification system, a possible Order for the peat and muck soils is  
(a) Spodosol (b) Histosol (c) Oxisol (d) Gelisol
159. The analytical instrument used in assay for working with radioactive isotopes such as  $P^{32}$  is  
(a) atomic emission spectrophotometer  
(b) flame emission spectrophotometer  
(c) mass spectrometer  
(d) Geiger Muller Counter
160. Peat soils are generally  
(a) black, heavy and neutral (b) black, heavy and acidic  
(c) black, light and saline (d) black, light and alkaline
161. The crop that requires the highest Oxygen Diffusion Rate is  
(a) rice (b) wheat (c) potato (d) pea
162. The oxidizing agent used in the determination of organic carbon content of soils by Walkley and Black's Wet Oxidation method is  
(a) potassium dichromate (b) potassium permanganate  
(c) sodium thiosulphate (d) hydrogen peroxide
163. Diagnostic subsurface horizon (endopedon) that is characterized by accumulation of organic matter and oxides of iron and aluminium is  
(a) Kandic (b) Spodic (c) Argillic (d) Sombric
164. Specific heat of a body is defined as the ratio of its heat capacity to its  
(a) volume (b) mass  
(c) density (d) thermal conductivity
165. The chemical added for the inclusion of nitrate nitrogen in the determination of total nitrogen content of soils by Kjeldahl method is  
(a) sulphuric acid (b) salicylic acid  
(c) sodium nitrite (d) Devarda's alloy
166. The number of soil textural classes in the triangular textural diagram is  
(a) 8 (b) 10 (c) 12 (d) 14
167. The unit for expressing the electrical conductivity of soils at a specified temperature is  
(a) dS/m (b) mmhos/cm  
(c) both the two (d) neither of the two

168. The exchangeable  $\text{Ca}^{2+}$  content of a soil is 120 mg/100 g soil. Assuming that CEC of the soil is 8 cmol ( $p^+$ )/kg soil, per cent  $\text{Ca}^{2+}$  saturation of the soil is  
(a) 15            (b) 37.5            (c) 75            (d) 80
169. The two active factors of soil formation are  
(a) climate and parent material  
(b) climate and biosphere  
(c) climate and relief  
(d) biosphere and parent material
170. Soil scientist who categorized the factors of soil formation into active and passive factors is  
(a) Joffe            (b) Jenny            (c) Marbut            (d) Dokuchaev
171. In soil, *Nitrobacter* bacteria carry out the following oxidation process  
(a) organic-N to amide-N            (b) organic-N to  $\text{NH}_4^+$   
(c)  $\text{NH}_4^+$  to  $\text{NO}_2^-$             (d)  $\text{NO}_2^-$  to  $\text{NO}_3^-$
172. The plant nutrient that has a rapid absorption rate in foliar spray is  
(a) potassium            (b) magnesium  
(c) sulphur            (d) molybdenum
173. A crop that has very high salt tolerance is  
(a) cotton            (b) sugar beet  
(c) barley            (d) rapeseed
174. The Salinity Class of irrigation water that has TDS level of 0.5 to 1.5 g/L and is rated as 'Doubtful for use for crops' is  
(a) C1            (b) C2            (c) C3            (d) C4
175. In India, the highest land area under cultivation is comprised by  
(a) alluvial soils            (b) black soils  
(c) laterite soils            (d) red soils
176. The solum of a soil is comprised of  
(a) A horizon            (b) A and B horizons  
(c) A, B and C horizons            (d) A, B, C and D horizons
177. Microorganisms that are efficient producers of antibiotics are  
(a) bacteria            (b) fungi  
(c) actinomycetes            (d) protozoa
178. In Soil Taxonomy, the soils of the cold tundra region that possess permafrost are classified under the Order  
(a) Histosol            (b) Andisol            (c) Spodosol            (d) Gelisol

179. In the fractionation of humus, the constituent of the latter that remains insoluble in both acid and alkali is  
(a) fulvic acid (b) humic acid  
(c) polyuronic acid (d) humin
180. At hygroscopic coefficient, soil water is held with a force of  
(a)  $\frac{1}{3}$  atmosphere (b) 1 atmosphere  
(c) 15 atmospheres (d) 31 atmospheres
181. Regolith of a soil is comprised by the following horizon/s  
(a) A and B horizons  
(b) C horizon  
(c) B and C horizons  
(d) A, B and C horizons
182. The soil that is not suitable for use in nursery is  
(a) alluvial (b) black (c) red (d) laterite
183. In alkaline pH, the ionic form in which phosphorus exists is  
(a)  $\text{H}_2\text{PO}_4^-$  (b)  $\text{HPO}_4^{2-}$  (c)  $\text{PO}_4^{3-}$  (d)  $\text{P}_2\text{O}_7^{4-}$
184. 'Die back' physiological disease in citrus is caused due to the deficiency of  
(a) boron (b) copper  
(c) zinc (d) molybdenum
185. A concentrated organic manure is  
(a) FYM (b) compost  
(c) vermicompost (d) neem cake
186. In Soil Taxonomy, a prominent characteristic of the area such as eroded, degraded etc. is included in naming a  
(a) Subgroup (b) Family  
(c) Series (d) Phase
187. The fertile soils of the Gangetic plains locally known as *Bhangar* and *Khaddar* are  
(a) alluvial soils (b) red soils  
(c) laterite soils (d) lateritic soils
188. The study of the different aspects of rocks such as their formation, composition, structure and properties is called  
(a) geology (b) metrology  
(c) petrology (d) mineralogy

189. Monocalcium phosphate is the phosphorus containing component of the phosphatic fertilizer
- (a) single super phosphate
  - (b) triple super phosphate
  - (c) both single and triple super phosphates
  - (d) neither single nor triple super phosphate
190. Specific heat ( $c$ ) of a substance, say soil, is expressed as
- (a)  $c = \frac{\text{heat capacity}}{\text{mass}}$
  - (b)  $c = \frac{\text{heat capacity}}{\text{heat flux}}$
  - (c)  $c = \frac{\text{heat capacity}}{\text{volume}}$
  - (d)  $c = \frac{\text{heat capacity}}{\text{temperature gradient}}$
191.  $\text{CaSO}_4$  is a constituent of the phosphatic fertilizer
- (a) single super phosphate
  - (b) triple super phosphate
  - (c) urea ammonium phosphate
  - (d) diammonium phosphate
192. Conversion of complex organic nitrogen to simple inorganic nitrogen like ammonium compounds as done in the case of mineralization is a process of
- (a) carbonation
  - (b) oxidation
  - (c) reduction
  - (d) hydration
193. With increase in soil pH, the anion exchange capacity of soils
- (a) decreases
  - (b) increases
  - (c) may increase or decrease
  - (d) no relationship between the two
194. Fly ash increasingly being used as an amendment in agriculture is a byproduct of
- (a) iron and steel plants
  - (b) cement manufacturing units
  - (c) coal based thermal power plants
  - (d) textile industry
195. ICAR-Indian Institute of Soil Science is located in
- (a) New Delhi
  - (b) Karnal
  - (c) Bhopal
  - (d) Hyderabad
196. 'Value' which defines the relative brightness of soil colour does have a scale of
- (a) 0 to 5
  - (b) 0 to 10
  - (c) 0 to 20
  - (d) 0 to 100

197. The concept of pF scale for expressing soil moisture tension was proposed by  
(a) Jenny (b) Schofield  
(c) Sorenson (d) Baver
198. Diagnostic subsurface horizon (endopedon) that is characterized by accumulation of silicate clays is  
(a) Kandic (b) Spodic (c) Argillic (d) Agric
199. On analysis, a soil with near neutral pH recorded an electrical conductivity of 5 dS/m at 25<sup>0</sup> C, cation exchange capacity of 18 m.e./100 g soil and exchangeable sodium of 45 mg/100 g soil. The soil in question is  
(a) alkali soil (b) sodic soil  
(c) saline alkali soil (d) saline soil
200. The enzyme concerned with Biological Nitrogen Fixation is  
(a) nitrogenase (b) nitrogen fixase  
(c) nitrate reductase (d) nitrite reductase
201. The term Ustipsamment signifies the following hierarchical category in Soil Taxonomy  
(a) Suborder (b) Great Group  
(c) Subgroup (d) Family
202. Terracing is an effective method of soil conservation in  
(a) Plain area (b) Hilly area  
(c) Desert area (d) High rainfall area
203. The gas produced during the anaerobic decomposition of organic matter in flooded paddy fields is  
(a) methane (b) ammonia  
(c) sulphur dioxide (d) carbon dioxide
204. Oxygen Diffusion Rate (O.D.R.) in soils is expressed in terms of  
(a)  $\mu\text{g Oxygen cm}^{-2} \text{min}^{-1}$  (b)  $\text{ml Oxygen cm}^{-2} \text{min}^{-1}$   
(c)  $\mu\text{g Oxygen m}^{-1} \text{min}^{-1}$  (d)  $\text{ml Oxygen m}^{-1} \text{min}^{-1}$
205. The vast mountain range of north-western part of India India running from Gujarat to Delhi through Rajasthan and Haryana that that acts a barrier for the clouds to shift eastwards to the lower Himalayas, thus contributing to the climate of north india is  
(a) Satpura (b) Sivalik (c) Vindhya (d) Aravalli

206. In the fractionation of humus, the constituent of the latter that is soluble in both alkali and acid is  
(a) fulvic acid (b) humic acid  
(c) polyuronic acid (d) lignin
207. A typical example of a fossil fuel is  
(a) petroleum (b) liquid hydrogen  
(c) biodiesel (d) ethanol
208. At pH 4, phosphorus exists in the following ionic form  
(a)  $\text{H}_2\text{PO}_4^-$  (b)  $\text{HPO}_4^{2-}$  (c)  $\text{PO}_4^{3-}$  (d)  $\text{P}_2\text{O}_7^{4-}$
209. 'Little leaf' in cotton is caused due to the deficiency of  
(a) copper (b) manganese  
(c) zinc (d) molybdenum
210. If the particle density and per cent pore space of a soil are  $2.6 \text{ g/cm}^3$  and 45 respectively, the bulk density of the soil is  
(a)  $1.37 \text{ g/cm}^3$  (b)  $1.43 \text{ g/cm}^3$   
(c)  $1.55 \text{ g/cm}^3$  (d)  $1.76 \text{ g/cm}^3$
211. *Akiochi* disease in rice is caused due to the excess formation of this gas in waterlogged rice fields  
(a) methane (b) nitrous oxide  
(c) ammonia (d) hydrogen sulphide
212. A solution of single super phosphate tests  
(a) acidic (b) neutral  
(c) slightly alkaline (d) highly alkaline
213. Basic slag is a byproduct of this industry  
(a) cement (b) iron and steel  
(c) refractory (d) textiles
214. According to FCO specifications, the minimum per cent sulphur content (w/w) of the fertilizer grade ammonium sulphate is  
(a) 16 (b) 20.6 (c) 23.0 (d) 46.0
215. Single super phosphate is manufactured by acidulation of rock phosphate with  
(a) sulphuric acid (b) hydrochloric acid  
(c) nitric acid (d) phosphoric acid
216. Plants absorb phosphorus preferentially in the form of  
(a)  $\text{H}_2\text{PO}_4^-$  (b)  $\text{HPO}_4^{2-}$   
(c) both  $\text{H}_2\text{PO}_4^-$  and  $\text{HPO}_4^{2-}$  (d)  $\text{PO}_4^{3-}$

217. At wilting point, soil water is held with a force of  
(a)  $\frac{1}{3}$  atmosphere (b) 1 atmosphere  
(c) 15 atmospheres (d) 31 atmospheres
218. If the bulk density and per cent pore space of a soil are  $1.43 \text{ g/cm}^3$  and 45 respectively, the particle density of the soil is  
(a)  $1.37 \text{ g/cm}^3$  (b)  $1.50 \text{ g/cm}^3$   
(c)  $2.60 \text{ g/cm}^3$  (d)  $2.76 \text{ g/cm}^3$
219. Metallic element that is a constituent of chlorophyll is  
(a) calcium (b) magnesium  
(c) manganese (d) copper
220. Triple super phosphate is manufactured by acidulation of rock phosphate with  
(a) sulphuric acid (b) hydrochloric acid  
(c) nitric acid (d) phosphoric acid
221. Buttoning in cauliflower is caused due to the deficiency of  
(a) nitrogen (b) phosphorus  
(c) potassium (d) sulphur
222. Basic slag, a byproduct of iron and steel industry and a source of phosphorus, can be used for the reclamation of  
(a) saline soils (b) alkali soils  
(c) saline alkali soils (d) acid soils
223. The horizon that is not a part of the solum of a soil  
(a) A horizon (b) B horizon  
(c) C horizon (d) B and C horizons
224. These soils have high buffering capacity  
(a) sandy soils (b) sandy loam soils  
(c) sandy clay loam soils (d) clay soils
225.  $\text{P}_2\text{O}_5$  content of nitrophosphates fertilizers is  
(a) entirely water soluble  
(b) entirely water insoluble  
(c) entirely citrate insoluble  
(d) partly water soluble and partly citrate soluble
226. India does not manufacture this fertilizer  
(a) ammonium sulphate (b) nitrophosphates  
(c) muriate of potash (d) NPK complexes



227. Removal of top soil by running water with the formation of small channels that can later be removed by normal tillage is
- (a) sheet erosion                      (b) gully erosion  
(c) rill erosion                         (d) splash erosion
228. Soil forming process in which soil materials like silica, sesquioxides etc. washed down from the upper soil depths by percolating water are deposited in the lower layers is called
- (a) eluviation                            (b) illuviation  
(c) podzolization                       (d) humification
229. In the Wind Erosion Equation,  $E = f(I, K, C, L, V)$ , the notation I denotes
- (a) soil erodibility factor              (b) surface roughness factor  
(c) climatic factor                       (d) field length factor
230. In the fractionation of humus, the constituent of the latter that is soluble in alkali, but insoluble in acid is
- (a) fulvic acid                            (b) humic acid  
(c) polyuronic acid                      (d) humin
231. A part of the negative charge in humus arises from the dissociation of this functional group of the organic compounds present in the colloid
- (a) aldehyde                              (b) ketone  
(c) amino                                  (d) enolic OH
232. The wavelength of the following electromagnetic radiations follows the order
- (a) infrared > visible > X-ray > ultraviolet  
(b) visible > infrared > ultraviolet > X-ray  
(c) X-ray > visible > infrared > ultraviolet  
(d) infrared > visible > ultraviolet > X-ray
233. The buffering capacity of a soil increases with increase in the content of
- (a) silt                                        (b) clay  
(c) organic matter                        (d) both clay and organic matter
234. The pF of soil water at wilting point is
- (a) 1    (b) 2.53                                      (c) 4.19                                      (d) 4.5
235. If the bulk density and particle density of a soil are 1.43 and 2.60 g/cm<sup>3</sup> respectively, the per cent pore space of the soil is
- (a) 25                                        (b) 40                                        (c) 45                                        (d) 55
236. Brown heart in turnip is caused due to the deficiency of
- (a) nitrogen                                (b) sulphur  
(c) boron                                      (d) molybdenum

237. Basic slag, a byproduct of iron and steel industry, is a source of of this plant nutrient  
(a) phosphorus (b) potassium  
(c) nitrogen (d) manganese
238. Soil forming process in which soil materials like silica, sesquioxides etc. are washed down from the upper soil depths by percolating water is called  
(a) eluviation (b) illuviation  
(c) podzolization (d) humification
239. Podzolization soil formation process is favoured under  
(a) cool humid climate (b) high rainfall  
(c) acidic parent material (d) all the three
240. The SAR of an irrigation water is 7.5. The irrigation water is rated as  
(a) S1 Class. Low sodium hazard  
(b) S2 Class. Medium sodium hazard  
(c) S3 Class. High sodium hazard  
(d) S4 Class. Very high sodium hazard
241. A part of the negative charge in humus arises from the dissociation of this functional group of the organic compounds present in the colloid  
(a) aldehyde (b) ketone  
(c) amino (d) phenolic OH
242. The buffering capacity of a soil increases with increase in  
(a) bulk density (b) particle density  
(c) porosity (d) cation exchange capacity
243. Lime requirement of an acid soil increases with increase in the content of  
(a) silt (b) clay  
(c) organic matter (d) both clay and organic matter
244. Soil structure best suited for crop growth is  
(a) columnar (b) crumb  
(c) platy (d) prismatic
245. Soil forming process in which oxides of iron and aluminium washed down by percolating water from the upper soil depths are deposited in the lower layers is called  
(a) desalinization (b) gleization  
(c) podzolization (d) laterization

246. In the Wind Erosion Equation,  $E = f(I, K, C, L, V)$ , the notation I denoting soil erodibility factor does have the dimension of
- (a) mass (b) mass/unit time  
(c) mass/unit area (d) mass/unit area/unit time
247. Savanna ecoregion refers to a biome of
- (a) tropical rain forest  
(b) mixed woodland-grassland  
(c) large desert tract  
(d) dense forest under temperate climate
248. Irrigation method best suited for undulating topography is
- (a) flooding (b) basin method  
(c) furrow irrigation (d) sprinkler method
249. Available water in the soil ranges between
- (a) field capacity and wilting point  
(b) field capacity and hygroscopic coefficient  
(c) saturation point and hygroscopic coefficient  
(d) wilting point and hygroscopic coefficient
250. In mycorrhizae, the relationship between the root cells of higher plants and the fungi is
- (a) symbiotic (b) commensalism  
(c) parasitism (d) nonsymbiotic
251. The role of *Bacillus megatherium*, a microbial biofertilizer, is to
- (a) fix soluble phosphorus  
(b) precipitate soluble phosphorus  
(c) solubilize insoluble phosphorus  
(d) immobilize soluble phosphorus
252. The transporting agency involved in the formation of alluvial soils is
- (a) gravity (b) water (c) wind (d) ice
253. Gypsum process is widely used for the manufacture of this fertilizer
- (a) ammonium sulphate  
(b) calcium ammonium nitrate  
(c) single super phosphate  
(d) triple super phosphate

254. On analysis, a soil was reported to contain 0.065% nitrogen. Considering the average C:N of agricultural soils to be 10:1 to 15:1, the per cent organic matter content of the soil is  
(a) 0.650 to 0.975 (b) 1.121 to 1.681  
(c) 1.300 to 1.950 (d) 1.300 to 2.200
255. If the pOH of a solution is 4,  $H^+$  ion concentration of the solution in mole/litre is  
(a)  $10^{-4}$  (b)  $10^{-14}$  (c)  $10^{-10}$  (d)  $10^4$
256. In India, rock phosphate deposits are found in this area  
(a) Bundelkhand in Uttar Pradesh  
(b) Mayurbhanj in Odisha  
(c) Mussoorie in Uttarakhand  
(d) Terai in West Bengal
257. Manufacture of muriate of potash either from sylvite or sylvinite does not require any strong acid or heat treatment because both the potassium minerals are  
(a) water soluble (b) water insoluble  
(c) occur at a shallow depth (d) are free from impurities
258. Soil forming process in which silica is washed down by percolating water from the upper soil depths and then deposited in the lower layers resulting in the accumulation of iron and oxides in the upper layers is called  
(a) desalinization (b) gleization  
(c) podzolization (d) laterization
259. The SAR of an irrigation water source is 28.5. The irrigation water is rated as  
(a) S1 Class. Low sodium hazard  
(b) S2 Class. Medium sodium hazard  
(c) S3 Class. High sodium hazard  
(d) S4 Class. Very high sodium hazard
260. Large part of the negative charge in humus arises from the dissociation of this functional group of the organic compounds present in the colloid  
(a) aldehyde (b) ketone  
(c) carboxyl (d) amino
261. In the Wind Erosion Equation,  $E = f(I, K, C, L, V)$ , the notation K denotes  
(a) soil erodibility factor (b) ridge roughness factor  
(c) climatic factor (d) field length factor

262. The transporting agency in the formation of loess deposits of parent materials or soils is  
(a) gravity (b) water (c) wind (d) ice
263. Denitrifying bacteria are  
(a) obligate anaerobes (b) facultative anaerobes  
(c) obligate aerobes (d) facultative aerobes
264. The fertilizer that has the highest per cent nitrogen content is  
(a) urea solution (b) nitrogen solution  
(c) aqua ammonia (d) anhydrous ammonia
265. Bangalore method of composting was developed by  
(a) Hutchison and Richards (b) Dr C. N. Acharya  
(c) Howard and Ward (d) Fowler and Ridge
266. The catalyst used in the manufacture of ammonia from  $N_2-H_2$  (1:3) mixture at  $550^{\circ}C$  is  
(a) nickel (b) mercury  
(c) activated iron oxide (d) Devarda's alloy
267. Flotation process is widely used for the manufacture of this fertilizer  
(a) ammonium sulphate (b) single super phosphate  
(c) muriate of potash (d) urea
268. Den process is widely used for the manufacture of this fertilizer  
(a) triple super phosphate (b) single super phosphate  
(c) nitrophosphates (d) diammonium phosphate
269. Sulphate of Potash is manufactured by  
(a) Langbeinite process (b) Mannheim furnace process  
(c) Both the two (d) Neither of the two
270. A mix of ammonium chloride and ammonium hydroxide in specified amounts makes a good  
(a) Lewis acid (b) Bronsted acid  
(c) strong acid (d) buffer
271. Soil structure in which the structural units have horizontal axes much longer than the vertical axes is  
(a) blocky (b) columnar (c) prismatic (d) platy
272. This fertilizer is an acid forming fertilizer in the soil  
(a) urea (b) calcium ammonium nitrate  
(c) muriate of potash (d) sulphate of potash

273. Denitrification of plant available nitrate is favoured in  
(a) neutral soils (b) waterlogged soils  
(c) well aerated soils (d) loose and friable soils
274. Volatilization loss of soil nitrogen as ammonia is favoured in  
(a) neutral soils (b) acid soils  
(c) highly acidic soils (d) alkaline soils
275. According to FCO Specifications in India, neutral ammonium citrate soluble phosphate content (as  $P_2O_5$  % by weight) of diammonium phosphate (DAP) must be minimum  
(a) 16 (b) 41 (c) 46 (d) 48
276. The radioactive isotope  $P^{32}$  undergoes nuclear decay leading to the formation of  
(a)  $S^{31}$  (b)  $S^{32}$   
(c)  $Si^{31}$  (d)  $Si^{32}$
277. The term 'hue' denotes this feature of a colour  
(a) dominant spectrum (b) intensity or brightness  
(c) purity (d) wavelength
278. In alkaline soils, phosphorus is absorbed by plants in the form of  
(a)  $H_3PO_4$  (b)  $(H_2PO_4)^-$  (c)  $(HPO_4)^{2-}$  (d)  $(PO_4)^{3-}$
279. Slickensides are often noticed in soils that belong to the Order  
(a) Alfisol (b) Vertisol  
(c) Histosol (d) Mollisol
280. 5<sup>th</sup> December of the year is celebrated as  
(a) World Environment Day (b) World Soil Day  
(c) World Maritime Day (d) World Wildlife Day
281. In Munsell's Soil Color chart, a numerical value of 10 for 'hue' represents  
(a) black (b) grey (c) yellow (d) red
282. A plant in much use for indication of permanent wilting point is  
(a) sunflower (b) safflower  
(c) turnip (d) rapeseed
283. This country does have rich deposits of rock phosphate  
(a) Iran (b) France  
(c) Morocco (d) Indonesia
284. Individual crystals of kaolinite clay mineral are joined by  
(a) covalent bonding (b) electrovalent bonding  
(c) hydrogen bonding (d) van der Waals bonding

285. Microorganisms involved in the conversion of nitrite to nitrate are  
(a) *Pseudomonas* (b) *Xanthomonas*  
(c) *Nitrosomonas* (d) *Nitrobacter*
286. Nitrification is a process of  
(a) oxidation (b) reduction  
(c) hydration (d) hydrolysis
287. Mohs scale is followed to determine this property of minerals  
(a) cleavage (b) refractive index  
(c) fracture (d) hardness
288. The mineral that records the highest numerical value in Mohs scale is  
(a) pyrites (b) rock phosphate  
(c) diamond (d) limestone
289. Soils or parent material deposits formed by glaciers as the agency of transportation are called  
(a) outwash (b) moraines  
(c) fluvial (d) glacial
290. Essentiality of molybdenum for plant growth was first established by  
(a) Sommer and Lipman (b) Brownell and Wood  
(c) E. Gris (d) Arnon and Stout
291. Mohs scale followed to determine the property of hardness of minerals ranges from  
(a) 1 to 5 (b) 1 to 10 (c) 1 to 20 (d) 1 to 100
292. Essentiality of nitrogen as a plant nutrient was first established by  
(a) Justus von Leibig (b) Theodore de Saussure  
(c) D. J. Nicolas (d) Jean Baptiste Boussingault
293. Water is used in part as a source of hydrogen for the manufacture of ammonia in the fertilizer plant located at  
(a) Nangal (b) Trombay (c) Sindri (d) Namrup
294. The term 'value' denotes this feature of a colour  
(a) dominant spectrum (b) intensity or brightness  
(c) purity (d) transparency
295. Conversion of urea to ammonium carbonate in the soil is a process of  
(a) oxidation (b) reduction  
(c) hydration (d) hydrolysis

296. In Soil Taxonomy, relatively young soils are classified under the Order  
(a) Ultisol (b) Inceptisol  
(c) Entisol (d) both Inceptisol and Entisol
297. An expression of Q (the volume flow of water in  $\text{cm}^3/\text{second}$ ) in Poiseuille's law for flow of liquid through a narrow tube is  
(a)  $\frac{\pi R^4 \Delta P}{8 \mu L}$  (b)  $\frac{\pi R^2 \Delta P}{8 \mu L}$   
(c)  $\frac{\pi R^4 \Delta P}{4 \mu L}$  (d)  $\frac{\pi R^4 \Delta P}{\mu L}$
298. Laterization soil formation process is favoured under  
(a) warm humid climate (b) high rainfall  
(c) basic parent material (d) all the three
299. The transporting agency in the formation of deposits of parent materials or soils referred as till and moraine is  
(a) gravity (b) water (c) wind (d) ice
300. The terminal acceptor of electrons in the process of respiration by denitrifying bacteria is  
(a) molecular oxygen (b) nitrate  
(c) nitrite (d) elemental nitrogen
301. The method of composting developed by Hutchinson and Richards is  
(a) ADCO process (b) Activated Compost method  
(c) Indore method (d) Coimbatore method
302. This source of hydrogen for the manufacture of ammonia for use in fertilizer plants is not preferred because of high energy requirement  
(a) coal (b) naphtha (c) water (d) natural gas
303. The combustible gas produced in biogas plants is  
(a) methane (b) propane (c) butane (d) octane
304. Thiourea is a  
(a) coated urea (b) slow release urea  
(c) slow acting urea (d) nitrification inhibitor
305.  $\text{CaHPO}_4$  is a constituent of this fertilizer  
(a) nitro phosphate (b) triple super phosphate  
(c) single super phosphate (d) urea ammonium phosphate
306. This metal is a heavy metal  
(a) lead (b) calcium (c) magnesium (d) barium



307. This substance is used as a primary standard acid for the standardization of prepared alkali solutions
- (a) potassium hydrogen *ortho*phosphate
  - (b) potassium hydrogen phthalate
  - (c) oxalic acid
  - (d) all the three
308. Microorganisms for which the optimum temperature for growth is less than  $10^0\text{C}$  are called
- (a) mesophiles
  - (b) thermophiles
  - (c) psychrophiles
  - (d) hyperthermophiles
309. Essentiality of iron for plant growth was first established by
- (a) Theodore de Saussure
  - (b) C. Sprengel
  - (c) E. Gris
  - (d) Arnon and Stout
310. Microorganisms which can derive their carbon requirement from atmospheric  $\text{CO}_2$  are called
- (a) heterotrophs
  - (b) phototrophs
  - (c) autotrophs
  - (d) chemotrophs
311. Saline alkali soils are characterized by these soil characteristics
- (a)  $\text{pH} < 8.5$ ,  $\text{EC} > 4 \text{ dS/m}$  at  $25^0\text{C}$ ,  $\text{ESP} < 15$
  - (b)  $\text{pH} > 8.5$ ,  $\text{EC} > 4 \text{ dS/m}$  at  $25^0\text{C}$ ,  $\text{ESP} > 15$
  - (c)  $\text{pH} > 8.5$ ,  $\text{EC} < 4 \text{ dS/m}$  at  $25^0\text{C}$ ,  $\text{ESP} > 15$
  - (d)  $\text{pH} > 8.5$ ,  $\text{EC} > 4 \text{ dS/m}$  at  $25^0\text{C}$ ,  $\text{ESP} < 15$
312. With decrease in soil acidity, the cation exchange capacity of silicate clays
- (a) increases
  - (b) decreases
  - (c) may increase or decrease
  - (d) remains unaffected
313. Gypsum is a popular choice amendment for the reclamation of
- (a) acid soils
  - (b) acid sulphate soils
  - (c) alkali soils
  - (d) calcareous soils
314. Individual crystals of this clay mineral are joined by hydrogen bonding
- (a) kaolinite
  - (b) montmorillonite
  - (c) illite
  - (d) vermiculite
315. Soil profiles of the soils of this Order are developed from parent materials of volcanic origin
- (a) Aridisol
  - (b) Andisol
  - (c) Spodosol
  - (d) Oxisol

316. A permafrost at a very low soil depth is associated with the soils of this Order  
(a) Aridisol (b) Andisol (c) Spodosol (d) Gelisol
317. The refractive index of sea and ocean water  
(a) increases with salinity (b) decreases with salinity  
(c) increases with temperature (d) decreases with temperature
318. In remote sensing, the basic requirement of any sensor system is  
(a) radiometric resolution (b) spectral resolution  
(c) spatial resolution (d) all the three
319. Soil Taxonomy now in vogue has been devised by  
(a) Food and Agriculture Organization  
(b) International Society of Soil Science  
(c) United States Department of Agriculture  
(d) Soil Science Society of America
320. On dissolution in water, this fertilizer produces a nonionic solution  
(a) borax (b) muriate of potash  
(c) urea (d) potassium schoenite
321. Leghaemoglobin protects the enzyme nitrogenase from being degraded by  
(a) molecular oxygen (b) ammonia  
(c) water (d) nitrate
322. *Frankia* associated with biological nitrogen fixation are  
(a) protozoa (b) fungi  
(c) actinomycetes (d) algae
323. An indicator plant for affirming molybdenum deficiency in soils is  
(a) rye (b) lucerne (c) sugar beet (d) cauliflower
324. With increase in pH, the CEC of humus  
(a) increases (b) decreases  
(c) may increase or decrease (d) remains unaltered
325. The most abundant genus of bacteria in soil is  
(a) *Bacillus* (b) *Xanthomonas*  
(c) *Pseudomonas* (d) *Escherichia*
326. The soil mass of a cylindrical core sampler (radius 6 cm, height 14 cm) on oven drying weighed 2.2176 kg. The bulk density of the soil is  
(a) 1.2 g/cm<sup>3</sup> (b) 1.3 g/cm<sup>3</sup> (c) 1.4 g/cm<sup>3</sup> (d) 1.5 g/cm<sup>3</sup>

327. Improper development of inflorescence in wheat is caused due to the deficiency of this nutrient
- (a) iron (b) zinc  
(c) molybdenum (d) boron
328. Amoozometer is used to measure this property of soils
- (a) soil moisture tension  
(b) saturated hydraulic conductivity  
(c) diffusion of gases  
(d) thermal conductivity
329. High concentration of this anion helps suppressing the incidence of *Fusarium* wilt of a number of crop plants
- (a) sulfite (b) nitrate (c) phosphate (d) sulphate
330. Pycnometer is used to measure this property of soils
- (a) soil moisture tension  
(b) saturated hydraulic conductivity  
(c) density  
(d) thermal conductivity
331. Flow of a fluid through a porous medium is quantified by
- (a) Fick's law (b) Stokes' law  
(c) Fourier's law (d) Darcy's law
332. Alkali soils are characterized by the following soil characteristics
- (a) pH < 8.5, EC > 4 dS/m at 25<sup>0</sup>C, ESP < 15  
(b) pH > 8.5, EC > 4 dS/m at 25<sup>0</sup>C, ESP > 15  
(c) pH > 8.5, EC < 4 dS/m at 25<sup>0</sup>C, ESP > 15  
(d) pH > 8.5, EC > 4 dS/m at 25<sup>0</sup>C, ESP < 15
333. Soil amendment not to be used for the reclamation of acid soils is
- (a) limestone (b) gypsum  
(c) dolomite (d) basic slag
334. In nitrogen fixation carried out by soil microbes and by lightnings in the atmosphere, the kinds of chemical reaction suffered by the elemental dinitrogen of the soil and atmospheric air are
- (a) reduction and oxidation (b) oxidation and reduction  
(c) reduction and reduction (d) oxidation and oxidation
335. The CEC of montmorillonite, illite, vermiculite and kaolinite follows the following order
- (a) montmorillonite > illite > vermiculite > kaolinite  
(b) vermiculite > montmorillonite > illite > kaolinite  
(c) vermiculite > montmorillonite > kaolinite > illite  
(d) vermiculite > kaolinite > montmorillonite > illite

336. Magnesium, a secondary plant nutrient, is intimately associated with the functioning of  
(a) hemoglobin (b) cytochrome  
(c) ribosomes (d) ATP
337. This enzyme is an extra cellular enzyme  
(a) nitrogenase (b) urease  
(c) nitrate reductase (d) nitrite reductase
338. Soils or parent material deposits formed by gravity as the agency of transportation are called  
(a) alluvial (b) colluvial (c) fluvial (d) glacial
339. 'White bud' in maize is caused due to the deficiency of  
(a) copper (b) manganese  
(c) zinc (d) molybdenum
340. *Azolla pinnata* is a  
(a) halophyte (b) thallophyte  
(c) lycophyte (d) pteridophyte
341. DTPA, a widely used extractant for determining available micronutrient cations in soils, is a/an  
(a) tridentate ligand (b) octadentate ligand  
(c) hexadentate ligand (d) pentadentate ligand
342. Soils of this Order are intensely weathered and leached so as to reach a per cent base saturation less than 35  
(a) Aridisol (b) Spodosol (c) Ultisol (d) Andisol
343. pH meter measures a soil's  
(a) active acidity (b) reserve acidity  
(c) buffering capacity (d) potential buffering capacity
344. Granite is a rock of this class  
(a) acid igneous (b) basic igneous  
(c) stratified (d) metamorphic
345. Black soils are normally poor in  
(a) phosphorus (b) potassium  
(c) calcium (d) magnesium
346. A *kankar* layer is often noticed in  
(a) black soils (b) red soils  
(c) arid region soils (d) humid region soils

347. Black soils are normally rich in  
(a) calcium (b) potassium  
(c) magnesium (d) calcium, potassium and lime
348. These soils have high particle density  
(a) black soils (b) red soils  
(c) alluvial soils (d) laterite soils
349. Gneiss is a rock metamorphically formed from this rock  
(a) granite (b) basalt (c) gabbro (d) andesite
350. The diameter of the micropores in soils is  
(a) more than 0.06 mm (b) less than 0.06 mm  
(c) 0.06 to 0.08 mm (d) 0.08 to 0.10 mm
351. The metamorphic rock produced from basalt, an igneous rock, is  
(a) gneiss (b) schist (c) slate (d) quartzite
352. According to Soil Taxonomy, the Soil Orders to which the desert soils belong to are  
(a) Alfisol and Aridisol (b) Entisol and Aridisol  
(c) Entisol and Vertisol (d) Ultisol and Andisol
353. The soil often referred to as garden soil is  
(a) alluvial soil (b) black soil  
(c) red soil (d) muck soil
354. According to Soil Taxonomy, the soil Order Ultisol includes these soil types  
(a) alluvial and black (b) black and red  
(c) red and laterite (d) alluvial and red
355. Strength of soil crusts can be determined by  
(a) tensiometer method  
(b) modulus of rupture test  
(c) pressure plate apparatus method  
(d) pressure membrane apparatus method
356. The hardest of the minerals available in the earth's crust is  
(a) quartz (b) coal (c) talc (d) diamond
357. Microorganisms involved in the conversion of ammonium to nitrite are the species of  
(a) *Pseudomonas* (b) *Xanthomonas*  
(c) *Nitrosomonas* (d) *Nitrobacter*

358. In Land Capability Classification, the Classes that are unsuitable for cultivation are
- (a) Class I to Class IV                      (b) Class V to Class VIII  
(c) Class I to Class V                      (d) Class VII and Class VIII
359. According to Soil Taxonomy, the soil Order Alfisol includes
- (a) desert soils                              (b) black soils  
(c) red soils                                (d) peat soils
360. This mineral contains both Al and Si
- (a) sphene      (b) goethite      (c) powellite      (d) topaz
361. The soil type that occupies the largest cultivable area in India is
- (a) alluvial soil                              (b) black soil  
(c) red soil                                    (d) swampy soil
362. In local parlance, the term *Khadar* refers to
- (a) fertile new alluvium                      (b) fertile old alluvium  
(c) infertile new alluvium                      (d) infertile old alluvium
363. A perfect black body
- (a) absorbs all radiations  
(b) reflects all radiations  
(c) absorbs only visible radiations  
(d) reflects only visible radiations
364. ICAR-Central Soil Salinity Research Institute is located in
- (a) New Delhi                              (b) Karnal  
(c) Bhopal                                    (d) Hyderabad
365. The order of binding of the anions to a positively charged surface follows the following order
- (a)  $\text{PO}_4^{3-} > \text{SO}_4^{2-} > \text{Cl}^- > \text{NO}_3^-$       (b)  $\text{SO}_4^{2-} > \text{PO}_4^{3-} > \text{Cl}^- > \text{NO}_3^-$   
(c)  $\text{Cl}^- > \text{PO}_4^{3-} > \text{NO}_3^- > \text{SO}_4^{2-}$       (d)  $\text{NO}_3^- > \text{Cl}^- > \text{PO}_4^{3-} > \text{SO}_4^{2-}$
366. The anion exchange capacity of the soil clays follows the following order
- (a) 2:1 type clays > oxide and hydroxide clays > 1:1 type clays  
(b) 1:1 type clays > 2:1 type clays > oxide and hydroxide clays  
(c) 1:1 type clays > oxide and hydroxide clays > 2:1 type clays  
(d) oxide and hydroxide clays > 1:1 type clays > 2:1 type clays
367. The capacity of the common cations to flocculate a colloidal system follows the following order
- (a)  $\text{Al}^{3+} > \text{K}^+ > \text{Na}^+ > \text{Ca}^{2+}$                       (b)  $\text{Ca}^{2+} > \text{Al}^{3+} > \text{K}^+ > \text{Na}^+$   
(c)  $\text{Al}^{3+} > \text{Ca}^{2+} > \text{Na}^+ > \text{K}^+$                       (d)  $\text{Al}^{3+} > \text{Ca}^{2+} > \text{K}^+ > \text{Na}^+$

368. The strength of binding of a cation to a negatively charged surface is a function of the charge of the cation and its  
(a) atomic weight (b) atomic number  
(c) solubility (d) radius of the hydrated cation
369. Ion exchange capacity soils is expressed in terms of  
(a) m.e./100 g soil (b) cmol ( $p^+/e^-$ )/kg soil  
(c) both the two (d) neither of the two
370. According to Soil Taxonomy, laterite soils do not belong to this soil Order  
(a) Alfisol (b) Ultisol (c) Inceptisol (d) Oxisol
371. The diameter of the macropores in soils is  
(a) more than 0.06 mm (b) less than 0.06 mm  
(c) 0.04 to 0.06 mm (d) less than 0.04 mm
372. Organic carbon content of a soil multiplied by this factor gives an approximate estimate of organic matter content of the soil  
(a) 0.58 (b) 1.21 (c) 1.724 (d) 2.29
373. The Standard Redox Potential of a redox system is denoted by the symbol  
(a) E (b) P (c)  $E^0$  (d) F
374. This layer lattice clay mineral is a limited expanding type clay mineral  
(a) montmorillonite (b) kaolinite  
(c) smectite (d) vermiculite
375. Gabbro is a rock of this class  
(a) acid igneous (b) basic igneous  
(c) stratified (d) metamorphic
376. Honeycomb soil structure is noticed in  
(a) alluvial soils (b) black soils  
(c) alkali soils (d) laterite soils
377. Soil crusting poses a problem in  
(a) sandy soils (b) sandy clay soils  
(c) clay soils (d) silty clay soils
378. In India, currently nano urea is being manufactured and marketed by  
(a) Fertilizer Corporation of India  
(b) ZuariAgro Chemicals  
(c) Fertilizers and Chemicals Travancore  
(d) Indian Farmers Fertilizer Cooperative Ltd (IFFCO)

379. On addition of organic matter to a soil, the bulk density of the soil  
(a) increases (b) decreases  
(c) may increase or decrease (d) remains unchanged
380. The clay mineral that causes cracks in black soils upon drying is  
(a) kaolinite (b) illite  
(c) montmorillonite (d) chlorite
381. Surface crusts made by algae, fungi, lichens, bacteria and mosses are crusts of the following kind  
(a) structural (b) erosion  
(c) depositional (d) cryptogamic
382. ICAR-Indian Institute of Soil and Water Conservation is located in  
(a) Karnal (b) Dehradun  
(c) Bhopal (d) Hyderabad
383. The headquarter of International Union of Soil Sciences is located in  
(a) Washington (b) Madison  
(c) Vienna (d) New Delhi
384. Ribbon behaviour test with a moist bolus of soil is performed to have an approximate estimate of  
(a) soil texture (b) soil structure  
(c) soil strength (d) soil thermal behaviour
385. *Karewas*, a unique soil/soil deposit found in Jammu and Kashmir is a deposit of this type  
(a) dune (b) lacustrine (c) moraine (d) till
386. The most widespread of the different soil types in Deccan plateau is  
(a) black soils (b) red soils  
(c) laterite soils (d) alluvial soils
387. Nickel is a metallic cofactor of the enzyme  
(a) nitrogenase (b) phosphatase  
(c) sulfatase (d) urease
388. Transfer of heat from one place to another without the help of an intervening or supporting medium is called  
(a) dissipation (b) conduction  
(c) convection (d) radiation
389. The soils of the Gangetic plains of India are mostly  
(a) black soils (b) red soils  
(c) laterite soils (d) alluvial soils



390. A practical way of reducing  $\text{NH}_4^+$  fixation in the inter lattice space of 2:1 type clay minerals following the application of ammonical fertilizers is prior application of potassic fertilizer because
- (a)  $\text{NH}_4^+$  is more soluble than  $\text{K}^+$
  - (b)  $\text{NH}_4^+$  is held more tightly than  $\text{K}^+$  on exchange complexes
  - (c) ionic radii of hydrated  $\text{NH}_4^+$  and  $\text{K}^+$  are matching
  - (d) atomic masses of  $\text{NH}_4^+$  and  $\text{K}^+$  are matching
391. With increase in the content of 2:1 type clay minerals, the degree of  $\text{NH}_4^+$  fixation by soil
- (a) increases
  - (b) decreases
  - (c) may increase or decrease
  - (d) no relationship between the two
392. Marble is a rock of this class
- (a) igneous
  - (b) sedimentary
  - (c) metamorphic
  - (d) volcanic
393. For the determination of available potassium content of soils, the extractant used is
- (a) neutral 1 N ammonium acetate
  - (b) Olsen's reagent
  - (c) Bray's No. 1 reagent
  - (d) Morgan's extractant
394. Keen and Rackzowski's boxes are used for the determination of a soil's
- (a) structure
  - (b) texture
  - (c) bulk density and particle density
  - (d) thermal conductivity
395. Bouyoucos, a soil physicist, developed a special type of this instrument for carrying out the particle size analysis of soils
- (a) pycnometer
  - (b) hydrometer
  - (c) thermometer
  - (d) viscometer
396. The capacity of the cations  $\text{Ca}^{2+}$ ,  $\text{Mg}^{2+}$ ,  $\text{K}^+$  and  $\text{Na}^+$  to keep a colloidal system in a state of dispersion (deflocculated state) follows the following order
- (a)  $\text{Mg}^{2+} > \text{K}^+ > \text{Na}^+ > \text{Ca}^{2+}$
  - (b)  $\text{Ca}^{2+} > \text{Mg}^{2+} > \text{K}^+ > \text{Na}^+$
  - (c)  $\text{Ca}^{2+} > \text{Mg}^{2+} > \text{Na}^+ > \text{K}^+$
  - (d)  $\text{Na}^+ > \text{K}^+ > \text{Mg}^{2+} > \text{Ca}^{2+}$

397. The cation exchange capacity of the soil clays follows the following order
- (a) 2:1 type clays > oxide and hydroxide clays > 1:1 type clays
  - (b) 1:1 type clays > 2:1 type clays > oxide and hydroxide clays
  - (c) 2:1 type clays > 1:1 type clays > oxide and hydroxide clays
  - (d) 1:1 type clays > oxide and hydroxide clays > 2:1 type clays
398. A simple method for the determination of organic carbon content of soils was developed by
- (a) Kjeldahl
  - (b) Walkley and Black
  - (c) Subbaiah and Asija
  - (d) Lindsay and Norvel
399. Nessler's reagent is used in the detection and determination of
- (a) ammonium
  - (b) nitrate
  - (c) nitrate
  - (d) amines
400. The diameter of silt particles according to ISSS classification system is
- (a) 0.2 to 2 mm
  - (b) 0.02 to 0.2 mm
  - (c) 0.002 to 0.02 mm
  - (d) less than 0.002 mm
401. The most abundant of all the elements in the earth's crust is
- (a) oxygen
  - (b) silicon
  - (c) iron
  - (d) aluminium
402. Clay minerals are
- (a) primary minerals
  - (b) secondary minerals
  - (c) accessory minerals
  - (d) essential minerals
403. With regard to genesis, limestone is a sedimentary rock of this type
- (a) residual
  - (b) mechanical
  - (c) chemical
  - (d) organic
404. The mineral that accounts for 50 to 90% of the mass of the sand and coarse silt fractions is
- (a) quartz
  - (b) feldspars
  - (c) micas
  - (d) olivines
405. If the top of the structural units in a columnar structure are relatively angular and flat horizontally, the soil structure is designated as
- (a) blocky
  - (b) columnar
  - (c) prismatic
  - (d) platy
406. This metal is a key component of the chemical structure of hemoglobin
- (a) iron
  - (b) cobalt
  - (c) manganese
  - (d) magnesium

407. Formation of urea from ammonium carbamate in the manufacture of urea is a process of  
(a) oxidation (b) hydrolysis  
(c) hydration (d) dehydration
408. This metal is a key component of the Photo System II of plants  
(a) iron (b) copper (c) manganese (d) zinc
409. The micronutrient that now finds almost a regular inclusion in the fertilizer schedule in Indian soils is  
(a) iron (b) copper (c) manganese (d) zinc
410. The unit for expressing the viscosity of fluids is  
(a) dBel (b) Siemens (c) Poise (d) Mho
411. 'Mottle leaf' in citrus is caused due to the deficiency of  
(a) iron (b) copper (c) manganese (d) zinc
412. Soils or parent material deposits formed by wind as the agency of transportation are called  
(a) outwash (b) aeolian (c) fluvial (d) glacial
413. DRIS as a diagnostic approach in soil fertility evaluation was developed by  
(a) Arnon (b) Morgan  
(c) Lindsay and Norvel (d) Beaufils
414. The concept of Critical Limits of plant nutrients for assessing their deficiencies in soils was developed by  
(a) Arnon (b) Morgan  
(c) Cate and Nelson (d) Beaufils
415. Boron is absorbed by plants in the form of  
(a)  $H_3BO_3$  (b)  $(H_2BO_3)^-$  (c)  $(HBO_3)^{2-}$  (d) All the three
416. In waterlogged soils, sulphur exists predominantly as  
(a)  $(SO_4)^{2-}$  (b)  $(SO_3)^{2-}$  (c)  $S^{2-}$  (d)  $(S_2O_3)^{2-}$
417. Acid equivalent of the following fertilizers follows the order:  
(a) ammonium sulphate > calcium ammonium nitrate > urea > anhydrous ammonia  
(b) Urea > ammonium sulphate > calcium ammonium nitrate > anhydrous ammonia  
(c) anhydrous ammonia > ammonium sulphate > urea > calcium ammonium nitrate  
(d) ammonium sulphate > anhydrous ammonia > urea > calcium ammonium nitrate

418. Pyrites are iron  
(a) sulphides (b) sulphites  
(c) sulphates (d) thiosulphates
419. In low pH acid soils, soluble phosphorus is fixed as insoluble  
(a) phosphoric acid (b) zinc phosphate  
(c) monocalcium phosphate (d) aluminium phosphate
420. Pressure Plate Apparatus is used to measure this property of soils  
(a) soil moisture retention  
(b) saturated hydraulic conductivity  
(c) density  
(d) thermal conductivity
421. Bonemeal is a rich source of  
(a) calcium and potassium (b) calcium and phosphorus  
(c) calcium and iron (d) calcium and magnesium
422. Kjeldahl method is used for the determination of soil's  
(a) total nitrogen (b) available nitrogen  
(c) ammonium nitrogen (d) nitrate nitrogen
423. The instrument in use for the determination of micronutrient cations in soils is  
(a) colorimer  
(b) flame photometer  
(c) spectrometer  
(d) atomic absorption spectrophotometer
424. The equivalent weight of  $\text{MnSO}_4$  (molecular weight 151.0) in its oxidation to  $\text{KMnO}_4$  is  
(a) 151.0 (b) 75.5 (c) 30.2 (d) 25.2
425. Denitrification is process of  
(a) oxidation (b) reduction  
(c) hydration (d) hydrolysis
426. The ionic form of nitrogen toxic to plants is  
(a)  $\text{NO}_2^-$  (b)  $\text{NO}_3^-$  (c)  $\text{NH}_4^+$  (d)  $-\text{NH}_3^+$
427. The reagent that acts as a catalyst in the digestion of soil and plant samples by Kjeldahl's method of total nitrogen determination is  
(a) potassium sulphate (b) cupric sulphate  
(c) salicylic acid (d) Devarda's alloy

428. The mixed indicator used in the back titration of ammonium borate to boric acid against a standard acid is made of bromocresol green and
- (a) phenolphthalein                      (b) bromocresol orange  
(c) litmus                                      (d) methyl red
429. Soil amendment that is not to be used for the reclamation of alkali soils is
- (a) limestone                                (b) gypsum  
(c) elemental sulphur                      (d) iron pyrites
430. Nitrification inhibitors inhibit the following step of the process of nitrification
- (a)  $\text{NH}_3 \rightarrow \text{NH}_4^+$                       (b)  $\text{NH}_4^+ \rightarrow \text{NO}_2^-$   
(c)  $\text{NH}_4^+ \rightarrow \text{NO}_3^-$                       (d)  $\text{NO}_2^- \rightarrow \text{NO}_3^-$
431. Rich deposits of guano are found in these countries
- (a) Indonesia and Malayasia              (b) Morocco and Jordan  
(c) Peru and Chile                            (d) France and England
432. Coal is a rock of this class
- (a) igneous                                      (b) sedimentary  
(c) metamorphic                              (d) volcanic
433. With increase in the compaction of a soil, the particle density of the soil
- (a) decreases                                    (b) increases  
(c) may increase or decrease              (d) remains unchanged
434. In soil analysis laboratories, molybdenum blue method is followed for the determination of soil
- (a) nitrogen    (b) phosphorus    (c) sulphur              (d) boron
435. Spectronic 20, a much used analytical instrument in soil analysis laboratories, is a variant of
- (a) absorption spectrophotometer  
(b) flame photometer  
(c) EC Bridge  
(d) gas chromatograph
436. A pH meter does have two electrodes viz. a reference electrode and a/an
- (a) standard hydrogen electrode  
(b) calomel electrode  
(c) silver-silver chloride electrode  
(d) indicator electrode

437. Aluminium chloride is an acid according to the acid base concept of  
(a) Arrhenius (b) Lowry  
(c) Bronsted (d) Lewis
438. Soils of high rainfall areas are normally  
(a) acidic (b) neutral (c) alkaline (d) calcareous
439. The fertilizer with the highest numerical value of acid equivalent is  
(a) ammonium sulphate (b) ammonium nitrate  
(c) nitrophosphate (d) anhydrous ammonia
440. Ratio law was formulated by  
(a) Sorenson (b) Jenny  
(c) Schofield (d) Lipman
441. A property not characteristic of colloidal particles is their  
(a) high surface area (b) adsorption behaviour  
(c) possessing electrical charge (d) coarse particle size
442. Boron deficiency is relatively uncommon in  
(a) sandy soils  
(b) clayey soils  
(c) alkaline soils  
(d) soils formed from granitic parent material
443. *Rhizobium* species specific to soybean as the host plant is  
(a) *R. japonicum* (b) *R. lupini*  
(c) *R. leguminosarum* (d) *R. meliloti*
444. Collision of molecules and passing on their kinetic energy to adjacent molecules is associated with the transfer of heat through the process of  
(a) dissipation (b) conduction  
(c) convection (d) radiation
445. The mineral that records the least numerical value of hardness in Mohs scale is  
(a) pyroxene (b) biotite  
(c) mica (d) talc
446. Theory of spectrophotometry is based upon the principles of  
(a) Snell's law (b) Kirchoff's law  
(c) Lambert-Beer's law (d) Beckman's law
447. The unit for expressing the Residual Sodium Carbonate (RSC) value of irrigation water is  
(a) mg/100 ml (b) mg/100 g  
(c) m.e./100 ml (d) m.e./L

448. Soils or parent material deposits referred as aeolian are formed by the following agency of transportation  
(a) water (b) wind (c) ice (d) gravity
449. Irrigation water with this numerical value of Residual Sodium Carbonate (RSC) is generally safe for irrigation  
(a) less than 1.25 (b) 1.25 to 2.50  
(c) 2.50 to 3.50 (d) more than 4.50
450. A guano forming sea bird is  
(a) pelican (b) gannets  
(c) albatross (d) all the three
451. Availability of phosphorus is maximum at this soil pH  
(a) 5 to 6 (b) 6 to 7 (c) 7 to 8 (d) more than 8
452. Heat flow in soils is described by  
(a) Fick's law (b) Stokes' law  
(c) Fourier's law (d) Darcy's law
453. Decomposability of the constituents of soil organic matter follows the sequence is  
(a) proteins > cellulose > sugars > lignins  
(b) cellulose > proteins > lignins > sugars  
(c) lignins > sugars > cellulose > proteins  
(d) sugars > proteins > cellulose > lignins
454. The C:N ratio of saw dust is  
(a) 10:1 (b) 50:1 (c) 100:1 (d) 400:1
455. Nano urea currently being marketed in India is a formulation of this kind  
(a) liquid (b) prills (c) granules (d) super granules
456. Thomas Way, an early Soil Scientist, first reported the  
(a) biological nitrogen fixation by legumes  
(b) colloidal behaviour of silicate clays  
(c) cation exchange property of soils  
(d) Law of Minimum in plant nutrition
457. An important geological feature of Deccan plateau is  
(a) vast tracts of black soils produced from basaltic rocks  
(b) vast tracts of alluvial soils transported by water  
(c) vast tracts of sandy soils produced from igneous rocks  
(d) vast tract of lateritic soils produced from laterite rocks

458. Most abundant of the different classes of rocks is  
(a) igneous (b) sedimentary  
(c) metamorphic (d) clastic
459. A higher value of Coefficient of Linear Extensibility (COLE) of a soil is indicative of its higher content of  
(a) expanding type clay minerals  
(b) nonexpanding type clay minerals  
(c) organic matter  
(d) fine sand and silt
460. Robinson's pipette method is used for the determination of soil  
(a) particle density (b) bulk density  
(c) water holding capacity (d) particle size analysis
461. Salicylic acid is used in the determination of total nitrogen by Kjeldahl method for the inclusion of  
(a) ammonium nitrogen (b) nitrite nitrogen  
(c) nitrate nitrogen (d) amino nitrogen
462. Nitrification inhibitors are inhibitory to the growth of the bacteria  
(a) *Nitrosomonas* (b) *Nitrobacter*  
(c) *Pseudomonas* (d) *Xanthomonas*
463. The SAR of an irrigation water source is 12.5. The irrigation water is rated as  
(a) S1 Class. Low sodium hazard  
(b) S2 Class. Medium sodium hazard  
(c) S3 Class. High sodium hazard  
(d) S4 Class. Very high sodium hazard
464. This potassic fertilizer is manufactured in India  
(a) muriate of potash (b) sulphate of potash  
(c) nitre (d) potassium schoenite
465. The fertilizer SUPHALA is  
(a) monoammonium phosphate (b) diammonium phosphate  
(c) urea ammonium phosphate (d) N-P-K complex
466. The terms epipedon and endopedon in Soil Taxonomy differ with regard to their  
(a) depth in the soil (b) physical properties  
(c) minerology (d) microbial population



467. Ammonium sulphate is produced as a byproduct in  
(a) iron and steel industry      (b) cement industry  
(c) paper industry      (d) thermal power plants
468. Hornmeal is a rich source of  
(a) nitrogen    (b) phosphorus    (c) calcium      (d) sulphur
469. Pit, Covered Pit and Heap method are different methods for  
(a) collection of FYM      (b) storage of FYM  
(c) preparation of compost      (d) preparation of poudrette
470. Of all the organic manures, the one that has the highest availability of nitrogen is  
(a) fish meal    (b) horn meal    (c) bone meal    (d) blood meal
471. Slate, a metamorphic rock, is produced from this rock  
(a) soapstone      (b) sandstone  
(c) dolomite      (d) shale
472. The green manuring crop that is also a minor pulse crop and does have considerable fodder value is  
(a) *Sesbania aculeata*      (b) *Crotalaria juncea*  
(c) *Phaseolus trilobus*      (d) *Tephrosia purpurea*
473. The mixed indicator used in the back titration of ammonium borate to boric acid against a standard acid is a mix of methyl red and  
(a) phenolphthalein      (b) bromocresol orange  
(c) litmus      (d) bromocresol green
474. Biotite is a mineral under the following class  
(a) feldspars      (b) olivines  
(c) amphiboles      (d) micas
475. Siderite is a mineral of the following class  
(a) oxide      (b) sulphate      (c) sulphite      (d) carbonate
476. This mineral contains water of crystallization as an integral part of the molecule  
(a) calcite      (b) gypsum      (c) limestone      (d) dolomite
477. The equivalent weight of gypsum is  
(a) 68.1      (b) 136.2      (c) 86.1      (d) 172.2
478. Charcoal like substance made by burning organic material from agricultural and forestry wastes in a controlled pyrolysis process is  
(a) Biomass    (b) Biosuper    (c) Biochar      (d) Biota

479. Actinomycetes for their growth prefer a medium that is  
(a) neutral (b) slightly acidic  
(c) slightly alkaline (d) strongly alkaline
480. Rate of diffusion of gases between two systems is described by  
(a) Fick's law (b) Stokes' law  
(c) Fourier's law (d) Poiseuille's law
481. Fungi for their growth prefer a medium that has a pH of  
(a) 4.5 to 6.5 (b) 6.5 to 7.5  
(c) 7.5 to 8.5 (d) more than 8.5
482. One of the following rocks is not a polymineralitic rock  
(a) quartzite (b) basalt (c) granite (d) diorite
483. Soil crusts may be  
(a) physical crusts (b) chemical crusts  
(c) biological crusts (d) all the three
484. Brownian movement, a characteristic of colloidal solutions, is a property of this kind  
(a) electrical (b) mechanical  
(c) optical (d) magnetic
485. The reagent added for elevating the boiling point of concentrated sulphuric acid in the digestion of samples by Kjeldahl's method of total nitrogen determination is  
(a) potassium sulphate (b) cupric sulphate  
(c) salicylic acid (d) Devarda's alloy
486. Rice because of its prolonged requirement of submerged conditions grows well in  
(a) light textured soils (b) heavy textured soils  
(c) well aerated soils (d) well drained soils
487. Clumps and fragments of rocks are more abundant in this soil horizon  
(a) A horizon (b) B horizon (c) C horizon (d) D horizon
488. Muscovite is a mineral of the following class  
(a) feldspars (b) olivines  
(c) amphiboles (d) micas
489. The seeds of this green manuring crop require scarification for facilitating easy germination  
(a) dhaincha (b) indigo  
(c) wild indigo (d) sunnhemp

490. Hausmannite is a mineral containing  
(a) titanium (b) manganese (c) copper (d) iron
491. Rutile is a mineral of the following type  
(a) oxide (b) sulphate (c) sulphite (d) carbonate
492. This soil horizon contains more humus than any of the other horizons  
(a) A horizon (b) B horizon  
(c) C horizon (d) D horizon
493. A soil becomes more adhesive, cohesive and plastic with its higher content of  
(a) fine sand (b) coarse sand  
(c) silt (d) clay
494. Water retention capacity of soils is directly related to their content of  
(a) fine sand (b) coarse sand  
(c) silt (d) clay
495. Profiles of the soils of this Order are still under development  
(a) Alfisol (b) Vertisol (c) Mollisol (d) Inceptisol
496. Micaceous layer lattice minerals of the following type  
(a) 1:1 (b) 2:1 (c) 2:1:1 (d) all the three
497. Byre method is a method concerned with the  
(a) collection of FYM (b) storage of FYM  
(c) preparation of compost (d) preparation of poudrette
498. Tyndall effect, a property characteristic of colloidal solutions, is a property of this kind  
(a) electrical (b) mechanical  
(c) optical (d) sedimentation
499. India's first fertilizer manufacturing plant was established at  
(a) Alwaye in Kerala (b) Ranipet in Tamil Nadu  
(c) Sindri in Jharkhand (d) Kalol in Gujarat
500. The fertilizer the consumption of which is the highest in India  
(a) ammonium sulphate (b) urea  
(c) calcium ammonium nitrate (d) diammonium phosphate
501. One among the following fertilizers is commercially available in granular form is  
(a) ammonium nitrate (b) single super phosphate  
(c) ammonium chloride (d) diammonium phosphate

502. The second most widely used fertilizer in India is  
(a) ammonium sulphate (b) urea  
(c) calcium ammonium nitrate (d) diammonium phosphate
503. Ammonium polyphosphate is a  
(a) crystalline fertilizer (b) coated fertilizer  
(c) granulated fertilizer (d) liquid fertilizer
504. If the mean annual soil temperature is  $< 0^{\circ}\text{C}$ , usually with permafrost, the Soil Temperature Regime (STR) for use in Soil Taxonomy is referred as  
(a) Frigid (b) Gelic (c) Pergelic (d) Cryic
505. PEC process is used in the manufacture of  
(a) NPK complexes (b) nitrophosphates  
(c) urea ammonium phosphate (d) ammonium phosphate sulphate
506. A radioisotope of much concern for increasing levels of its presence in soils is  
(a)  $^3\text{H}$  (b)  $^{32}\text{S}$  (c)  $^{39}\text{K}$  (d)  $^{137}\text{Cs}$
507. This mineral does not contain iron  
(a) pyrites (b) siderite (c) ilmenite (d) sphalerite
508. Black colour of black soils is due to the presence of  
(a) hematite (b) limonite  
(c) muscovite (d) titaniferous magnetite
509. Chlorofluorocarbons are potent environment pollutant gases because they  
(a) increase pollution load of the soil  
(b) contaminate the lithosphere of the earth  
(c) pollute the underground hydrosphere of the earth  
(d) deplete the protective ozone layer cover of the earth
510. The state of India which has the maximum fertilizer manufacturing facility in terms of tonnage is  
(a) Uttar Pradesh (b) Tamil Nadu  
(c) Maharashtra (d) Gujarat
511. This fertilizer is a straight fertilizer  
(a) monoammonium phosphate (b) diammonium phosphate  
(c) nitrophosphate (d) single super phosphate
512. Nitrophosphates are manufactured by  
(a) floatation process (b) Manheim furnace process  
(c) Den process (d) ODDA process

513. In the manufacture of urea, the latter is produced by the dehydration of  
(a) carbamide (b) ammonium carbamate  
(c) ammonium carbonate (d) ammonium bicarbonate
514. *Nostoc* genera are  
(a) bacteria (b) fungi  
(c) actinomycetes (d) algae
515. Solubilization of insoluble rock phosphate involves  
(a) hydrolysis (b) oxidation  
(c) reduction (d) carbonation
516. The soils with this endopedon are intensely weathered  
(a) calcic (b) natric (c) histic (d) oxic
517. One among the following micronutrient elements is not polyvalent  
(a) iron (b) manganese  
(c) zinc (d) molybdenum
518. The scientist who contributed much to the modern USDA Soil Taxonomy is  
(a) C F Marbut (b) V V Dokuchaev  
(c) Guy D Smith (d) Hans Jenny
519. It is not advisable to apply potassic fertilizers to coarse textured soils just before the onset of rains because of their loss by  
(a) fixation (b) leaching  
(c) mineralization (d) immobilization
520. In Soil Taxonomy, an identifying geographic name such as that of a river, town, area etc. is used in naming a  
(a) Subgroup (b) Family  
(c) Series (d) Phase
521. If the present radioactivity of a plant sample containing the radioisotope  $^{32}\text{P}$  ( $t_{1/2}$  is 14.2 days) is 40000 dps, the radioactivity of the sample after 70 days shall be close to  
(a) 20000 dps (b) 5000 dps  
(c) 2500 dps (d) 1250 dps
522. The most important hydrocarbon constituent of natural gas is  
(a) methane (b) ethane  
(c) propane (d) butane

523. If the mean annual soil temperature (MAST) is  $> 15^{\circ}\text{C}$  but  $< 22^{\circ}\text{C}$ , the Soil Temperature Regime (STR) for reference in Soil Taxonomy is referred as  
(a) Frigid      (b) Thermic      (c) Mesic      (d) Cryic
524. Microorganisms which can derive their energy requirement from the oxidation of organic compounds are called  
(a) heterotrophs      (b) phototrophs  
(c) autotrophs      (d) chemoautotrophs
525. The relationship of the decrease in the intensity of the transmitted radiation with an increase in the concentration of radiation absorbing substance in a solution is quantified by  
(a) Fourier's law      (b) Beer's law  
(c) Bouguer's law      (d) Darcy's law
526. The usually preferred concentration of urea for its foliar application is  
(a) 0.05 to 0.10%      (b) 0.10 to 0.50%  
(c) 0.50 to 2.00%      (d) 2.00 to 5.00%
527. The fertilizer manufactured from caprolactam manufacturing plants is  
(a) ammonium sulphate      (b) urea  
(c) nitrophosphate      (d) diammonium phosphate
528. A simple method for the laboratory determination of Lime Requirement of acid soils was described by  
(a) Schoonover      (b) Mehlich  
(c) Morgan      (d) Shoemaker
529. Nitrogenase, the nitrogen fixing enzyme, is protected from being degraded by molecular oxygen by  
(a) porphyrin      (b) siroheme  
(c) ferredoxin      (d) leghemoglobin
530. The fertilizer for which FCO Specifications for Fertilizers in India permit moisture content upto a maximum of 12 per cent by weight is  
(a) single super phosphate      (b) diammonium phosphate  
(c) nitrophosphates      (d) ammonium polyphosphate
531. Super phosphoric acid is used in the manufacture of  
(a) triple super phosphate      (b) diammonium phosphate  
(c) urea ammonium phosphate      (d) ammonium polyphosphate

532. If the mean annual soil temperature (MAST) is  $> 0^{\circ}\text{C}$ , but  $< 8^{\circ}\text{C}$ , the difference between mean summer and winter soil temperature is  $> 5^{\circ}\text{C}$ , and there is cool summer temperatures, the Soil Temperature Regime (STR) for reference in Soil Taxonomy is referred as  
(a) Frigid (b) Gelic (c) Pergelic (d) Cryic
533. Spene is a mineral containing  
(a) titanium (b) iron (c) copper (d) manganese
534. This fertilizer is a complex fertilizer  
(a) monoammonium phosphate (b) urea  
(c) calcium ammonium nitrate (d) single superphosphate
535. Nitrophosphates are manufactured by  
(a) floatation process (b) Manheim furnace process  
(c) Den process (d) PEC process
536. If the mean annual soil temperature (MAST) is  $> 0^{\circ}\text{C}$  but  $< 8^{\circ}\text{C}$ , the difference between mean summer and mean winter soil temperature is  $> 5^{\circ}\text{C}$  and there is warm summer temperatures, the Soil Temperature Regime (SMR) for reference in Soil Taxonomy is referred as  
(a) Frigid (b) Gelic (c) Pergelic (d) Cryic
537. This element is intimately associated with functioning of the enzyme nitrate reductase  
(a) boron (b) copper  
(c) manganese (d) molybdenum
538. The purpose of adding potassium sulphate in the digestion of soil and plant samples by Kjeldahl's method of total nitrogen determination is  
(a) catalyzing the digestion process  
(b) elevation of the boiling point of concentrated sulphuric acid  
(c) inclusion of nitrate nitrogen  
(d) to prevent bumping and frothing of the digestion mixture
539. A radio isotope of carbon (atomic number 6) of much use in soil research is  
(a)  $\text{C}^{11}$  (b)  $\text{C}^{12}$  (c)  $\text{C}^{13}$  (d)  $\text{C}^{14}$
540. In Soil Taxonomy, highly weathered soils are classified under the Order  
(a) Inceptisol (b) Andisol  
(c) Oxisol (d) Aridisol

541. Shoemaker described a simple method for the laboratory determination of this characteristic of soils
- (a) Cation Exchange Capacity
  - (b) Exchangeable Sodium Percentage
  - (c) Lime Requirement of acid soils
  - (d) Gypsum Requirement of alkali soils
542. *Anabaena* associated with the process of biological nitrogen fixation are
- (a) bacteria
  - (b) fungi
  - (c) actinomycetes
  - (d) algae
543. A solution of 10 parts per million (ppm) of iron contains
- (a) 10 mg iron in 100 ml solution
  - (b) 10 mg iron in 1 L solution
  - (c) 10 dg iron in 100 ml solution
  - (d) 10 dg iron in 1 L solution
544. These soils are referred to as white alkali soils because of a white encrustation of salts on the soil surface
- (a) acid soils
  - (b) alkali soils
  - (c) saline alkali soils
  - (d) saline soils
545. Petrology is the study of formation, composition, structure, properties, and such aspects of
- (a) petroleum products
  - (b) rocks
  - (c) minerals
  - (d) underground hydrosphere
546. The formation of a black colour on the soil surface is often noticed in
- (a) acid soils
  - (b) alkali soils
  - (c) saline soils
  - (d) calcareous soils
547. A soil profile is a physical exposure of a soil along
- (a) horizontally
  - (b) vertically
  - (c) laterally
  - (d) longitudinally
548. Paddy husk is composed of principally
- (a) hemicellulose and crude proteins
  - (b) waxes and resins
  - (c) silica and lignins
  - (d) alumina and fibre proteins



549. The wavelength of the following electromagnetic radiations decreases in the order
- (a) X-ray < infrared < visible < ultraviolet
  - (b) visible < infrared < ultraviolet < X-ray
  - (c)  $\gamma$ -ray < ultraviolet < visible < radio waves
  - (d) infrared < visible < ultraviolet < X-ray
550. The profile of a soil is a historical record of the
- (a) soil forming processes
  - (b) parent material
  - (c) soil biological activity
  - (d) soil physical properties
551. The first fertilizer manufacturing plant of post independent India was established at
- (a) Alwaye in Kerala
  - (b) Ranipet in Tamil Nadu
  - (c) Sindri in Jharkhand
  - (d) Phulpur in Uttar Pradesh
552. Lime Requirement of an acid soil is related to the soil's
- (a) texture
  - (b) cation exchange capacity
  - (c) clay content
  - (d) all the three
553. The second most abundant element in the earth's crust, next only to oxygen, is
- (a) hydrogen
  - (b) silicon
  - (c) iron
  - (d) aluminium
554. Diagnostic subsurface horizon (endopedon) characterized by accumulation and cementation of insoluble limestone and dolomite is
- (a) Gypsic
  - (b) Salic
  - (c) Calcic
  - (d) Petrocalcic
555. Marble, a metamorphic rock, is produced from the rock
- (a) soapstone
  - (b) sandstone
  - (c) limestone
  - (d) shalestone
556. An example of a carbonate mineral is
- (a) magnesite
  - (b) siderite
  - (c) smithsonite
  - (d) all the three
557. The theory proposed by lundegardh for the absorption of ionic nutrients by plants is known as
- (a) Contact Exchange theory
  - (b) Facilitated Diffusion of Nutrients
  - (c) Passive Uptake of Nutrients against a concentration gradient
  - (d) Cytochrome Pump theory

558. Cobalt, a beneficial plant nutrient for higher plants, is essential for
- (a) nitrogen fixing microbes
  - (b) Azolla
  - (c) phosphate solubilizing bacteria
  - (d) Mycorrhizae
559. The practice that may aggravate soil crusting is
- (a) liberal addition of organic matter
  - (b) application of single super phosphate
  - (c) surface mulching
  - (d) shallow ploughing
560. A primary standard acid for the standardization of a prepared NaOH solution is
- (a) hydrochloric acid
  - (b) nitric acid
  - (c) sulphuric acid
  - (d) benzoic acid
561. Rock phosphates of Indian origin are not suitable for the manufacture of phosphatic fertilizers because of their
- (a) low water solubility
  - (b) low phosphorus content
  - (c) presence of impurities
  - (d) presence of silica
562. The purpose of adding gypsum in the collection and storage of farm yard manure is to
- (a) promote microbial activity
  - (b) increase calcium content of the manure
  - (c) decrease losses of nitrogen from FYM
  - (d) improve physical state of the manure
563. A simple method for the laboratory determination of Gypsum Requirement of acid soils was described by
- (a) Schoonover
  - (b) Mehlich
  - (c) Morgan
  - (d) Shoemaker
564. Rock phosphate can be applied as a phosphatic fertilizer along with
- (a) gypsum
  - (b) elemental sulphur
  - (c) phosphate solubilizing bacteria
  - (d) all the three
565. *Eisenia foetida* is a
- (a) nitrogen fixing alga
  - (b) compost earthworm
  - (c) guano forming bird
  - (d) sulphur oxidizing bacteria

566. With increase in pH, the cation exchange capacity of humus and clays  
(a) increases (b) decreases  
(c) remains unchanged (d) may increase or decrease
567. According to the norms of the Soil Health Card Scheme of the Government of India, the grid area for drawing soil samples in the irrigated areas is  
(a) 1 ha (b) 2.5 ha (c) 10 ha (d) 25 ha
568. For reference in Soil Taxonomy, soils that remain saturated with water for most part of the year as in tidal marsh are assigned the following Soil Moisture Regime (SMR)  
(a) Udic (b) Aquic (c) Peraquic (d) Torric
569. Lowry and Bronsted proposed a theory for the  
(a) nature of acids and bases  
(b) mechanism of action of buffers  
(c) degree of dissociation of weak acids and bases  
(d) solubility product principles
570. A primary standard base for the standardization of a prepared HCl solution is  
(a) sodium hydroxide (b) potassium hydroxide  
(c) sodium carbonate (d) ammonia
571. Pampas grasslands are widespread in  
(a) South America (b) Africa  
(c) Siberia (d) Australia
572. Meghdoot, a joint initiative of the Government of India, Indian Meteorological Department and Indian Council of Agricultural Research for helping farmers in weather based farming, is a  
(a) Call Centre (b) Mobile Application (App)  
(c) database (d) satellite
573. Gypsum Requirement of an alkali soil is related to the soil's  
(a) texture (b) cation exchange capacity  
(c) clay content (d) all the three
574. An epipedon common in soils is  
(a) Ochric (b) Argillic (c) Natric (d) Oxic

575. If the Residual Sodium Carbonate (RSC) value of a water source is 0.80 m.e./L, the water is categorized as
- (a) generally safe for irrigation
  - (b) marginally safe for irrigation
  - (c) usually unsuitable for irrigation without amendment
  - (d) unsuitable for irrigation
576. Effectiveness of rock phosphate for its direct application as a phosphatic fertilizer in acid soils increases with its
- (a) purity
  - (b) fine particle size
  - (c) intimate mixing with the soil
  - (d) all the three
577. Ammonium sulphate is produced as a byproduct in the industry manufacturing
- (a) cement
  - (b) petroleum
  - (c) caprolactam
  - (d) thermal power
578. These two elements alone account for nearly 75% of the mass of the earth's crust
- (a) oxygen and hydrogen
  - (b) oxygen and silicon
  - (c) silicon and iron
  - (d) silicon and aluminium
579. The number of soil test parameters in the Soil Health Card Scheme of the Government of India is
- (a) 8
  - (b) 10
  - (c) 12
  - (d) 14
580. In Soil Taxonomy, Salic, Sombric and Glossic are different
- (a) peds
  - (b) pedons
  - (c) epipedons
  - (d) endopedons
581. Microorganisms for which the optimum temperature for growth is between 20 to 40<sup>0</sup> C are called
- (a) mesophiles
  - (b) thermophiles
  - (c) psychrophiles
  - (d) hyperthermophiles
582. Manufacture of phosphatic fertilizers from rock phosphate requires
- (a) strong heat treatment
  - (b) strong acid treatment
  - (c) either of the two
  - (d) neither of the two

583. The purpose of adding cupric sulphate in the digestion of soil and plant samples by Kjeldahl's method of total nitrogen determination is
- (a) catalyzing the digestion process
  - (b) elevation of the boiling point of concentrated sulphuric acid
  - (c) inclusion of nitrate nitrogen
  - (d) to prevent bumping and frothing of the digestion mixture
584. In Soil Taxonomy, a diagnostic soil horizon characterized by the cementation by silica to form a subsurface hardpan is referred to by the term
- (a) Duripan
  - (b) Fragipan
  - (c) Plaggen
  - (d) Sombric
585. The particular category of Soil Taxonomy represented by the term Halaquept is
- (a) Suborder
  - (b) Great group
  - (c) Subgroup
  - (d) Family
586. With increase in pH, the extent of isomorphous substitution that contributes to the negative charge in silicate clays
- (a) increases
  - (b) decreases
  - (c) may increase or decrease
  - (d) remains unchanged
587. Sodium Adsorption Ratio (SAR) of an irrigation water source is 22.5. The irrigation water is rated as
- (a) S1 Class. Low sodium hazard
  - (b) S2 Class. Medium sodium hazard
  - (c) S3 Class. High sodium hazard
  - (d) S4 Class. Very high sodium hazard
588. The sequence of the soil Orders arranged according to their age (newest first)
- (a) Inceptisol, Oxisol, Entisol, Vertisol
  - (b) Entisol, Ultisol, Aridisol, Oxisol
  - (c) Entisol, Mollisol, Alfisol, Ultisol
  - (d) Entisol, Spodosol, Ultisol, Oxisol
589. One gram equivalent  $\text{H}_2\text{SO}_4$  equals to
- (a) 1 g  $\text{H}_2\text{SO}_4$
  - (b) 2 g  $\text{H}_2\text{SO}_4$
  - (c) 49 g  $\text{H}_2\text{SO}_4$
  - (d) 98 g  $\text{H}_2\text{SO}_4$
590. The instrument used for measuring the plasticity of soils is
- (a) Pressure Plate apparatus
  - (b) Pressure Membrane apparatus
  - (c) Pycnometer
  - (d) Atterberg apparatus

591. Principal organic cementing agents that help formation of soil aggregates are  
(a) lignins (b) proteins  
(c) polysaccharides (d) waxes
592. In Soil Taxonomy, the bottommost category for classifying soils is  
(a) Family (b) Series (c) Subgroup (d) Suborder
593. The feature of a colour denoted by the term 'chroma' is  
(a) dominant spectrum (b) intensity or brightness  
(c) purity (d) wave number
594. The microorganism which contribute the maximum to the biomass of soils are  
(a) Bacteria (b) Fungi  
(c) Actinomycetes (d) Protozoa
595. Downward movement of water from the surface to the lower depths of the soil is called  
(a) permeation (b) percolation  
(c) infiltration (d) runoff
596. According to the norms of the Soil Health Card Scheme of the Government of India, the grid area for drawing soil samples in the rainfed areas is  
(a) 1 ha (b) 2.5 ha (c) 10 ha (d) 25 ha
597. In Soil Taxonomy, a diagnostic subsurface horizon that is loamy textured, weakly cemented and is brittle, is referred by the term  
(a) Duripan (b) Fragipan (c) Plaggen (d) Sombric
598. With increase in pH, ionization of the functional groups in humus that contributes to the negative charge in the organic colloid  
(a) decreases (b) increases  
(c) may increase or decrease (d) remains unaffected
599. In Indian fertilizer market, the brand GROMOR is a In Indian fertilizer market, the brand GROMOR is a  
(a) complex fertilizer  
(b) mixed fertilizer  
(c) biofertilizer  
(d) micronutrient fertilizer
600. With increase in pH, the cation exchange capacity of smectite clays  
(a) increases (b) decreases  
(c) may increase or decrease (d) remains unchanged

601. In spectrophotometers, monochromatic radiation is selected by the use of a
- (a) prism (b) grating  
(c) either of the two (d) neither of the two
602. A fertilizer that develops alkalinity in soils is
- (a) calcium sulphate (b) anhydrous ammonia  
(c) ammonia solution (d) calcium cyanamide
603. Soils or parent material deposits referred to as lacustrines are formed inside
- (a) rivers (b) sea and gulfs  
(c) lakes (d) oceans
604. Movement of water along the soil surface is called
- (a) permeation (b) percolation  
(c) infiltration (d) runoff
605. In soils, the colloidal mass is accounted by
- (a) layer lattice silicate, and iron and aluminium oxide clays  
(b) allophane  
(c) humus  
(d) sum of the three
606. With increase in the alkalinity of soils, the cation exchange capacity of kaolinite
- (a) increases (b) decreases  
(c) may increase or decrease (d) remains unchanged
607. Currently, the number of essential plant nutrients for higher plants satisfying Arnon's criteria is
- (a) 16 (b) 17 (c) 18 (d) 20
608. An expression for the Universal Soil Loss Equation (USLE) is
- (a)  $S = f(CI, pm, b, r, t)$  (b)  $S = f(b, r, t)$   
(c)  $A = f(RKLSCLP)$  (d)  $A = f(IKCLV)$
609. Nitrogen content of thiourea is
- (a) 25% (b) 36.8% (c) 44% (d) 46%
610. The instrument used for measuring soil aggregation is
- (a) Yoder's apparatus (b) Cone penetrometer  
(c) Pycnometer (d) Atterberg apparatus

611. The 'Law of Minimum' in plant nutrition was proposed by  
(a) Justus von Liebig (b) Theodore de Saussure  
(c) Jean Baptiste Boussingault (d) Hans Jenny
612. *Rhizobia* bacteria responsible for biological nitrogen fixation are  
(a) heterotrophic anaerobic bacteria  
(b) heterotrophic aerobic bacteria  
(c) autotrophic anaerobic bacteria  
(d) autotrophic aerobic bacteria
613. In GPS, receivers used are  
(a) electronic clocks (b) quartz clocks  
(c) atomic clocks (d) mechanical clocks
614. Downy mildew of pearl millet is suppressed by  
(a) chloride (b) nickel (c) arsenic (d) chromium
615. Heat flow consequent to differences in the density of the molecules between two points of a body with unequal temperature is associated with  
(a) dissipation (b) conduction  
(c) convection (d) radiation
616. The mobile application launched by the Government of India in collaboration with Indian Meteorological Department and Indian Council of Agricultural Research for helping farmers in weather-based farming is named as  
(a) Krishi Kisan (b) Kisan Madad  
(c) eKisan (d) Meghdoot
617. According to Stokes' law, with increase in the density of the homogenous viscous medium, the terminal velocity of the falling particle (assuming other factors to remain unchanged)  
(a) increases (b) decreases  
(c) may increase or decrease (d) no relationship between the two
618. Light minerals are those minerals the density of which is lower than  
(a)  $1.30 \text{ g/cm}^3$  (b)  $1.76 \text{ g/cm}^3$   
(c)  $2.30 \text{ g/cm}^3$  (d)  $2.85 \text{ g/cm}^3$
619. The cation exchange capacity of kaolinite is low in comparison to that of montmorillonite because of  
(a) low external surface  
(b) low internal surface  
(c) low isomorphous substitution  
(d) all the three



620. The particular category of Soil Taxonomy represented by the whole term 'Grossarenic Argiaquoll, Fine, Silty, Illitic, Semiactive, Mesic, Rudali, *Eroded*' is
- (a) Subgroup (b) Family  
(c) Series (d) Phase
621. With increase in pH, the negative charge in silicate clays originating from the broken edges
- (a) increases (b) decreases  
(c) may increase or decrease (d) remains unchanged
622. Purple sulfur bacteria are
- (a) chemoautotrophs (b) photoautotrophs  
(c) aerobic heterotrophs (d) anaerobic heterotrophs
623. This soil material is an inorganic amorphous colloid
- (a) kaolin (b) smectite (c) allophane (d) humus
624. Soil moisture characteristic curves depict the relationship between soil moisture and
- (a) soil structure (b) soil texture  
(c) soil mineralogy (d) soil moisture tension
625. Per cent recovery of applied phosphatic fertilizers is in the range of
- (a) 20 to 40 (b) 40 to 60 (c) 60 to 70 (d) 70 to 80
626. A soil property that does not change much over a short period of time is
- (a) texture (b) structure  
(c) bulk density (d) water holding capacity
627. Magnesium is a component of
- (a) plastocyanin (b) chlorophyll  
(c) leghemoglobin (d) porphyrin
628. Albite is a
- (a) potash feldspar (b) lime feldspar  
(c) soda feldspar (d) magnesium feldspar
629. Soils rich in this clay mineral are unlikely to suffer from the deficiency of potassium
- (a) montmorillonite (b) vermiculite  
(c) illite (d) kaolinite
630. In an ideal soil, the per cent of the soil volume occupied by mineral matter is
- (a) 20 to 30 (b) 45 to 55 (c) 60 to 70 (d) 70 to 80

631. The total surface area of the clay minerals kaolinite, illite, montmorillonite and chlorite is in the following order
- (a) montmorillonite > chlorite > illite > kaolinite
  - (b) chlorite > illite > montmorillonite > kaolinite
  - (c) chlorite > montmorillonite > illite > kaolinite
  - (d) kaolinite > illite > montmorillonite > chlorite
632. All other factors remaining equal, the power of the monovalent cations to replace the cations on the soil exchange complexes is in the order:
- (a)  $K^+ > Na^+ > Li^+ > H^+$
  - (b)  $Na^+ > K^+ > H^+ > Li^+$
  - (c)  $H^+ > K^+ > Na^+ > Li^+$
  - (d)  $K^+ > H^+ > Na^+ > Li^+$
633. The expression  $\Sigma [Ca^{2+}] + [Mg^{2+}] + [K^+] + [Na^+] = CEC$  (all in m.e./100 g soil) is almost invariably true for
- (a) acid soils
  - (b) calcareous soils
  - (c) acid sulphate soils
  - (d) high rainfall area soils
634. This soil material is an organic amorphous colloid
- (a) kaolin
  - (b) smectite
  - (c) allophane
  - (d) humus
635. Per cent recovery of applied fertilizers is the least in the case of
- (a) nitrogenous fertilizers
  - (b) phosphatic fertilizers
  - (c) potassic fertilizers
  - (d) sulphur fertilizers
636. Manufacture of ammonium sulphate fertilizer by Gypsum process involves the following chemical reaction
- (a) decomposition
  - (b) double decomposition
  - (c) hydration
  - (d) hydrolysis
637. This property is not a characteristic of inorganic soil colloids
- (a) high plasticity
  - (b) high surface area
  - (c) adsorbed cations
  - (d) high refractive index
638. The unit for expressing the bulk density of soils is
- (a)  $g/cm^2$
  - (b)  $Mg/m^2$
  - (c)  $dg/m^2$
  - (d)  $Mg/m^3$
639. Diatomaceous earth is used in fertilizers and fertilizer mixtures as a
- (a) carrier
  - (b) filler
  - (c) separator
  - (d) coating agent
640. Deaminated bonemeal is produced by the removal of this constituent from raw bonemeal
- (a) carbohydrates
  - (b) proteins
  - (c) lipids
  - (d) heteropolysaccharides

641. In Soil Taxonomy, sodium rich subsurface horizon is referred as  
(a) Cambic (b) Argillic (c) Natric (d) Sodic
642. In highly alkaline soils, loss of fertilizer nitrogen takes place mostly in the form of  
(a)  $N_2$  (b)  $NH_3$  (c) NO (d)  $NO_2$
643. In Soil Taxonomy, the category represented by the term Typic Haplorthod, Sandy, Siliceous, Frigid is  
(a) Great group (b) Subgroup  
(c) Family (d) Series
644. Size of the particles falling in a viscous medium must be large enough to prevent them from Brownian movement is a factor to be considered in testing  
(a) Darcy's law (b) Fourier's law  
(c) Fick's law (d) Stokes' law
645. Microorganisms which are adapted for survival at temperatures above  $45^{\circ}C$  are called  
(a) mesophiles (b) thermophiles  
(c) psychrophiles (d) cryophiles
646. A consequential effect of the global warming of the planet earth is  
(a) unpredictable climate change  
(b) rise in sea level causing inundation of coastal areas  
(c) melting of the earth's glaciers  
(d) all the three
647. The foul smell often produced due to putrefactive fermentation during the process of making composts from urban wastes are due to the formation of  
(a) thiophosphates (b) sulphides  
(c) mercaptans (d) thiosulphate
648. Soils or parent material deposits formed by glaciers as the agency of transportation are called  
(a) outwash (b) till (c) fluvial (d) glacial
649. This is not an accepted term for describing the consistence of wet soils  
(a) slightly sticky (b) sticky  
(c) very sticky (d) very highly sticky
650. According to Fick's law of diffusion, the molar flux of a gas across a plane due to diffusion is proportional to  
(a) volume of the gas  
(b) concentration gradient of the gas  
(c) purity of the gas  
(d) specific heat of the gas

651. Fourier's law is related to the flow of  
(a) liquids (b) gases (c) fluids (d) heat
652. The cation exchange capacity of kaolinite is low in comparison to that of vermiculite because of  
(a) coarser particle size  
(b) lower exposed surface  
(c) lower isomorphous substitution  
(d) all the three
653. If the bulk density of a soil is increased from 1.4 to 2.1 g/cm<sup>3</sup>, the porosity of the soil is (particle density of the soil is 2.8 g/cm<sup>3</sup>)  
(a) decreased to its one fourth (b) increased by its one fourth  
(c) decreased to its half (d) increased by its half
654. Microorganisms that grow well in acidic pH are  
(a) bacteria (b) fungi  
(c) protozoa (d) actinomycetes
655. This is not an accepted term for describing the consistence of wet soils  
(a) slightly plastic (b) plastic  
(c) very plastic (d) very highly plastic
656. High total surface area of the clay mineral montmorillonite is due to  
(a) fine particle size (b) high internal surface  
(c) both the two (d) neither of the two
657. The ratio of organic matter to nitrogen in soil organic matter is around  
(a) 20:1 (b) 5:1 (c) 50:1 (d) 100:1
658. The notation 'h' in Planck's equation ' $E = h \frac{c}{\lambda}$ ', denotes  
(a) velocity of light (b) Planck's constant  
(c) wave number (d) wavelength
659. N-Serve, a nitrification inhibitor, is a substituted  
(a) pyridine (b) pyrimidine (c) triazine (d) triazole
660. This is not an Atterberg's consistence limit  
(a) Plastic limit (b) Viscous limit  
(c) Liquid limit (d) Shrinkage limit

661. The cation exchange capacity of the clay minerals kaolinite, illite, montmorillonite and vermiculite follows the following order
- (a) montmorillonite < vermiculite < kaolinite < illite
  - (b) vermiculite < illite < montmorillonite < illite
  - (c) vermiculite < montmorillonite < illite < kaolinite
  - (d) kaolinite < illite < montmorillonite < vermiculite
662. A reducing agent frequently used in soil analysis laboratory is
- (a)  $\text{SnCl}_2$
  - (b)  $\text{H}_2\text{O}_2$
  - (c) sodium dithionite
  - (d) EDTA
663. The internal surface of the clay mineral montmorillonite is
- (a) nil
  - (b) very low
  - (c) low
  - (d) high
664. The Genetic system of Soil Classification classifying soils into Zonal, Intrazonal and Azonal classes was proposed by
- (a) Marbut
  - (b) Dokuchaev
  - (c) Smith D Guy
  - (d) Joffe
665. Low surface area of the clay mineral kaolinite is due to
- (a) coarse particle size
  - (b) low internal surface
  - (c) both the two
  - (d) none of the two
666. Velocity of light in vacuum is
- (a)  $3 \times 10^8$  cm/s
  - (b)  $3 \times 10^8$  m/s
  - (c)  $3 \times 10^8$  dm/s
  - (d)  $3 \times 10^8$  km/s;econd
667. Unit for measuring radioactivity of radioactive substances is
- (a) Curie
  - (b) Rontgen
  - (c) Becquerel
  - (d) all the three
668. The practice of growing erosion permitting and erosion resisting crops in alternate strips across the slope as a measure to check soil erosion by water in steep slopes is called
- (a) contour strip cropping
  - (b) field strip cropping
  - (c) water strip cropping
  - (d) gully strip cropping
669. 'Feel method' with a small amount of soil sample taken on the palm is performed to have an approximate idea of the soil's
- (a) structure
  - (b) texture
  - (c) consistence
  - (d) strength
670. Parent materials that lie over the underlying bedrock from which they have been formed are referred to as parent materials of this kind
- (a) transported
  - (b) colluvial
  - (c) sedentary
  - (d) transformed

671. DTPA is used as a/an  
(a) synthetic mulch  
(b) antitranspirant  
(c) micronutrient fertilizer  
(d) extractant for available micronutrients
672. This nanotubular aluminosilicate clay mineral is found to occur in the soils belonging to the order Andisol  
(a) nontronite (b) imogolite (c) sauconite (d) saponite
673. The equation relating the properties of a soil to be a function of the five soil forming factors was first suggested by  
(a) Joffe (b) Jenny (c) Liebig (d) Dokuchaev
674. The epipedon that has a thick black horizon at or near, but within 30 cm of the soil surface, is  
(a) Grossarenic (b) Plaggen  
(c) Melanic (d) Folistic
675. The quantity of heat required to raise the temperature of a unit mass of soil by  $1^{\circ}\text{C}$  is the soil's  
(a) specific heat (b) heat capacity  
(c) thermal conductivity (d) thermal diffusivity
676. India's first-ever coal gasification based fertilizer plant is located at  
(a) Phulpur in Uttar Pradesh (b) Kalol in Gujarat  
(c) Talcher in Odisha (d) Trombay in Maharashtra
677. The benefits of green manuring are  
(a) improvement of soil physical properties  
(b) addition of all plant nutrients to soil  
(c) prevention soil erosion  
(d) all the three
678. In Land Capability Classification, the Class that serves the purpose for use only for wildlife and watershed is  
(a) Class I to Class IV (b) Class V to Class VIII  
(c) Class VI, VII and VIII (d) Class VIII
679. Man-made epipedon high in phosphorus is  
(a) Mollic (b) Anthropic (c) Umbric (d) Histic
680. One of the followings is not a benefit rendered by green manuring  
(a) addition of plant nutrients to soil  
(b) improvement of soil physical environment  
(c) change of unfavourable soil texture  
(d) prevention of soil erosion

681. The albedo of sandy soils in comparison to that of clayey soils is  
(a) lower (b) higher  
(c) same (d) no relationship between the two
682. The word manure is derived from the word 'manoeuvrer' which is a  
(a) French word (b) Chinese word  
(c) Greek word (d) Latin word
683. An insecticide that has been banned primarily for its high persistence in soil is  
(a) aldrin (b) BHC (c) DDT (d) all the three
684. Quartzite, a metamorphic rock, is produced from the following rock  
(a) soapstone (b) sandstone  
(c) conglomerate (d) shale
685. Micron, a unit of length, is expressed by the notation  
(a)  $\mu$  (b)  $n\mu$  (c) mm (d)  $\mu dm$
686. The term Versene is used to refer to  
(a) EDTA (b) DTPA (c) EDDHA (d) NTA
687. Schoonover described a simple method for the laboratory determination of this property of soils  
(a) Cation Exchange Capacity  
(b) Exchangeable Sodium Percentage  
(c) Lime Requirement of acid soils  
(d) Gypsum Requirement of alkali soils
688. Colorimeter used for measuring the intensity of the radiation transmitted by a solution in experiments in analytical chemistry laboratory is based upon  
(a) absorption spectroscopy (b) emission spectroscopy  
(c) IR spectroscopy (d) UV spectroscopy
689. Planck's equation that relates the energy of radiation to wavelength is  
(a)  $E = h \nu / \lambda$  (b)  $E = h c \lambda$   
(c)  $E = h c / \lambda$  (d)  $E = h c$
690. The micronutrients manganese, iron, nickel, copper and zinc are all *d* block elements of the following series in the Periodic Table of the elements  
(a) 4*d* (b) 3*d* (c) 5*d* (d) 6*d*

691. The chemical composition of the FCO approved molybdenum fertilizer in India is  
(a)  $\text{CaMoO}_4$  (b)  $\text{MoO}_3$   
(c)  $(\text{NH}_4)_2\text{MoO}_4$  (d)  $(\text{NH}_4)_6\text{Mo}_7\text{O}_{24} \cdot 4 \text{H}_2\text{O}$
692. In local parlance, the term *Bhangar* refers to  
(a) new alluvium (b) old alluvium  
(c) both the two (d) neither of the two
693. It is convenient to express the wavelength of electromagnetic radiation in ultraviolet region in terms of  
(a) kilometre (b) millimetre  
(c) decimetre (d) nanometer
694. If the concentration of  $\text{OH}^-$  ion of a solution is  $10^{-3}$  mole/litre, the pH of the solution is  
(a) 3 (b) 11 (c)  $-3$  (d)  $-11$
695. The combustible gas produced in biogas plants is  
(a) methane (b) ethane (c) propane (d) butane
696. 'Hidden hunger' of plant nutrients refers to a situation where  
(a) visual deficiency symptoms appear when the nutrient is deficient  
(b) visual deficiency symptoms do not appear even though the nutrient is deficient  
(c) the nutrient is not deficient and yet deficiency symptoms appear  
(d) the nutrient is available and yet deficiency symptoms appear
697. The instrument lysimeter is used to measure  
(a) wind velocity  
(b) evaporation water loss  
(c) evapotranspiration water loss  
(d) density of viscous fluids
698. The dissolution of this substance in water produces considerable heat (exothermic)  
(a) concentrated  $\text{H}_2\text{SO}_4$  (b) solid  $\text{NaOH}$   
(c) solid  $\text{CaCl}_2$  (d) all the three
699. If the pOH of a solution is 4, pH of the same is  
(a)  $-4$  (b) 4 (c)  $-10$  (d) 10
700. Fertile soil deposits rich in silt and clay formed near the mouth of rivers are called  
(a) alluvial terrace (b) outwash  
(c) delta (d) flood plain
701. *Khaira* disease in rice is caused due to the deficiency of  
(a) iron (b) zinc (c) copper (d) manganese



702. The method of soil moisture determination by using aluminium boxes and oven is  
(a) gravimetric method (b) gypsum block method  
(c) neutron scattering method (d) tensiometer method
703. The method of fertilizer application that shows the maximum Fertilizer Use Efficiency (FUE) is  
(a) drip fertigation (b) top dressing  
(c) band placement (c) split application
704. The height of capillary rise of water in soil is inversely proportional to the  
(a) purity of water  
(b) radius of the tube  
(c) hydrostatic pressure difference  
(d) surface tension of water
705. A nonexpanding silicate clay is  
(a) kaolinite (b) illite  
(c) montmorillonite (d) vermiculite
706. As soil pH rises, the P constituent of single super phosphate is eventually converted to  
(a) triple super phosphate (b) monocalcium phosphate  
(c) dicalcium phosphate (d) tricalcium phosphate
707. Diagnostic subsurface horizon that is highly acidic ( $\text{pH} < 3.5$ ) is called  
(a) Hydrochloric (b) Sulphuric  
(c) Nitric (d) Acetic
708. The term 'Steppe' in describing soils of cultivated areas refers to an ecoregion of  
(a) plain grassland (b) tropical forest lands  
(c) coniferous forest lands (d) hydromorphic lands
709. The plant nutrient that often exhibits luxury consumption is  
(a) nitrogen (b) phosphorus (c) potassium (d) sulphur
710. The soil that has the highest bulk density is  
(a) sandy (b) silty (c) clayey (d) loamy
711. This step is not performed in mechanical analysis of soils  
(a) flocculation (b) dispersion  
(c) sedimentation (d) fractionation

712. Flame photometer, the analytical instrument in use for determining potassium and sodium contents of samples, operates within this region of the electromagnetic spectrum  
(a) visible (b) ultraviolet (c) near infrared (d) far infrared
713. The dissolution of this substance in water produces an ionic solution  
(a) urea (b) glucose (c)  $\text{MgSO}_4$  (d) all the three
714. The problems associated with hidden hunger of plant nutrients can be unmistakably handled by resorting to  
(a) soil testing (b) plant analysis  
(c) soil fertility evaluation (d) all the three
715. Oxidation of soil organic matter by  $\text{H}_2\text{O}_2$  is a step performed in the experiment on  
(a) soil structure evaluation (b) soil moisture determination  
(c) soil mechanical analysis (d) soil infiltration study
716. Soil scientist regarded as the 'Father of Pedology' is  
(a) Hans Jenny (b) Justus von Liebig  
(c) Thomas Way (d) V. V. Dokuchaev
717. This is not one among the twelve Orders of Soil Taxonomy  
(a) Lithosol (b) Spodosol (c) Gelisol (d) Andisol
718. This metal is a key component in the chemical structure of plastocyanin  
(a) iron (b) copper  
(c) manganese (d) magnesium
719. Monochromatic electromagnetic radiation of wavelength of 650 nm falls within this region of the electromagnetic spectrum  
(a) ultraviolet (b) visible  
(c) near infrared (d) far infrared
720. In particle size analysis of soils, sodium hexametaphosphate is added as a/an  
(a) aggregating agent (b) flocculating agent  
(c) oxidizing agent (d) dispersing agent
721. Nebular hypothesis to explain the theory for the formation of the planet earth was proposed by  
(a) Kuiper (b) Laplace  
(c) Hoyles (d) Chamberlin and Moulton

722. Fried and Dean first suggested the concept of  
(a) DRIS concept of plant nutrition  
(b) Inverse Ratio law  
(c) Q/I relationship  
(d) 'A' value for the dynamics of drawing a plant nutrient from two sources
723. One of the following rocks is not a monomineralitic rock  
(a) quartzite (b) sandstone (c) granite (d) limestone
724. Soil horizon that shows an accumulation of silica, sesquioxides and clay due to illuviation is  
(a) A horizon (b) B horizon  
(c) C horizon (d) D horizon
725. In Soil Taxonomy, the Order for a soil under the Subgroup Lithic Fibristel is  
(a) Histosol (b) Andisol (c) Gelisol (d) Entisol
726. The metamorphic rock produced from granite, an igneous rock, is  
(a) gneiss (b) schist (c) slate (d) quartzite
727. A bulky organic manure is  
(a) neem cake (b) fish meal  
(c) guano (d) urban compost
728. An endopedon common in soils is  
(a) Umbric (b) Histic (c) Argillic (d) Anthropic
729. Flame photometry is based upon  
(a) absorption spectrophotometry  
(b) emission spectrophotometry  
(c) infra red spectrophotometry  
(d) ultra violet spectrophotometry
730. The cation of this metal is intimately associated with the functioning of the energy rich compound ATP  
(a) magnesium (b) zinc  
(c) iron (d) copper
731. The diameter of soil separates is usually expressed in terms of  
(a) micron (b) milli micron  
(c) milli meter (d) centi meter

732. Grass tetany disease in cattle is caused due to the consumption of forages with low content of  
(a) magnesium (b) sulphur  
(c) iron (d) zinc
733. Sulphur is absorbed by plants in the form of  
(a) S (b)  $S^{2-}$  (c)  $SO_3^{2-}$  (d)  $SO_4^{2-}$
734. For the capillary rise of water in soil, the relationship between the height and radius is  
(a) direct (b) inverse  
(c) direct or inverse (d) no relationship between the two
735. The symbionts that fix atmospheric nitrogen in *Azolla pinnata* are  
(a) algae (b) bacteria (c) fungi (d) ferns
736. The metallic element present in vitamin B12 as a structural constituent is  
(a) iron (b) copper  
(c) cobalt (d) molybdenum
737. An early soil scientist regarded as the 'Father of Field Plot Techniques' is  
(a) Justus von Liebig (b) Theodore de Saussure  
(c) Hens Jenny (d) Jean Baptiste Boussingault
738. Liming of acid soils increases the availability of  
(a) iron (b) copper  
(c) manganese (d) molybdenum
739. Laboratory analysis revealed that 1 m<sup>2</sup> area of an acid soil required 90 g calcium for liming. With limestone as the liming material, the Lime Requirement of the soil in tons/ha is (purity of the liming material is 90%)  
(a) 1.5 (b) 2.25 (c) 2.5 (d) 4.5
740. The availability of this nutrient remains relatively less affected by soil pH  
(a) nitrogen (b) potassium  
(c) sulphur (d) calcium
741. A gas in the atmosphere that contributes to acid rains is  
(a) H<sub>2</sub>S (b) CH<sub>4</sub> (c) NH<sub>3</sub> (d) SO<sub>2</sub>
742. Ultraviolet radiation reaching the earth from the sun is intercepted by  
(a) atmosphere (b) ionosphere  
(c) lithosphere (d) ozonosphere

743. Walkley and Black developed a simple method for the determination of soil
- (a) organic carbon                      (b) total nitrogen  
(c) sulphur                                (d) available nitrogen
744. 'Grey speck' disease in some plants like oat and barley is caused due to the deficiency of
- (a) iron            (b) copper            (c) zinc            (d) manganese
745. Average per cent CO<sub>2</sub> content (v/v) of the upper soil layers is around
- (a) 0.03            (b) 0.10            (c) 0.25            (d) 1.2
746. The expression for deriving the Residual Sodium Carbonate (RSC) of irrigation water is  
(the brackets indicate concentrations of the ions in m. e. per litre)
- (a)  $RSC = [CO_3^{2-}] - ([Ca^{2+}] + [Mg^{2+}])$   
(b)  $RSC = ([CO_3^{2-}] + [HCO_3^-]) - ([Ca^{2+}] + [Mg^{2+}])$   
(c)  $RSC = ([CO_3^{2-}] + [HCO_3^-]) - [Ca^{2+}]$   
(d)  $RSC = ([CO_3^{2-}] + [HCO_3^-]) - [Mg^{2+}]$
747. The process of increase of the concentration of pollutants through the food chain is called
- (a) bioremediation                      (b) biomagnification  
(c) biotoxication                        (d) biotrophication
748. A common nonfossil fuel is
- (a) coal            (b) petroleum            (c) hydrogen            (d) natural gas
749. The process of the conversion of sediments to sedimentary rocks is called
- (a) conglomeration                      (b) cementation  
(c) compaction                            (d) lithification
750. Soil horizon that shows depletion of silica, sesquioxides and clay due to eluviation is
- (a) A horizon    (b) B horizon    (c) C horizon    (d) D horizon
751. The most abundant mineral in sandstone rock is
- (a) feldspars                                (b) quartz  
(c) micas                                      (d) muscovite
752. The equilibrium constant  $K_{eq}$  of the reaction  $AB = A + B$  is
- (a)  $K_{eq} = \frac{[A][B]}{[AB]}$                                 (b)  $K_{eq} = \frac{[A][B]}{[B]}$   
(c)  $K_{eq} = \frac{[A][B]}{[A]}$                                 (d)  $K_{eq} = \frac{[AB]}{[A][B]}$

753. To obey Stokes' law, the particles falling in the viscous medium must be  
(a) angular (b) rectangular  
(c) prismatic (d) spherical
754. In high pH alkaline soils, soluble phosphorus is fixed as insoluble  
(a) monocalcium phosphate (b) dicalcium phosphate  
(c) tricalcium phosphate (d) all the three
755. Hornblende is a mineral of the following class  
(a) amphibole (b) mica  
(c) olivine (d) feldspar
756. An example of a feldspar mineral is  
(a) muscovite (b) forsterite  
(c) hornblende (d) orthoclase
757. According to the Soil Health Card Scheme of the Government of India, a soil is considered 'medium' with regard to available nitrogen, if its content is  
(a) 140 to 280 kg/ha (b) 280 to 560 kg/ha  
(c) 560 to 700 kg/ha (d) more than 700 kg/ha
758. Gypsum Requirement analysis in the laboratory revealed that 1 m<sup>2</sup> area of an alkali soil required 80 g calcium. The Gypsum Requirement (molecular weight 172) of the soil in tons/ha is (purity of gypsum is 95%)  
(a) 1.81 (b) 3.62 (c) 4.25 (d) 4.5
759. In soil testing laboratory, Conductivity Bridge instrument is used to measure  
(a) total soluble salt content of the soil  
(b) total insoluble salt content of the soil  
(c) total salt content of the soil  
(d) precipitated salt content of the soil
760. Basaltic rocks on weathering form  
(a) alluvial soils (b) brown soils  
(c) black soils (d) sandy soils
761. Acid igneous rocks on weathering form  
(a) red soils (b) clayey soils  
(c) black soils (d) sandy soils

762. Core sampler method is used for measuring soil  
(a) bulk density (b) particle density  
(c) hydraulic conductivity (d) infiltration capacity
763. This mineral nutrient is essential for nitrogen fixing microbes in legumes  
(a) silicon (b) nickel (c) cobalt (d) vanadium
764. With increase in clay content, the bulk density of a soil  
(a) decreases (b) increases  
(c) may increase or decrease (d) remains unaffected
765. Diagnostic surface horizon (epipedon) that is thick, dark coloured, and does possess high base saturation and strong structure is  
(a) Mollic (b) Umbric (c) Ochric (d) Histic
766. A soil property commonly associated with soil crusting is the soil's  
(a) high organic matter content (b) low silt content  
(c) high sodium content (d) high gypsum content
767. COLE of a soil is indicative of the soil's  
(a) particle density (b) resistance to percolation  
(c) rate of infiltration (d) swelling capacity
768. Soil crusts of different types such as slaking, infiltrating, coalescing and sieving crusts are soil crusts of the following kind  
(a) structural (b) erosional  
(c) depositional (d) cryptogamic
769. The clay mineral that causes cracks in Vertisol soils upon drying is  
(a) kaolinite (b) illite  
(c) montmorillonite (d) chlorite
770. A gas in the atmosphere that contributes to acid rains is  
(a) H<sub>2</sub>S (b) CH<sub>4</sub> (c) NH<sub>3</sub> (d) NO<sub>2</sub>
771. The letter G in the standard abbreviation GPS stands for  
(a) geographical (b) geological  
(c) geostationary (d) global
772. Permeability of soils is expressed in terms of  
(a) millimeters per hour (b) litres per hour  
(c) litres per centimeter (d) litres per centimeter per hour
773. Soil crusting causes an increase in soil's  
(a) bulk density (b) particle density  
(c) cation exchange capacity (d) pH

774. c-Axis spacings of clay minerals are expressed in terms of  
(a) cm            (b) mm            (c) m            (d) Å
775. The instrument used to measure the depth of water table is  
(a) sonometer            (b) piezometer  
(c) hydrometer            (d) penetrometer
776. Dapog method of raising rice nursery was introduced by  
(a) Indonesia            (b) South Korea  
(c) Malayasia            (d) Philippines
777. Terracing is an effective method of checking soil erosion in  
(a) desert area            (b) hilly area  
(c) plain area            (d) low rainfall area
778. This radioisotope does have a half-life of 5730 years  
(a) H<sup>3</sup>            (b) Mo<sup>99</sup>            (c) C<sup>14</sup>            (d) Fe<sup>59</sup>
779. Renewal of soil air by its exchange with the atmospheric air takes place by the process/es of  
(a) mass flow  
(b) diffusion  
(c) both mass flow and diffusion  
(d) neither mass flow nor diffusion
780. In Land Capability Classification, the lands under Class VIII are shown in maps in this colour  
(a) red            (b) orange            (c) purple            (d) green
781. Soil crusting causes deterioration in soil's  
(a) texture            (b) structure  
(c) cation exchange capacity            (d) pH
782. The plant nutrient the essentiality of which was established by Sommer and Lipman is  
(a) iron            (b) manganese  
(c) zinc            (d) molybdenum
783. In Land Capability Classification, the Land Capability Subclass is further divided into a number of  
(a) Land Capability Sub-subclasses  
(b) Land Capability Units  
(c) Land Capability Families  
(d) Land Capability Phases



784. The specific surface of soil separates follow the order:
- (a) fine sand > coarse sand > silt > clay
  - (b) coarse sand > silt > fine sand > clay
  - (c) clay > fine sand > silt > coarse sand
  - (d) clay > silt > fine sand > coarse sand
785. Amount of nitrate ( $\text{NO}_3^-$ ) required for replacing 2 milliequivalents of (not as ' $\text{SO}_4^{2-}$ ') (sulphate) by anion exchange process is
- (a) 2 mg
  - (b) 4 mg
  - (c) 124 mg
  - (d) 248 mg
786. A fertilizer that adds neither acidity nor alkalinity to soil is
- (a) urea
  - (b) urea solution
  - (c) ammonium nitrate
  - (d) calcium ammonium nitrate
787. A crop that prefers nitrogen in ammonium form for considerable part of its growth is
- (a) rice
  - (b) wheat
  - (c) maize
  - (d) pea
788. Diagnostic subsurface horizon (endopedon) that is characterized by accumulation of salts is
- (a) Gypsic
  - (b) Salic
  - (c) Calcic
  - (d) Petrocalcic
789. Specific characters of the master horizons of soils are indicated by adding this kind of notation as suffixes after the abbreviations of the master horizons (A, B etc.)
- (a) numerals such as 1,2 etc. e.g. A<sub>1</sub>, A<sub>2</sub>, A<sub>3</sub>
  - (b) lower case letters such as a,b, c etc. e.g. A<sub>p</sub>, B<sub>t</sub>
  - (c) numerals such as 1, 2 after the lower case letter e.g. A<sub>p</sub>1, B<sub>t</sub>1
  - (d) Roman numbers such as I, II etc. e.g. A<sub>I</sub>, B<sub>II</sub>
790. Drinking water high in nitrate nitrogen causes
- (a) anemia
  - (b) methemoglobinemia
  - (c) improper bone formation
  - (d) night blindness
791. Bulk of the gaseous exchange in soil system takes place through
- (a) mass flow
  - (b) diffusion
  - (c) convection
  - (d) contact exchange
792. For the restoration of highly degraded soils, plantation of the land is recommended with
- (a) grasses
  - (b) tall trees
  - (c) seedlings of trees
  - (d) orchard crops

793. Decomposition of this constituent in organic matter delays its rate of decomposition in soil
- (a) oligosaccharides                      (b) polysaccharides  
(c) proteins                                  (d) lignins
794. The instrument used for assessing consumptive use of water by plants is
- (a) anemometer                              (b) pycnometer  
(c) lysimeter                                 (d) piezometer
795. *Bacillus megatherium* is a
- (a) nitrogen fixing bacteria  
(b) nitrifying bacteria  
(c) denitrifying bacteria  
(d) phosphate solubilizing bacteria
796. This epipedon is not common in India
- (a) Mollic              (b) Histic              (c) Umbric              (d) Anthropic
797. In Land Capability Classification, the Classes that serve the purpose only for grazing
- (a) Class I to Class IV                      (b) Class I to Class V  
(c) Class V to Class VII                    (d) Class V and Class VIII
798. For the determination of a soil chemical property, say soil organic carbon content, the mass of a soil sample of 1 g drawn from a large mass of composite soil sample represents the following fraction of the mass of the hectare furrow slice soil (assume the soil bulk density and depth of furrow slice to be  $1.335 \text{ g/cm}^3$  and 15 cm, respectively)
- (a) two millionth                              (b) half a billionth  
(c) half a millionth                             (d) two billionth
799. The most important chemical process involved in the weathering of rocks and minerals is
- (a) oxidation                                    (b) reduction  
(c) hydration                                  (d) hydrolysis
800. In Soil Taxonomy, one of the followings is not a Suborder under the Order Inceptisol
- (a) Gelept              (b) Ustept              (c) Udept              (d) Oxept
801. The gas produced in the puddled rice soil is
- (a) NO                      (b) SO<sub>2</sub>                      (c) CH<sub>4</sub>                      (d) NO<sub>2</sub>

802. The per cent nitrogen content of diammonium phosphate is  
(a) 11            (b) 18            (c) 26            (d) 46
803. Thermal diffusivity is the ratio of thermal conductivity to  
(a) heat capacity            (b) thermal retentivity  
(c) thermal resistivity            (d) heat flux
804. FCO stipulated the minimum per cent (w/w) water soluble  $P_2O_5$  content of diammonium phosphate is  
(a) 16            (b) 46            (c) 41            (d) 52
805. An expression for soil heat flux is  
(a)  $\frac{dT}{dz}$             (b)  $\frac{dz}{dT}$             (c)  $K \frac{dT}{dz}$             (d)  $K \frac{dz}{dT}$
806. Chamberlin and Moulton's proposed theory/hypothesis to explain the formation of the planet earth is known as  
(a) Nebular hypothesis            (b) Big bang theory  
(c) Planetesimal hypothesis            (d) Supernova hypothesis
807. The process of intermixing of soil horizons by external forces is called  
(a) pedoturbation            (b) gleization  
(c) physicochemical weathering            (d) melanization
808. Soil heat flux is upward during  
(a) morning            (b) noon  
(c) midday            (d) midnight
809. In accepted hydrological terms, waterlogged areas are the land areas where the water table is  
(a) within 2 m depth from soil surface  
(b) between 2 to 4 m depth from soil surface  
(c) between 4 to 5 m depth from soil surface  
(d) within 5 m depth from soil surface
810. According to WHO specifications, the concentration of nitrate in drinking water must not exceed  
(a) 5 mg/L            (b) 10 mg/L            (c) 20 mg/L            (d) 50 mg/L
811. Biofertilizers in essence are  
(a) bulky organic manures            (b) green manures  
(c) organic manures            (d) cultures of microorganisms
812. Man made sod like horizon created by years of manuring is  
(a) Mollic            (b) Anthropic  
(c) Plaggen            (d) Histic

813. The per cent nitrogen content of monoammonium phosphate is  
(a) 11                      (b) 18                      (c) 26                      (d) 46
814. The symbol  $K$  in the expression  $Q = c K A \frac{h_2 - h_1}{L}$  of Darcy's law denotes  
(a) flux density                      (b) flow velocity  
(c) hydraulic gradient                      (d) hydraulic conductivity
815. Nutrient element that imparts drought resistance to plants is  
(a) nitrogen                      (b) phosphorus  
(c) potassium                      (d) magnesium
816. An effective *in situ* method for soil moisture conservation is  
(a) drip irrigation                      (b) sprinkler irrigation  
(c) fertigation                      (d) mulching
817.  $Mg/m^3$  is the unit for expressing this property of soils is  
(a) bulk density                      (b) particle density  
(c) both the two                      (d) neither of the two
818. Diagnostic surface horizon (epipedon) that is light coloured, contains low organic matter and may be hard and massive when dry is  
(a) Mollic                      (b) Umbric                      (c) Ochric                      (d) Histic
819. The one among the four that has the highest albedo is  
(a) land area covered by vegetation  
(b) bare land without vegetation  
(c) water surface  
(d) ice
820. A temperature reading of  $25^{\circ}C$  equals to  
(a)  $45^{\circ}F$                       (b)  $77^{\circ}F$                       (c)  $95^{\circ}F$                       (d)  $105^{\circ}F$
821. One of the followings is not associated with podzolization soil forming process  
(a) movement of iron and aluminium oxides from surface to lower soil layers  
(b) movement of silica from surface to lower soil layers  
(c) acid soil pH  
(d) cool humid climate
822. Water holding capacity is the maximum in  
(a) sandy soils                      (b) sandy loam soils  
(c) loamy soils                      (d) clayey soils

823. The contribution by the different processes in wind erosion is in the following order
- (a) saltation > surface creep > suspension
  - (b) saltation > suspension > surface creep
  - (c) suspension > saltation > surface creep
  - (d) surface creep > saltation > suspension
824. Allophane, an amorphous inorganic colloid, is more abundant in soils of
- (a) humid regions
  - (b) volcanic origin
  - (c) intense weathering
  - (d) alluvial deposits
825. Black soils usually come under the soil Order
- (a) Entisol
  - (b) Inceptisol
  - (c) Histosol
  - (d) Vertisol
826. Most recommended of the soil:water ratios for preparing the soil suspension for measuring the pH of soils is
- (a) 1:1
  - (b) 1:2.5
  - (c) 1:10
  - (d) 1:100
827. The per cent total  $P_2O_5$  content of monoammonium phosphate is
- (a) 16
  - (b) 42
  - (c) 46
  - (d) 52
828. Energy of an electromagnetic radiation is directly related to its
- (a) frequency
  - (b) wavelength
  - (c) both the two
  - (d) neither of the two
829. An example of a sedimentary rock is
- (a) syenite
  - (b) diorite
  - (c) shale
  - (d) slate
830. A temperature of  $105^{\circ}F$  is equal to
- (a)  $37.5^{\circ}C$
  - (b)  $40.5^{\circ}C$
  - (c)  $45.5^{\circ}C$
  - (d)  $50.5^{\circ}C$
831. A physical process associated with heat loss from soil is
- (a) infiltration
  - (b) translocation
  - (c) evaporation
  - (d) transpiration
832. In laboratory studies on micronutrients, dithizone is used as a/an
- (a) chelate
  - (b) extractant
  - (c) chromogenic agent
  - (d) buffer
833. Murexide is an indicator of the following type
- (a) acid base indicator
  - (b) metal ion indicator
  - (c) precipitation indicator
  - (d) adsorption indicator

834. Disodium EDTA solution is used as a titrant in the determination of
- (a) calcium
  - (b) magnesium
  - (c) both calcium and magnesium
  - (d) neither calcium nor magnesium
835. Wilting is the most general deficiency symptom of
- (a) boron
  - (b) molybdenum
  - (c) manganese
  - (d) chlorine
836. Matric potential in soil is due to
- (a) capillary rise of soil water
  - (b) cohesive action among soil particles
  - (c) adhesive action among soil particles
  - (d) adsorption due to soil colloids
837. An environment friendly pesticide should have
- (a) selective toxicity to the target pest
  - (b) short persistence in the environment
  - (c) rapid detoxification in case of ingestion in animals
  - (d) all the three
838. Canopy Temperature Depression is inversely proportional to
- (a) canopy temperature
  - (b) soil temperature
  - (c) air temperature
  - (d) soil moisture
839. In space, heat is transferred in the form of
- (a) thermal energy
  - (b) electromagnetic radiation
  - (c) kinetic energy
  - (d) potential energy
840. The bulk density, particle density and porosity of a soil are  $0.7 \text{ g/cm}^3$ ,  $2.8 \text{ g/cm}^3$ , and 75%, respectively. If the porosity of the soil is now reduced to 50%, the bulk density of the soil is
- (a) decreased to its half
  - (b) increased by its half
  - (c) doubled
  - (d) increased by its one fourth
841. Conversion of nitrate nitrogen to oxides of nitrogen and/or elemental nitrogen as done soil is a process of
- (a) hydrolysis
  - (b) oxidation
  - (c) reduction
  - (d) hydration
842. In the expression of Stokes' law, the viscosity of the fluid is usually represented by the Greek alphabet
- (a)  $\delta$
  - (b)  $\varepsilon$
  - (c)  $\eta$
  - (d)  $\theta$

843. The ionic radii of the following monovalent cations follows the sequence
- (a)  $\text{Na}^+ > \text{K}^+ > \text{H}^+ > \text{Li}^+$       (b)  $\text{Li}^+ > \text{Na}^+ > \text{H}^+ > \text{K}^+$   
(c)  $\text{K}^+ > \text{Na}^+ > \text{Li}^+ > \text{H}^+$       (d)  $\text{H}^+ > \text{K}^+ > \text{Na}^+ > \text{Li}^+$
844. The solubility products ( $K_{\text{sp}}$ ) of the sparingly soluble salts  $\text{Ca}(\text{OH})_2$ ,  $\text{CaCO}_3$  and  $\text{CaSO}_4$  are  $5.5 \times 10^{-6}$ ,  $4.8 \times 10^{-9}$  and  $1.2 \times 10^{-6}$ , respectively. Accordingly, the solubility of the salts (g/L) is in the order
- (a)  $\text{Ca}(\text{OH})_2 < \text{CaCO}_3 < \text{CaSO}_4$     (b)  $\text{CaCO}_3 < \text{CaSO}_4 < \text{Ca}(\text{OH})_2$   
(c)  $\text{CaCO}_3 < \text{Ca}(\text{OH})_2 < \text{CaSO}_4$     (d)  $\text{Ca}(\text{OH})_2 < \text{CaSO}_4 < \text{CaCO}_3$
845. An example of a metamorphic rock is
- (a) syenite    (b) diorite    (c) shale    (d) slate
846. The changes in spectral reflectivity/emissivity with time are called
- (a) spectral variations      (b) temporal variations  
(c) spatial variations      (d) optical variations
847. With increase in soil acidity, anion exchange capacity (AEC) and cation exchange capacity (CEC) are altered as follows
- (a) AEC decreases, but CEC increases  
(b) AEC increases, but CEC decreases  
(c) both AEC and CEC decrease  
(d) both AEC and CEC increase
848. The equivalent weight of oxalic acid ( $\text{H}_2\text{C}_2\text{O}_4$ ) in the reaction ' $\text{H}_2\text{C}_2\text{O}_4 \rightarrow 2 \text{CO}_2 + 2 \text{H}^+$ ' is
- (a) 90      (b) 180      (c) 120      (d) 45
849. The indicator used in  $\text{K}_2\text{Cr}_2\text{O}_7$  vs  $\text{FeSO}_4$  titration in acid medium is
- (a) diphenylamine      (b) mixed indicator  
(c) phenolphthalein      (d) methyl red
850. In comparison to black soils, the red soils have
- (a) lower CEC and lower per cent base saturation  
(b) lower CEC and higher per cent base saturation  
(c) higher CEC and lower per cent base saturation  
(d) higher CEC and higher per cent base saturation
851. One of the following properties is not a function of state
- (a) enthalpy      (b) entropy  
(c) internal energy      (d) concentration

852. If in the experiment on the determination of chlorides, the titre value is 5.2 ml 0.02 N  $\text{AgNO}_3$  for 10 ml soil water extract, then g per litre soluble chloride content of the soil water extract is
- (a) 0.00104 (b) 0.00208  
(c) 0.03688 (d) 0.36878
853. Lignins of soil organic matter are
- (a) phenolic polymers (b) polycarboxylic acids  
(c) heteropolysaccharides (d) quinones
854. Sulphate content of soils using  $\text{BaCl}_2$  is determined by
- (a) colorimetry (b) flame photometry  
(c) titrimetry (d) turbidimetry
855. An approximate estimate of TDS (mg/L) of a water source derived from its Electrical Conductivity (dS/m) is obtained from the following empirical relationship
- (a)  $\text{TDS} = \text{EC} \times 10$  (b)  $\text{TDS} = \text{EC} \times 100$   
(c)  $\text{TDS} = \text{EC} \times 64$  (d)  $\text{TDS} = \text{EC} \times 640$
856. If the bulk density of a soil is reduced from 1.4 to 0.7  $\text{g/cm}^3$ , the porosity of the soil is changed as (particle density of the soil is 2.8  $\text{g/cm}^3$ )
- (a) decreased by its 25% (b) increased by its 25%  
(c) decreased by its 50% (d) increased by its 50%
857. In Soil Taxonomy, the soils are classified under a particular Order on the basis of their
- (a) parent materials (b) Soil Moisture Regimes  
(c) Soil Temperature Regimes (d) Diagnostic horizons
858. Elemental oxygen content of soil air is
- (a) less than 21% (b) more than 25%  
(c) more than 30% (d) less than 5%
859. Rothamsted Experimental Station in UK is famous for
- (a) long term field studies in soil and agricultural research  
(b) research on Soil Survey and Classification  
(c) research in soil clay minerology  
(d) research in soil geology
860. A light weight low specific gravity and frothed rock is
- (a) shale (b) slate (c) asbestos (d) pumice



861. In soil forming processes, lime, silica and iron oxides are all  
(a) flocculating agents                      (b) dispersing agents  
(c) cementing agents                        (d) oxidizing agents
862. According to Poiseuille's law, the rate of flow of a liquid through a narrow tube is inversely proportional to the  
(a) radius of the tube                        (b) pressure gradient  
(c) temperature                                (d) viscosity of the liquid
863. Prairie soils which account for a significant area of the world's ice-free land are classified under the soil Order  
(a) Vertisol    (b) Mollisol    (c) Aridisol    (d) Ultisol
864. One picometer is equal to  
(a)  $10^{-15}$  meter                                (b)  $10^{-12}$  meter  
(c)  $10^{-10}$  meter                                (d)  $10^{-9}$  meter
865. Thermal conductivity of soils is expressed in terms of  
(a)  $\text{cal/s}/^{\circ}\text{C}$     (b)  $\text{cal/cm/s}/^{\circ}\text{C}$     (c)  $\text{cal/cm/s}$                                 (d)  $\text{cal/g/s}/^{\circ}\text{C}$
866. Diffusion of a fluid in a medium is a function of  
(a) concentration gradient  
(b) diffusion coefficient of the medium  
(c) cross sectional area  
(d) all the three
867. Diagnostic surface horizon (epipedon) that is high in organic matter and wet during some part of the year is  
(a) Mollic                      (b) Umbric                      (c) Ochric                      (d) Histic
868. *Streptomyces* genera are  
(a) bacteria                                      (b) fungi  
(c) actinomycetes                                (d) protozoa
869. Conversion of simple inorganic nitrogen like ammonium compounds to complex organic nitrogen of organic matter as done in the case of immobilization is a process of  
(a) hydrolysis                                      (b) oxidation  
(c) reduction                                      (d) hydration
870. In nuclear decay, the radioisotope  $\text{C}^{14}$  is an emitter of  
(a) alfa particles with high ionization power  
(b) hard beta particles with high penetrating power  
(c) soft beta particles with very low penetrating power  
(d) very short wavelength electromagnetic radiation

871. One of the followings is not a FCO approved zinc fertilizer in India  
(a) zinc sulphate monohydrate ( $\text{ZnSO}_4 \cdot \text{H}_2\text{O}$ )  
(b) zinc sulphate heptahydrate ( $\text{ZnSO}_4 \cdot 7 \text{H}_2\text{O}$ )  
(c) zinc chloride anhydrous ( $\text{ZnCl}_2$ )  
(d) zinc-EDTA ( $\text{Zn-EDTA}$ )
872. The bacteria involved in the process of nitrification in soils are  
(a) heterotrophs (b) saprophytes  
(c) photoautotrophs (d) chemoautotrophs
873. The redox potential of chemical equilibria is determined by using  
(a) Bragg's equation (b) Freundlich equation  
(c) Planck's equation (d) Nernst equation
874. The Sodium Adsorption Ratio (SAR) of irrigation water is derived from the following expression  
(the cations are expressed in terms of m.e./L water)  
(a)  $\frac{[\text{Na}^+]}{\sqrt{\frac{[\text{Ca}^{2+}] + [\text{Mg}^{2+}]}{2}}}$  (b)  $\frac{[\text{Na}^+]}{\sqrt{\frac{[\text{Ca}^{2+}] + [\text{Mg}^{2+}]}{2}}}$   
(c)  $\frac{[\text{Na}^+]}{\sqrt{\frac{[\text{Ca}^{2+}] + [\text{Mg}^{2+}]}{4}}}$  (d)  $\frac{[\text{Na}^+]}{[\text{Ca}^{2+}] + [\text{Mg}^{2+}]}$
875. Equivalent weight of  $\text{Fe}_2(\text{SO}_4)_3$  (molecular weight is 399.9) in its reduction to  $\text{FeSO}_4$  is  
(a) 399.88 (b) 133.29 (c) 199.94 (d) 99.97
876. The volume of water to be added for raising the pH of 100 ml solution from 6 to 7 is  
(a) 100 ml (b) 200 ml (c) 900 ml (d) 1000 ml
877. In soil classification, tundra soils are classified as  
(a) Histosol (b) Cryosol  
(c) Regosol (d) Lithosol
878. A crop highly tolerant to soil acidity is  
(a) alfalfa (b) sugar beet  
(c) peanut (d) citrus
879. This endopedon is light coloured  
(a) Albic (b) Mollic (c) Placic (d) Melanic
880. In Soil Taxonomy, dark coloured base rich (>50%) soils of grasslands are classified under the Order  
(a) Mollisol (b) Inceptisol  
(c) Entisol (d) Alfisol

881. Diagnostic subsurface horizon (epipedon) that is characterized by accumulation and cementation of insoluble  $\text{CaSO}_4$  wherein the fragments do not slake in water is  
(a) Gypsic (b) Petrogypsic (c) Calcic (d) Petrocalcic
882. In waterlogged soils, reduction of the compounds of this element is the most conspicuous chemical reaction  
(a) phosphorus (b) magnesium  
(c) potassium (d) iron
883. Volume (V) of a cylindrical core soil sampler is given by the formula  
(a)  $\pi d^2 h$  (b)  $\pi r^2 h$  (c)  $\frac{\pi r^2 h}{4}$  (d)  $\frac{\pi r^2 h}{2}$
884. According to Darcy's law, the flow of a liquid through a porous medium like soil is inversely proportional to  
(a) hydraulic conductivity  
(b) hydraulic gradient  
(c) cross sectional area of the porous medium  
(d) length over which the hydraulic drop is taking place
885. The letter G in the standard abbreviation GIS stands for  
(a) geographic (b) geologic  
(c) geostationary (d) global
886. Thermal diffusivity of soils is expressed in terms of  
(a)  $\text{cal/cm/s}$  (b)  $\text{cal/g/s}^0\text{C}$  (c)  $\text{cm}^2/\text{s}$  (d)  $\text{s/cm}^2$
887. Capital letters like A, B etc. are used to designate soils'  
(a) master horizons  
(b) deviations within master horizons  
(c) diagnostic surface horizons  
(d) diagnostic subsurface horizons
888. Ferrous ammonium sulphate is known as  
(a) Mohr's salt (b) Rochelle salt  
(c) Epsom salt (d) Glauber's salt
889. The ease with which water passes through a bulk mass of soil is the soil's  
(a) infiltration (b) percolation  
(c) conductivity (d) permeability
890. Energy of electromagnetic radiation is inversely related to the  
(a) frequency of the radiation (b) wavelength of the radiation  
(c) both the two (d) neither of the two

891. One of the following processes does not take place in puddled rice field
- conversion of  $\text{MnCl}_2$  to  $\text{MnCl}_4$
  - formation of  $\text{CH}_4$  from the decomposition of organic matter
  - formation of sulphide from  $(\text{NH}_4)_2\text{SO}_4$
  - increase in the activity of denitrifying bacteria
892. Given that  $\lambda$ ,  $C_v$ , and  $c$  represent the thermal conductivity thermal conductivity, volumetric heat capacity and specific heat respectively, of a soil, the thermal diffusivity ( $\alpha$ ) of the soil is expressed as
- $\alpha = \frac{\lambda}{C_v}$
  - $\alpha = \frac{C_v}{\lambda}$
  - $\alpha = \frac{C_v c}{\lambda}$
  - $C_v c$
893. For nomenclature in Soil Taxonomy, the formative element for the soil Order Gelisol is
- ol*
  - oll*
  - el*
  - eg*
894. An expression for calculating the Per cent Base Saturation (PBS) of a soil is (CEC and the cations are expressed in terms of m.e./100 g soil)
- $\frac{[\text{Ca}^{2+}] + [\text{Mg}^{2+}] + [\text{K}^+]}{\text{CEC}} \times 100$
  - $\frac{[\text{Ca}^{2+}] + [\text{Mg}^{2+}] + [\text{Na}^+]}{\text{CEC}} \times 100$
  - $\frac{[\text{Ca}^{2+}] + [\text{K}^+] + [\text{Na}^+]}{\text{CEC}} \times 100$
  - $\frac{[\text{Ca}^{2+}] + [\text{Mg}^{2+}] + [\text{K}^+] + [\text{Na}^+]}{\text{CEC}} \times 100$
895. According to the Soil Health Card Scheme of the Government of India, a soil is considered 'high' with regard to available potassium, if its content is
- 60 to 120 kg/ha
  - 120 to 280 kg/ha
  - more than 280 kg/ha
  - more than 200 kg/ha
896. If the Great Group of a soil is Salustert, then according to Soil Taxonomy, Ustert designates the soil's
- Suborder
  - Subgroup
  - Family
  - Series
897. The unit for expressing the particle density of soils is
- $\text{g/cm}^2$
  - $\text{Mg/m}^3$
  - $\text{dg/m}^2$
  - both (a) and (b)
898. The chemical formula for Glauber's salt is
- $\text{Na}_2\text{CO}_3 \cdot 10 \text{H}_2\text{O}$
  - $\text{CaSO}_4 \cdot 2 \text{H}_2\text{O}$
  - $\text{Na}_2\text{SO}_4 \cdot 10 \text{H}_2\text{O}$
  - $\text{MgSO}_4 \cdot 7 \text{H}_2\text{O}$
899. The micronutrient cation that has fungicidal value is
- manganese
  - copper
  - cobalt
  - boron

900. Reduction in particle size with no change in chemical composition is a characteristic of  
(a) physical weathering (b) chemical weathering  
(c) physicochemical weathering (d) biological weathering
901. Saltation and surface creep are processes associated with  
(a) wind erosion (b) water erosion  
(c) surface runoff (d) leaching
902. c-Axis spacing of kaolinite, illite and montmorillonite is in the following order:  
(a) illite > kaolinite > montmorillonite  
(b) kaolinite > illite > montmorillonite  
(c) illite > montmorillonite > kaolinite  
(d) montmorillonite > illite > kaolinite
903. A farmer has to apply single super phosphate (SSP) @ 300 kg/ha. Assuming that SSP is not available and his field size is 0.5 ha, the amount of triple super phosphate (TSP) he requires is ( $P_2O_5$  contents of SSP and TSP are 16 and 46%, respectively)  
(a) 24 kg (b) 52 kg (c) 150 kg (d) 225 kg
904. Regarding optimum temperature required for growth, majority soil organisms are  
(a) psychrophiles (b) mesophiles  
(c) thermophiles (d) all the three
905. This mineral contains both iron and titanium  
(a) stengite (b) ilmenite  
(c) magnetite (d) vivianite
906. Red soils are widespread in this state of India  
(a) West Bengal (b) Andhra Pradesh  
(c) Arunachal Pradesh (d) Tamil Nadu
907. If the Lime Requirement of an acid soil is 5.5 tons/ha and due to nonavailability, burnt lime (CaO) is to be used instead of limestone, then the quantity of burnt lime for a field plot of 0.5 ha is  
(a) 1.54 tons (b) 3.08 tons  
(c) 2.75 tons (d) 4.91 tons
908. One of the followings is NOT a unit of radioactivity  
(a) Curie (Ci) (b) Becquerel (Bq)  
(c) Dalton (D) (d) Rutherford (Rd)

909. This substance is used as a primary standard base for the standardization of prepared acid solutions  
(a) NaOH      (b) KOH      (c) borax      (d)  $\text{Ca}(\text{OH})_2$
910. This mineral is black in colour  
(a) muscovite      (b) biotite  
(c) haematite      (d) malachite
911. According to FCO Specifications of Fertilizations, nitrophosphate (20-20-0) must contain ammonical and nitrate nitrogen in  
(a) 10% each      (b) entirely in ammonical form  
(c) entirely in nitrate form      (d) 15% and 5%
912. Cobalt is a constituent of  
(a) hemoglobin      (b) leghaemoglobin  
(c) plastocyanin      (d) vitamin B12
913. Biosuper is an intimate mixture of rock phosphate and  
(a) elemental sulphur      (b) gypsum  
(c) pyrites      (d) sulphate of potash
914. Eutrophication in water bodies pertains to the bloom in the population of  
(a) higher plants      (b) aquatic ferns  
(c) fungi      (d) algae
915. This substance is used as a primary standard acid for the standardization of prepared alkali solutions  
(a) HCl      (b) potassium hydrogen phthalate  
(c)  $\text{H}_2\text{SO}_4$       (d)  $\text{NaHCO}_3$
916. Isobutylidenediurea is a  
(a) coated fertilizer      (b) slow release fertilizer  
(c) nitrification inhibitor      (d) nitrification promoter
917. Flame Ionization Detector (FID) is a component of the instrumentation of  
(a) Flame photometer  
(b) atomic absorption spectrophotometer  
(c) Gas Liquid Chromatograph (GLC)  
(d) absorption spectrophotometer
918. Organic matter with wide C:N ratio should not be applied to a field with a standing crop because of the problem associated with  
(a) denitrification      (b) ammonia volatilization  
(c) mineralization      (d) immobilization

919. Soils suitable for growing rubber plantation are  
(a) black soils (b) red soils  
(c) laterite soils (d) alluvial soils
920. Slickensides are often noticed in  
(a) soils rich in humus  
(b) soils rich in sand  
(c) soils rich in nonexpanding clays with little swelling and shrinkage  
(d) soils rich in expanding clays with high swelling and shrinkage
921. In potentiometric determinations such as the measurement of  $H^+$  concentration or pH of a solution, the electrode that records a constant potential is called the  
(a) reference electrode (b) indicator electrode  
(c) glass electrode (d) none of the three
922. Biological weathering involves the processes of  
(a) physical weathering (b) chemical weathering  
(c) both the two (d) neither of the two
923. A gas contributing to greenhouse effect is  
(a)  $CO_2$  (b)  $CH_4$   
(c) both the two (d) neither of the two
924. Preindependent India's first fertilizer plant established at Ranipet in Tamil Nadu manufactured  
(a) ammonium sulphate (b) urea  
(c) ammonium nitrate (d) single super phosphate
925. A substance added to put off the offensive odour due to putrefactive fermentation during the process of making composts from urban wastes is  
(a) chlorine (b) sodium thiosulphate  
(c) copper sulphate (d) bleaching powder
926. A carrier material for *Rhizobium* culture is  
(a) peat (b) lignite (c) charcoal (d) all the three
927. The base of the equilateral triangle of the soil textural diagram represents the per cent content of  
(a) clay (b) silt (c) sand (d) fine sand
928. Rich deposits of gypsum are found in this state of India  
(a) Haryana (b) Odisha  
(c) Sikkim (d) Rajasthan

929. Red colour of red soils is due to the presence  
(a) oxides of iron (b) oxides of aluminium  
(c) muscovite (d) biotite
930. The concentration of exchangeable  $H^+$ ,  $K^+$ ,  $Na^+$ ,  $Ca^{2+}$  and  $Mg^{2+}$  ions of a soil are 3, 39, 69, 150 and 18 mg/100 g soil, respectively. Assuming the soil not to have any other exchangeable cation, the soil meets the ESP requirement of a/an  
(a) saline soil (b) acid soil  
(c) calcareous soil (d) alkali soils
931. The metamorphic rock produced from sandstone, a sedimentary rock, is  
(a) gneiss (b) schist (c) slate (d) quartzite
932. A soil on analysis was found to contain 1.035% organic matter. Considering the average C:N of agricultural soils to be 10:1 to 15:1, the per cent nitrogen content of the soil is  
(a) 0.400 to 0.600 (b) 0.040 to 0.060  
(c) 0.600 to 0.900 (d) 0.060 to 0.090
933. An effective practice to check soil loss by wind erosion is  
(a) contour bunding (b) terrace cropping  
(c) strip cropping (d) ridge and furrow cropping
934. In particle size analysis of soils, deflocculating agent added to maintain the stability of the dispersed soil system is  
(a) sodium dithionite (b) sodium hexametaphosphate  
(c) DTPA (d) hydrogen peroxide
935. The particular category of Soil Taxonomy represented by the term Orthents is  
(a) Suborder (b) Great group (c) Subgroup (d) Family
936. According to the Soil Health Card Scheme of the Government of India, a soil is considered 'high' with regard to organic carbon, if its content is  
(a) 0.25 to 0.50 % (b) 0.50 to 0.75 %  
(c) more than 0.75 % (d) more than 0.50 %
937. Calomel electrode used in potentiometers consists of a pool of this metal in contact with a paste of its chloride salt  
(a) mercury (b) silver  
(c) antimony (d) none of the three



938. The expression for deriving Residual Sodium Bicarbonate (RSBC) of irrigation water is  
(the brackets indicate concentrations of the ions in m. e. per litre)
- (a)  $[\text{HCO}_3^-] - ([\text{Ca}^{2+}] + [\text{Mg}^{2+}])$   
 (b)  $([\text{CO}_3^{2-}] + [\text{HCO}_3^-]) - ([\text{Ca}^{2+}] + [\text{Mg}^{2+}])$   
 (c)  $[\text{HCO}_3^-] - [\text{Ca}^{2+}]$   
 (d)  $[\text{HCO}_3^-] - [\text{Mg}^{2+}]$
939. Amounts of ammonium sulphate and single super phosphate to be applied in place of 150 kg DAP for its nonavailability are (% N content of ammonium sulphate is 20.6; % N and  $\text{P}_2\text{O}_5$  contents of DAP are 18 and 46; %  $\text{P}_2\text{O}_5$  content of SSP is 16)
- (a) 131 kg A.S. + 131 kg SSP    (b) 131 kg A.S. + 231 kg SSP  
 (c) 131 kg A.S. + 431 kg SSP    (d) 181 kg A.S. + 431 kg SSP
940. This epipedon is so named because of its light colour  
 (a) Ochric    (b) Mollic    (c) Folistic    (d) Placic
941. In remote sensing, the device that gathers electromagnetic radiation, converts it into a signal and presents it in a form suitable for obtaining information about the object under investigation, is called  
 (a) lens    (b) sensor    (c) scanner    (d) camera
942. Swamps, bogs, marshes, and estuaries are examples of  
 (a) watersheds    (b) waterlogged soils  
 (c) wetlands    (d) submerged soils
943. Leaching Requirement (LR) for the reclamation of saline soils is derived by the expression  
 (a)  $\text{LR} = \frac{\text{EC}_{\text{iw}}}{\text{EC}_{\text{dw}}}$     (b)  $\text{LR} = \frac{\text{EC}_{\text{dw}}}{\text{EC}_{\text{iw}}}$   
 (c)  $\text{LR} = \frac{\text{EC}_{\text{iw}} \times \text{EC}_{\text{dw}}}{\text{EC}_{\text{iw}}}$     (d)  $\text{LR} = \frac{\text{EC}_{\text{iw}} \times \text{EC}_{\text{dw}}}{\text{EC}_{\text{dw}}}$   
 ( $\text{EC}_{\text{iw}}$  and  $\text{EC}_{\text{dw}}$  indicate the electrical conductivity of the irrigation and drainage water, respectively)
944. The analytical instrument that uses a hollow cathode lamp as the source of radiation is  
 (a) flame photometer  
 (b) UV visible spectrophotometer  
 (c) atomic emission spectrophotometer  
 (d) atomic absorption spectrophotometer

945. Crop logging is a method of  
(a) soil fertility evaluation  
(b) plant analysis for assessing requirements of nutrients for crop production  
(c) phytotoxicity of excessive use of fertilizers  
(d) testing suitability of fertilizers
946. A crop quite tolerant to high salt concentration in soil is  
(a) beans      (b) pea      (c) grape      (d) sugar beet
947. In Soil Taxonomy, highly weathered soils are classified under the Order  
(a) Spodosol      (b) Oxisol  
(c) Histosol      (d) Mollisol
948. A solution of muriate of potash tests  
(a) acidic      (b) neutral  
(c) slightly alkaline      (d) highly alkaline
949. Ramsar sites refer to  
(a) sites of degraded soils      (b) designated wastelands  
(c) designated wetlands      (d) specific areas of polluted soils
950. Echard, Hollard and Chresard are terms for use in describing  
(a) soil water plant relationship  
(b) soil thermal regime plant relationship  
(c) soil chemical behaviour plant relationship  
(d) soil redox behaviour plant relationship
951. Amount of sulphate of potash equivalent to 150 kg of muriate of potash with regard to  $K_2O$  content is ( $K_2O$  contents of potash and muriate of potash are 50 and 60%)  
(a) 90 kg      (b) 120 kg      (c) 180 kg      (d) 240 kg
952.  $P^{31}$  and  $P^{32}$  are  
(a) isomers of each other      (b) isomorphs of each other  
(c) isotopes of each other      (d) isobars of each other
953. Inderite is a mineral of magnesium and  
(a) molybdenum      (b) boron  
(c) copper      (d) manganese
954. Amount of  $CaCO_3$  required for the neutralization of acidity produced by the application of 180 kg ammonium sulphate is (acid equivalent of ammonium sulphate is 110)  
(a) 180 kg      (b) 198 kg      (c) 220 kg      (d) 262 kg

955. Molybdenum blue method is used for the colorimetric/spectrophotometric determination of  
(a) phosphate (b) nitrate  
(c) sulphate (d) ammonium
956. In plant analysis, organic matter of plant samples is destroyed by  
(a) dry ashing (b) digestion by triacid mixture  
(c) either of the two (d) neither of the two
957. Plant nutrient that increases the oil content of groundnut and other oilseed crop plants is  
(a) nitrogen (b) phosphorus  
(c) potassium (d) sulphur
958. Soils or parent material deposits referred as dunes are formed by the following agency of transportation  
(a) water (b) wind (c) ice (d) gravity
959. The total water present in soil is known as Hollard. The total water available to plants is known as  
(a) Echard (b) Hollard (c) Chresard (d) Conard
960. The constituent of organic matter most resistant to microbial degradation is  
(a) cellulose (b) hemicelluloses  
(c) waxes (d) lignins
961. Critical Soil Test Level Concept of nutrient management in plants was suggested by  
(a) Beaufils (b) Fried and Dean  
(c) Cate and Nelson (d) Sommer and Lipmann
962. A crop very sensitive to soil acidity is  
(a) grapes (b) sugar beet  
(c) tobacco (d) citrus
963. The commercially available form of this fertilizer does have tints of various colours due to the presence of impurities  
(a) muriate of potash (b) sulphate of potash  
(c) ammonium sulphate (d) urea
964. If the Electrical Conductivity (EC) of the saturation paste of a soil is 2 dS/m at 25<sup>0</sup> C, the same in terms of  $\mu\text{mho/cm}$  is  
(a) 0.2 (b) 2 (c) 20 (d) 2000

965. A commonly used carrier gas for sweeping the substances to be separated in Gas Liquid Chromatography is  
(a) oxygen (b) methane  
(c) acetylene (d) nitrogen
966. Soapstone used as a coating agent in the manufacture of fertilizers is primarily made of  
(a) serpentine (b) pyrophyllite  
(c) talc (d) hornblende
967. A solution of ammonium sulphate tests  
(a) acidic (b) neutral  
(c) slightly alkaline (d) highly alkaline
968. Soil amendment used for the reclamation of alkali soils is  
(a) limestone (b) dolomite  
(c) gypsum (d) basic slag
969. In particle size analysis of soils, the chemical added to the soil sample for the destruction of soil organic matter is  
(a) sodium dithionite (b) sodium hexametaphosphate  
(c) DTPA (d) hydrogen peroxide
970. According to FCO, 1985 Specifications amended in 2021, the total nitrogen (as N) per cent by weight, minimum of vermicompost to be commercially available in market is  
(a) 1 (b) 2 (c) 3 (d) 5
971. This fertilizer does bear the risk of explosive hazard due to which its use is curtailed  
(a) ammonium nitrate (b) calcium ammonium nitrate  
(c) ammonium chloride (d) monoammonium phosphate
972. The primary objective of converting the crystalline powdery forms of fertilizers to their granular forms is to  
(a) increase their water solubility  
(b) decrease their contact area with the soil  
(c) decrease their shelf-life  
(d) increase their chemical reactivity
973. In Ostwald's process, nitric acid is produced by the catalytic oxidation of  
(a)  $N_2$  (b)  $NH_3$   
(c)  $NH_2NH_2$  (d)  $NH_2OH$



985. The atomic numbers of the plant nutrient elements K, Ca, Mg and S follows the sequence  
(a)  $S > Ca > Mg > K$  (b)  $Ca > K > S > Mg$   
(c)  $Ca > Mg > S > K$  (d)  $K > S > Mg > Ca$
986. Pahala blight in sugarcane is caused due to the deficiency of  
(a) zinc (b) copper (c) manganese (d) boron
987. For the determination of available potassium in soils, a representative mass of the soil is treated with  
(a) 1 N ammonium acetate, pH 7.0  
(b) 0.5 M  $NaHCO_3$ , pH 8.5  
(c) 1% ammonium citrate  
(d) 0.01 M  $CaCl_2$
988. A fertilizer that contains 25% total nitrogen is  
(a) ammonium nitrate (b) calcium ammonium nitrate  
(c) monoammonium phosphate (d) diammonium phosphate
989. Cuvettes (sample holders) of spectrophotometers for working in the visible range of the electromagnetic spectrum are made of  
(a) glass (b) porcelain (c) plastic (d) ceramic
990. The fertilizer that can be recommended for correcting the deficiency of sulphur is  
(a) ammonium chloride (b) single super phosphate  
(c) triple super phosphate (d) dolomite
991. The term 'pomace' in agricultural chemistry refers to a manure obtained from  
(a) carcasses of animals (b) residues of oil extracting plants  
(c) night soil (d) kitchen wastes
992. One among the following fertilizers is commercially available in the form of super granules  
(a) urea (b) calcium ammonium nitrate  
(c) single super phosphate (d) triple super phosphate
993. Deficiency symptoms of the plant nutrients that are mobile in plant systems are noticed first in  
(a) older leaves (b) newer leaves  
(c) both older and newer leaves (d) apical leaves
994. Devarda's alloy used in the determination of total nitrogen content of soils by Kjeldahl method is made up of aluminium, copper and  
(a) chromium (b) mercury (c) iron (d) zinc

995. A crop quite sensitive to high salt concentration in soil is  
(a) pulses (b) date palm  
(c) rice (d) sugar beet
996. A fertilizer that is commercially available in the form of prills is  
(a) calcium ammonium nitrate (b) urea  
(c) ammonium sulphate (d) sulphate of potash
997. Ramsar Convention recommendations that became effective in December 1975 pertains to  
(a) land degradation (b) soil erosion  
(c) habitat destruction (d) wetlands
998. Atomiser for causing a mist of the sample solution is a component of this analytical instrument in  
(a) colorimeter (b) spectrophotometer  
(c) flame photometer (d) conductivity bridge
999. The most widely used source of hydrogen for the manufacture of nitrogenous fertilizers in India is  
(a) water (b) coal (c) natural gas (d) naphtha
1000. The particular category of Soil Taxonomy represented by the term Vertic Ustorthent is  
(a) Suborder (b) Great group (c) Subgroup (d) Family
1001. The usual oxidizing agent for determining and expressing the Chemical Oxygen Demand (COD) for assessing the pollution load of water sample is  
(a)  $\text{KMnO}_4$  (b)  $\text{K}_2\text{Cr}_2\text{O}_7$   
(c)  $\text{H}_2\text{O}_2$  (d) concentrated  $\text{HNO}_3$
1002. This soil property is a universal character of soil health and quality  
(a) soil pH (b) soil structure  
(c) Soil Organic Carbon (SOC) (d) soil moisture retention capacity
1003. This mineral is a trioctahedral mica  
(a) halloysite (b) muscovite  
(c) chlorite (d) biotite
1004. The two ions which together contribute to the acidity of the soil solution are  
(a)  $\text{Mg}^{2+}$  and  $\text{Al}^{3+}$  (b)  $\text{H}^+$  and  $\text{Ba}^{2+}$   
(c)  $\text{H}^+$  and  $\text{Al}^{3+}$  (d)  $\text{Ba}^{2+}$  and  $\text{Al}^{3+}$

1005. In India, this fertilizer alone accounts for more than 50% of the total consumption of all commercial chemical fertilizers
- (a) calcium ammonium nitrate
  - (b) urea
  - (c) diammonium phosphate (DAP)
  - (d) NPK complexes
1006. Daniel Hillel's much referred book is on this branch of Soil Science
- (a) Soil Fertility
  - (b) Soil Physics
  - (c) Soil Chemistry
  - (d) Soil Classification
1007. Nitrogenase, the enzyme responsible for biological nitrogen fixation, is an enzyme of the following Class
- (a) Oxidoreductase
  - (b) Transferase
  - (c) Ligase
  - (d) Lyase
1008. The water solubility of monocalcium phosphate (MCP), dicalcium phosphate (DCP) and tricalcium phosphate (TCP) is in the following order
- (a) TCP > DCP > MCP
  - (b) DCP > MCP > TCP
  - (c) DCP > TCP > MCP
  - (d) MCP > DCP > TCP
1009. The fertilizer calcium cyanamide ( $\text{CaCN}_2$ ) is hydrolyzed in soil to form
- (a) CaO and HCN
  - (b) CaO and  $\text{CH}_3\text{NH}_2$
  - (c) CaO and  $\text{NH}_2\text{NH}_2$
  - (d)  $\text{CaCO}_3$  and  $\text{NH}_3$
1010. *Ambrosia artemisiifolia* is used as an indicator plant for deficiency of this nutrient element
- (a) copper
  - (b) zinc
  - (c) manganese
  - (d) molybdenum
1011.  $\text{K}_2\text{O}$  to K conversion factor is
- (a) 2.29
  - (b) 0.44
  - (c) 1.21
  - (d) 0.83
1012. In Land Capability Classification, the lands under Class I are shown in soil maps in this colour
- (a) yellow
  - (b) orange
  - (c) purple
  - (d) green
1013. For manufacturing single super phosphate, the  $\text{P}_2\text{O}_5$  content of rockphosphate must be a minimum of
- (a) 16%
  - (b) 31%
  - (c) 46%
  - (d) 52%
1014. This soil Order has so far not been reported in India
- (a) Spodosol
  - (b) Oxisol
  - (c) Gelisol
  - (d) All the three



1015. With regard to water of crystallization present in the molecules of borax, the fully hydrated form of the substance is  
(a) monohydrate (b) dihydrate  
(c) heptahydrate (d) decahydrate
1016. According to Soil Taxonomy, the number of soil Orders found in India is  
(a) 8 (b) 9 (c) 10 (d) 12
1017. The analytical instrument used for the determination of micronutrient cations is  
(a) emission spectrophotometer  
(b) gas liquid chromatograph  
(c) polarograph  
(d) atomic absorption spectrophotometer
1018. The ionic form of phosphorus produced by the dissolution of single super phosphate in water is  
(a)  $(\text{PO}_4)^{3-}$  (b)  $(\text{HPO}_4)^{2-}$  (c)  $(\text{H}_2\text{PO}_4)^-$  (d)  $(\text{H}_2\text{P}_2\text{O}_7)^{2-}$
1019. Nitrogen content of nano urea liquid currently available in Indian market is  
(a) 4% (b) 23% (c) 44% (d) 46%
1020. An enzyme involved in the first of the two steps of nitrification executed by the *Nitrosomonas* group of bacteria is  
(a) nitrate reductase  
(b) ammonia monooxygenase  
(c) nitrite oxidase  
(d) nitrite reductase
1021. Isomorphous substitution that confers electrical charge to silicate clays refers to the substitution of one ion by another one with comparable  
(a) mass (b) size (c) electrical charge (d) valency
1022. Particle size of urea in nano urea liquid formulation currently available in Indian market is  
(a) less than 1 mm (b) 1 mm to 4 mm  
(c) 20 to 50  $\mu\text{m}$  (d) 20 to 50 nm
1023. In healthy plants, the N:S ratio should be between  
(a) 80 to 100:1 (b) 50 to 60:1  
(c) 7 to 9:1 (d) 2 to 3:1

1024. For *Desulfovibrio* bacteria, the terminal acceptor of electrons for its respiratory requirements in waterlogged soils is
- (a) sulphate ( $\text{SO}_4^{2-}$ )                      (b) sulphite ( $\text{SO}_3^{2-}$ )  
(c) sulphide ( $\text{S}^{2-}$ )                      (d) tetrathionate ( $\text{S}_4\text{O}_6^{2-}$ )
1025. Presence of  $\text{Ca}(\text{NO}_3)_2$  in a complex fertilizer or fertilizer mixture enhances the following characteristic of the product
- (a) drillability                      (b) flowability  
(c) hygroscopicity                      (d) shelflife
1026. In the experiment on the determination of Ca+Mg, 10 ml soil water extract was found to contain 0.087 milli equivalent of Ca+Mg together. Assuming 10 ml soil water extract prepared from 0.5 g soil to contain 1.2 mg Ca, the per cent Mg content of the soil is
- (a) 0.024      (b) 0.240      (c) 0.6480      (d) 0.0648
1027. Strongly acidic soil pH helps suppressing the incidence of this disease of potato
- (a) late blight                      (b) pink rot  
(c) scab                      (d) potato virus Y
1028. Characteristic Soil Moisture Regime (SMR) and Soil Temperature Regime (STR) of soils are mostly used in assigning the following category of Soil Taxonomy
- (a) Order                      (b) Suborder  
(c) Great Group                      (d) Subgroup
1029. Chile salt peter is a nitrate of
- (a) sodium                      (b) potassium  
(c) calcium                      (d) magnesium
1030. If the C:N and C:P ratios of a soil are 10:1 and 150:1, respectively, then the N:P ratio of the soil is
- (a) 10:1      (b) 15:1      (c) 100:1      (d) 150:1
1031. Chisel ploughing is resorted to manage and amend the following limitation of a soil
- (a) gleyed subsoil  
(b) subsurface hardpan  
(c) waterlogged condition  
(d) unfavourable crumb soil structure
1032. In False Colour Composite (FCC), the colour in which vegetation is shown is
- (a) green      (b) blue      (c) purple      (d) red

1033. In making soil maps, the basic unit for mapping is  
(a) Family      (b) Phase      (c) Series      (d) Subgroup
1034. Biotite is a primary mineral under the following mineralogical class  
(a) micas      (b) feldspars  
(c) amphiboles      (d) pyroxenes
1035. In works in Soil Taxonomy and Soil Survey, a soil property that is determined very approximately in the field itself by a semiquantitative method and later in the laboratory by a recommended method is the soil's  
(a) colour      (b) texture  
(c) structure      (d) bulk density
1036. Coniferous vegetation is a characteristic of the soils belonging to the Order  
(a) Aridisol      (b) Mollisol  
(c) Spodosol      (d) Vertisol
1037. *Kankar*, a colloquial term often used in soil science, refers to concretions of  
(a) lime carbonate      (b) gypsum  
(c) pyrites      (d) fine silt
1038. The distance between the middle of the camera lens and the focal plane is called  
(a) optical length      (b) focal length  
(c) spatial length      (d) spectral length
1039. Among the four soil Orders viz. Alfisol, Mollisol, Oxisol and Vertisol, infertile soils are more likely in soils belonging to the Order  
(a) Alfisol      (b) Vertisol      (c) Mollisol      (d) Oxisol
1040. Extent of carbonation reaction in chemical weathering of rocks and minerals is more prominent in soils belonging to the Order  
(a) Mollisol      (b) Vertisol      (c) Aridisol      (d) Gelisol
1041. H bonding is typified by the attraction between a partially positive atom of hydrogen and a partially negative atom of  
(a) oxygen      (b) nitrogen  
(c) fluorine      (d) all the three
1042. Ligands are neutral or ionic species that bind to  
(a) metals ions      (b) clays  
(c) humic substances      (d) all the three

1043. The characteristic property used in identifying clay minerals is their
- (a) X ray diffractograms
  - (b) Differential Thermal Analysis (DTA) curves
  - (c) both X ray diffractograms and Differential Thermal Analysis (DTA) curves
  - (d) Nuclear Magnetic Resonance (NMR) spectra
1044. Among the four clay minerals viz. chlorite, montmorillonite, vermiculite and kaolinite, the one that is the most chemically weathered is
- (a) chlorite
  - (b) montmorillonite
  - (c) vermiculite
  - (d) kaolinite
1045. A substance that can accept as the terminal acceptor of electrons for soil microbial respiration in the absence of molecular oxygen is
- (a)  $\text{NO}_3^-$
  - (b)  $\text{SO}_4^{2-}$
  - (c)  $\text{Fe}^{3+}$
  - (d) all the three
1046. The available nitrogen content of an agricultural soil is 500 mg/kg soil. Following soil application of 283 kg urea/ha (46% N), the per cent available nitrogen increases to (assume 1 ha furrow slice soil to weigh 2.2 million kg soil)
- (a) 0.0280
  - (b) 0.0559
  - (c) 0.0420
  - (d) 0.0955
1047. DTPA is an extractant of choice for the determination of available micronutrient cation contents of soils is for this property of the substance
- (a) it forms ionic bonds with the micronutrient cations
  - (b) it forms hydrophobic bonds with the micronutrient cations
  - (c) large molecular size
  - (d) high number of dents
1048. A factor that determines the weatherability of minerals is their
- (a) order of crystallization
  - (b) contents of iron and aluminium
  - (c) increased basicity
  - (d) all the three
1049. Soil microorganisms that are filamentous are
- (a) fungi
  - (b) actinomycetes
  - (c) fungi and actinomycetes
  - (d) fungi, actinomycetes and algae
1050. Formation of urea by heating ammonium cyanate, as done by Friedrich Wohler in his famous Urea Synthesis in the laboratory, is a chemical reaction of the following kind
- (a) oxidation
  - (b) dehydration
  - (c) isomerisation
  - (d) carbonation