

# PHYSICAL SCIENCE ICAR SEPT 2022

Topic:- 03 PHYSICAL SCIENCE\_PG

1) Pitcher irrigation is NOT suitable for

[Question ID = 1441][Question Description = 101\_6\_PHSC\_AUG22\_Q01]

1. Tomato crop [Option ID = 5761]
2. Brinjal crop [Option ID = 5762]
3. Wheat crop [Option ID = 5763]
4. Broccoli crop [Option ID = 5764]

2) Which of the following is the prerequisite for aggregation?

[Question ID = 1442][Question Description = 102\_6\_PHSC\_AUG22\_Q02]

1. Dispersion [Option ID = 5765]
2. Fractionation [Option ID = 5766]
3. Sedimentation [Option ID = 5767]
4. Flocculation [Option ID = 5768]

3) Which of the following sphere is NOT associated with the soil?

[Question ID = 1443][Question Description = 103\_6\_PHSC\_AUG22\_Q03]

1. Ionosphere  
[Option ID = 5769]
2. Atmosphere  
[Option ID = 5770]
3. Lithosphere  
[Option ID = 5771]
4. Hydrosphere  
[Option ID = 5772]

4) Which of the following is the available form of Molybdenum to plants?

[Question ID = 1444][Question Description = 104\_6\_PHSC\_AUG22\_Q04]

1.  $\text{MoO}_4^{2-}$  [Option ID = 5773]
2.  $\text{MoO}_4^-$  [Option ID = 5774]
3.  $\text{HMoO}_4^-$  [Option ID = 5775]
4.  $\text{HMoO}_4^{2-}$  [Option ID = 5776]

5) Match List I with List II

List I	List II
Weathering Reaction	Weathering process
A. $\text{CaSO}_4 + 2\text{H}_2\text{O} \rightarrow \text{CaSO}_4 \cdot 2\text{H}_2\text{O}$	I. Oxidation
B. $2\text{Fe}_2\text{O}_3 \rightarrow 4\text{FeO}$	II. Hydration
C. $\text{KAlSi}_3\text{O}_8 + \text{HOH} \rightarrow \text{HAlSi}_3\text{O}_8 + \text{KOH}$	III. Reduction
D. $4\text{FeO} + \text{O}_2 \rightarrow 2\text{Fe}_2\text{O}_3$	IV. Hydrolysis

Choose the correct answer from the options given below:

[Question ID = 1445][Question Description = 105\_6\_PHSC\_AUG22\_Q05]

1. A - II, B - III, C - I, D - IV [Option ID = 5777]
2. A - II, B - III, C - IV, D - I [Option ID = 5778]
3. A - III, B - II, C - I, D - IV [Option ID = 5779]
4. A - III, B - IV, C - I, D - II [Option ID = 5780]

6) Which of the following suborder belongs to the order of Alfisols?

[Question ID = 1446][Question Description = 106\_6\_PHSC\_AUG22\_Q06]

1. Boralf [Option ID = 5781]
2. Aquults [Option ID = 5782]
3. Ochrepts [Option ID = 5783]

4. Fluvents [Option ID = 5784]

7) Naturally formed aggregates are known as [Question ID = 1447][Question Description = 107\_6\_PHSC\_AUG22\_Q07]

1. Crusts [Option ID = 5785]
2. Concretions [Option ID = 5786]
3. Flocculens [Option ID = 5787]
4. Peds [Option ID = 5788]

8) Given below are two statements

Statement I:  $\text{Al}(\text{OH})^{2+}$  ion is predominant in soil between pH 4.7 & 6.5

Statement II:  $\text{Al}^{3+}$  ion is predominant in soil pH below 4.7

In light of the above statements, choose the *correct* answer from the options given below

[Question ID = 1448][Question Description = 108\_6\_PHSC\_AUG22\_Q08]

1. Both Statement I and Statement II are true [Option ID = 5789]
2. Both Statement I and Statement II are false [Option ID = 5790]
3. Statement I is true but Statement II is false [Option ID = 5791]
4. Statement I is false but Statement II is true [Option ID = 5792]

9) The wet digestion method is followed for the estimation of [Question ID = 1449][Question Description = 109\_6\_PHSC\_AUG22\_Q09]

1. pH [Option ID = 5793]
2. E C [Option ID = 5794]
3. Organic Carbon [Option ID = 5795]
4. Cation Exchange Capacity [Option ID = 5796]

10) Which of the following manure has the highest content of Nitrogen?

[Question ID = 1450][Question Description = 110\_6\_PHSC\_AUG22\_Q10]

1. Cowdung [Option ID = 5797]
2. Mustard cake [Option ID = 5798]
3. Poultry litter [Option ID = 5799]
4. Blood meal [Option ID = 5800]

11) Given below are two statements

Statement I: Dominance of  $\text{Ca}^{2+}$  and  $\text{Mg}^{2+}$  on the clay exchange complex decrease the zeta potential that results in the flocculation of clay particles.

Statement II: High  $\text{Na}^{2+}$  saturation in the soil increases the zeta potential resulting in dispersion of clay particles.

In light of the above statements, choose the *correct* answer from the options given below

[Question ID = 1451][Question Description = 111\_6\_PHSC\_AUG22\_Q11]

1. Both Statement I and Statement II are true [Option ID = 5801]
2. Both Statement I and Statement II are false [Option ID = 5802]
3. Statement I is true but Statement II is false [Option ID = 5803]
4. Statement I is false but Statement II is true [Option ID = 5804]

12) Vesicular Arbuscular Mycorrhiza has an important role in increasing the availability of [Question ID = 1452][Question Description = 112\_6\_PHSC\_AUG22\_Q12]

1. Potassium [Option ID = 5805]
2. Phosphorus [Option ID = 5806]
3. Sulphur [Option ID = 5807]
4. Zinc [Option ID = 5808]

13) Given below are two statements

Statement I: The permanent charge of silicate clay minerals results from isomorphous substitution within the clay lattice.

Statement II: The pH-dependent charges depend on the dissociation of  $\text{H}^+$  ions from the edges of the crystal unit.

In light of the above statements, choose the *correct* answer from the options given below

[Question ID = 1453][Question Description = 113\_6\_PHSC\_AUG22\_Q13]

1. Both Statement I and Statement II are true [Option ID = 5809]
2. Both Statement I and Statement II are false [Option ID = 5810]
3. Statement I is true but Statement II is false [Option ID = 5811]

4. Statement I is false but Statement II is true [Option ID = 5812]

**14) The cation exchange capacity of clay minerals follows in the order of**[Question ID = 1454][Question Description = 114\_6\_PHSC\_AUG22\_Q14]

1. Montmorillonite > Vermiculite > Illite > Kaolinite [Option ID = 5813]
2. Montmorillonite > Illite > Vermiculite > Kaolinite [Option ID = 5814]
3. Vermiculite > Montmorillonite > Illite > Kaolinite [Option ID = 5815]
4. Vermiculite > Illite > Montmorillonite > Kaolinite [Option ID = 5816]

**15) Which of the following is NOT a micro-irrigation system?**[Question ID = 1455][Question Description = 115\_6\_PHSC\_AUG22\_Q15]

1. Sprinkler irrigation [Option ID = 5817]
2. Pitcher pot irrigation [Option ID = 5818]
3. Drip irrigation [Option ID = 5819]
4. Furrow irrigation [Option ID = 5820]

**16) Water use efficiency in increasing order**[Question ID = 1456][Question Description = 116\_6\_PHSC\_AUG22\_Q16]

1. Surface irrigation, Sprinkler irrigation, Drip irrigation, Pitcher pot irrigation [Option ID = 5821]
2. Sprinkler irrigation, Pitcher pot irrigation, Surface irrigation, Drip irrigation [Option ID = 5822]
3. Drip irrigation, Surface irrigation, Sprinkler irrigation, Pitcher pot irrigation [Option ID = 5823]
4. Pitcher pot irrigation, Drip irrigation, Surface irrigation, Sprinkler irrigation [Option ID = 5824]

**17) Biological measures for soil erosion is**[Question ID = 1457][Question Description = 117\_6\_PHSC\_AUG22\_Q17]

1. Strip cropping [Option ID = 5825]
2. Bench terracing [Option ID = 5826]
3. Contour bench terracing [Option ID = 5827]
4. Broad base terrace [Option ID = 5828]

**18) Irrigation is likely to be used, where the water supply is ample and the market value of the crop is low**[Question ID = 1458][Question Description = 118\_6\_PHSC\_AUG22\_Q18]

1. Drip irrigation [Option ID = 5829]
2. Check basin irrigation [Option ID = 5830]
3. Wild flooding [Option ID = 5831]
4. Sprinkler irrigation [Option ID = 5832]

**19) Which of the following crops has maximum water requirement?**

[Question ID = 1459][Question Description = 119\_6\_PHSC\_AUG22\_Q19]

1. Rice [Option ID = 5833]
2. Wheat [Option ID = 5834]
3. Barly [Option ID = 5835]
4. Oat [Option ID = 5836]

**20) Farmers Information and Advisory Centre (FIAC)**[Question ID = 1460][Question Description = 120\_6\_PHSC\_AUG22\_Q20]

1. Village level [Option ID = 5837]
2. Block level [Option ID = 5838]
3. Distric level [Option ID = 5839]
4. State level [Option ID = 5840]

**21) land Capability class I is denoted by which color?**[Question ID = 1461][Question Description = 121\_6\_PHSC\_AUG22\_Q21]

1. Green [Option ID = 5841]
2. Yellow [Option ID = 5842]
3. Red [Option ID = 5843]
4. Blue [Option ID = 5844]

**22) Erosion-resistance crop is**[Question ID = 1462][Question Description = 122\_6\_PHSC\_AUG22\_Q22]

1. Maize [Option ID = 5845]
2. Bajra [Option ID = 5846]
3. Jowar [Option ID = 5847]
4. Black gram [Option ID = 5848]

**23) Thorthwait's formula is used for the calculation of**[Question ID = 1463][Question Description = 123\_6\_PHSC\_AUG22\_Q23]

1. Evaporation (E) [Option ID = 5849]
2. Transpiration (T) [Option ID = 5850]
3. Evapotranspiration (ET) [Option ID = 5851]

4. Potential evapotranspiration (PET) [Option ID = 5852]

**24) The most important soils for agriculture are**[Question ID = 1464][Question Description = 124\_6\_PHSC\_AUG22\_Q24]

1. Alluvial soils [Option ID = 5853]
2. Black soils [Option ID = 5854]
3. Red soils [Option ID = 5855]
4. Saline soils [Option ID = 5856]

**25) Which of the following is an example of a non-edible oilcake is NOT suitable for feeding cattle?**

[Question ID = 1465][Question Description = 125\_6\_PHSC\_AUG22\_Q25]

1. Castor [Option ID = 5857]
2. Groundnut [Option ID = 5858]
3. Rapeseed [Option ID = 5859]
4. Sesame [Option ID = 5860]

**26) Which crop removes maximum N from the soil?**[Question ID = 1466][Question Description = 126\_6\_PHSC\_AUG22\_Q26]

1. Barley [Option ID = 5861]
2. Wheat [Option ID = 5862]
3. Maize [Option ID = 5863]
4. Oats [Option ID = 5864]

**27) Which soil order stands for recent alluvial soil?**[Question ID = 1467][Question Description = 127\_6\_PHSC\_AUG22\_Q27]

1. Alfisol [Option ID = 5865]
2. Entisol [Option ID = 5866]
3. Inceptisol [Option ID = 5867]
4. Mollisol [Option ID = 5868]

**28) Highest wind erosion has occurs in**[Question ID = 1468][Question Description = 128\_6\_PHSC\_AUG22\_Q28]

1. East India [Option ID = 5869]
2. West India [Option ID = 5870]
3. North India [Option ID = 5871]
4. South India [Option ID = 5872]

**29) Identify the most critical stage of wheat when irrigation is required**[Question ID = 1469][Question Description = 129\_6\_PHSC\_AUG22\_Q29]

1. Tillering stage [Option ID = 5873]
2. Booting stage [Option ID = 5874]
3. Flowering stage [Option ID = 5875]
4. Crown root initiation stage [Option ID = 5876]

**30) Suppose roots, straw, and grain of a wheat crop producing dry matter of 2.5 t/ha, 6 t/ha, and 4 t/ha contain 0.2%, 0.5%, and 1.2% N, respectively. How much total N uptake by wheat?**[Question ID = 1470][Question Description = 130\_6\_PHSC\_AUG22\_Q30]

1. 65 kg/ha [Option ID = 5877]
2. 75 kg/ha [Option ID = 5878]
3. 85 kg/ha [Option ID = 5879]
4. 95 kg/ha [Option ID = 5880]

**31) Accumulation of soluble salts in soils is called?**

[Question ID = 1471][Question Description = 131\_6\_PHSC\_AUG22\_Q31]

1. Laterization [Option ID = 5881]
2. Podzolization [Option ID = 5882]
3. Gleization [Option ID = 5883]
4. Salinization [Option ID = 5884]

**32) Which of the following program has considered the 'poorest of the poor' people as the target group?**

[Question ID = 1472][Question Description = 132\_6\_PHSC\_AUG22\_Q32]

1. Training of Rural Youth for Self-Employment (TRYSEM)

[Option ID = 5885]

2. Indra Awaas Yojana (IAY)

[Option ID = 5886]

3. Integrated Rural Development Programme (IRDP)

[Option ID = 5887]

4. Jawaharlal Nehru Rozgar Yojana (JRY)

[Option ID = 5888]

**33) Which soil has more pore space?[Question ID = 1473][Question Description = 133\_6\_PHSC\_AUG22\_Q33]**

1. Sandy soil [Option ID = 5889]
2. Clay soil [Option ID = 5890]
3. Sandy loam soil [Option ID = 5891]
4. Silty soil [Option ID = 5892]

**34) Raingun irrigation system is the method form of**

**[Question ID = 1474][Question Description = 134\_6\_PHSC\_AUG22\_Q34]**

1. Drip irrigstion

[Option ID = 5893]

2. Surface irrigation

[Option ID = 5894]

3. Sprinkler irrigation

[Option ID = 5895]

4. Subsurface irrigation

[Option ID = 5896]

**35) How many kilograms of soil are in one hectare in 15 cm depth having a bulk density of 1.33 g/cm<sup>3</sup>?[Question ID = 1475][Question Description = 135\_6\_PHSC\_AUG22\_Q35]**

1. 17,95,000 kg. [Option ID = 5897]
2. 19,95,000 kg. [Option ID = 5898]
3. 15,95,000 kg. [Option ID = 5899]
4. 21,95,000 kg. [Option ID = 5900]

**36) Match List I with List II**

List I	List II
Soil parameters	Unit
A. Hydraulic conductivity	I. kg m <sup>-3</sup>
B. Hydraulic head	II. N m <sup>-1</sup>
C. Hydraulic diffusivity	III. m <sup>2</sup> hr <sup>-1</sup>
D. Bulk density	IV. m <sup>3</sup> m <sup>-3</sup>
E. Water content	V. m

Choose the correct answer from the options given below:

**[Question ID = 1476][Question Description = 136\_6\_PHSC\_AUG22\_Q36]**

1. A - IV, B - III, C - I, D - II, E - V [Option ID = 5901]
2. A - V, B - IV, C - I, D - III, E - II [Option ID = 5902]
3. A - II, B - V, C - III, D - I, E - IV [Option ID = 5903]
4. A - I, B - II, C - IV, D - III, E - V [Option ID = 5904]

**37) In the infiltration moisture profile, the saturation zone is followed by[Question ID = 1477][Question Description = 137\_6\_PHSC\_AUG22\_Q37]**

1. Wetting zone [Option ID = 5905]
2. Drying zone [Option ID = 5906]
3. Transition zone [Option ID = 5907]
4. Wetting front [Option ID = 5908]

**38) *In situ* unsaturated hydraulic conductivity is measured by[Question ID = 1478][Question Description = 138\_6\_PHSC\_AUG22\_Q38]**

1. Tension infiltrometer [Option ID = 5909]
2. Double-ring infiltrometer [Option ID = 5910]
3. Tensiometer [Option ID = 5911]
4. Neutron probe [Option ID = 5912]

**39) The effective soil volume of measurement through neutron probe, is known as**

**[Question ID = 1479][Question Description = 139\_6\_PHSC\_AUG22\_Q39]**

1. Depth of soil water content [Option ID = 5913]

2. Representative volume of soil [Option ID = 5914]
3. Sphere of measurement [Option ID = 5915]
4. Sphere of influence [Option ID = 5916]

40) The primary mode of soil aeration is [Question ID = 1480][Question Description = 140\_6\_PHSC\_AUG22\_Q40]

1. Diffusion [Option ID = 5917]
2. Mass flow [Option ID = 5918]
3. Diffusion-dispersion combined [Option ID = 5919]
4. Transfer of dissolved gases by rain or irrigation [Option ID = 5920]

41) The soil structure can be defined as

- A. the very fragments or clods into which the soil breaks up
- B. three-dimensional arrangement of individual mineral grains and organic constituents
- C. assemblage of aggregates (peds) and voids, including voids between and within aggregates
- D. relative distribution and arrangement of soil particles

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

[Question ID = 1481][Question Description = 141\_6\_PHSC\_AUG22\_Q41]

1. D only [Option ID = 5921]
2. A and C only [Option ID = 5922]
3. A, C and D only [Option ID = 5923]
4. A, B and C only [Option ID = 5924]

42) Given below are two statements, one is labelled as Assertion A and the other is labelled as Reason R

Assertion A: Darcy's law is valid for a steady and stationary flow process in the soil

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

In light of the above statements, choose the *most appropriate* answer from the options given below

[Question ID = 1482][Question Description = 142\_6\_PHSC\_AUG22\_Q42]

1. Both A and R are correct and R is the correct explanation of A [Option ID = 5925]
2. Both A and R are correct but R is NOT the correct explanation of A [Option ID = 5926]
3. A is correct but R is not correct [Option ID = 5927]
4. A is not correct but R is correct [Option ID = 5928]

43) Arrange the following forms of soil consistencies with decreasing soil wetness

- A. Soft
- B. Friable
- C. Plastic
- D. Viscous
- E. Sticky

Choose the *correct* answer from the options given below

[Question ID = 1483][Question Description = 143\_6\_PHSC\_AUG22\_Q43]

1. A, B, C, D, E [Option ID = 5929]
2. A, C, D, E, B [Option ID = 5930]
3. B, A, C, E, D [Option ID = 5931]
4. D, E, C, A, B [Option ID = 5932]

44) Given below are two statements

Statement I: Application of nitrogenous fertilizer leads to  $N_2O$  emission from the soil

Statement II: Nitrous oxide is present in larger quantities compared to methane in the atmosphere, and therefore possesses a higher potent danger

In light of the above statements, choose the *correct* answer from the options given below

[Question ID = 1484][Question Description = 144\_6\_PHSC\_AUG22\_Q44]

1. Both Statement I and Statement II are true [Option ID = 5933]
2. Both Statement I and Statement II are false [Option ID = 5934]
3. Statement I is true but Statement II is false [Option ID = 5935]
4. Statement I is false but Statement II is true [Option ID = 5936]

45) In the USDA soil classification system, fine sand has a size range of [Question ID = 1485][Question Description = 145\_6\_PHSC\_AUG22\_Q45]

1. 2.0-0.50 mm [Option ID = 5937]
2. 0.50-0.25 mm [Option ID = 5938]
3. 0.25-0.10 mm [Option ID = 5939]
4. 0.10-0.05 mm [Option ID = 5940]

46) Given below are two statements

Statement I: The surface of a 'pedon' is roughly polygonal

Statement II: The surface area of a pedon ranges from 1 m<sup>2</sup> to 10 m<sup>2</sup>

In light of the above statements, choose the *correct* answer from the options given below

[Question ID = 1486][Question Description = 146\_6\_PHSC\_AUG22\_Q46]

1. Both Statement I and Statement II are true [Option ID = 5941]
2. Both Statement I and Statement II are false [Option ID = 5942]
3. Statement I is true but Statement II is false [Option ID = 5943]
4. Statement I is false but Statement II is true [Option ID = 5944]

47) The most homogeneous category on the soil taxonomy is [Question ID = 1487][Question Description = 147\_6\_PHSC\_AUG22\_Q47]

1. Soil series [Option ID = 5945]
2. Soil family [Option ID = 5946]
3. Soil suborders [Option ID = 5947]
4. Soil orders [Option ID = 5948]

48) If a road elevation changes 10 m over a horizontal distance of 100 m, the slope will be [Question ID = 1488][Question Description = 148\_6\_PHSC\_AUG22\_Q48]

1. 0.01% [Option ID = 5949]
2. 0.1% [Option ID = 5950]
3. 1% [Option ID = 5951]
4. 10% [Option ID = 5952]

49) Given below are two statements

Statement I: 'Hue is a measure of the chromatic composition of light

Statement II: The Munsell system is based on five principal hues

In light of the above statements, choose the *correct* answer from the options given below

[Question ID = 1489][Question Description = 149\_6\_PHSC\_AUG22\_Q49]

1. Both Statement I and Statement II are true [Option ID = 5953]
2. Both Statement I and Statement II are false [Option ID = 5954]
3. Statement I is true but Statement II is false [Option ID = 5955]
4. Statement I is false but Statement II is true [Option ID = 5956]

50) Medium and deep black soils are grouped in the order of [Question ID = 1490][Question Description = 150\_6\_PHSC\_AUG22\_Q50]

1. Alfisols [Option ID = 5957]
2. Entisols [Option ID = 5958]
3. Vertisols [Option ID = 5959]
4. Inceptisols [Option ID = 5960]

51) Which, among the following soil orders, are maximally area distributed in India? [Question ID = 1491][Question Description = 151\_6\_PHSC\_AUG22\_Q51]

1. Inceptisols [Option ID = 5961]
2. Alfisols [Option ID = 5962]
3. Entisols [Option ID = 5963]
4. Vertisols [Option ID = 5964]

52) Utilization of N from atmosphere by legumes was first observed by [Question ID = 1492][Question Description = 152\_6\_PHSC\_AUG22\_Q52]

1. Jean-Baptiste Boussingault [Option ID = 5965]
2. David Baltimore [Option ID = 5966]
3. Martinus W. Beijerinck [Option ID = 5967]
4. Sergei N. Winogradsky [Option ID = 5968]

53) Which of the following genera of bacteria are most abundant in soil?[Question ID = 1493][Question Description = 153\_6\_PHSC\_AUG22\_Q53]

1. Bacillus [Option ID = 5969]
2. Pseudomonas [Option ID = 5970]
3. Arthrobacter [Option ID = 5971]
4. Azotobacter [Option ID = 5972]

54) Which remote sensing is capable of penetrating through the cloud?[Question ID = 1494][Question Description = 154\_6\_PHSC\_AUG22\_Q54]

1. Thermal [Option ID = 5973]
2. Optical [Option ID = 5974]
3. Optical and Near-Infra red [Option ID = 5975]
4. Microwave [Option ID = 5976]

55) Which type of satellite is generally used for communication purposes?[Question ID = 1495][Question Description = 155\_6\_PHSC\_AUG22\_Q55]

1. Polar-orbiting [Option ID = 5977]
2. Sun-synchronous [Option ID = 5978]
3. Geostationary [Option ID = 5979]
4. Experimental [Option ID = 5980]

56) Which electromagnetic wave band is most sensitive to plant chlorophyll content?[Question ID = 1496][Question Description = 156\_6\_PHSC\_AUG22\_Q56]

1. Green [Option ID = 5981]
2. Red [Option ID = 5982]
3. Near infrared [Option ID = 5983]
4. Thermal infrared [Option ID = 5984]

57) Which of the followings is an active sensor?[Question ID = 1497][Question Description = 157\_6\_PHSC\_AUG22\_Q57]

1. Multispectral scanner [Option ID = 5985]
2. Hypersepctral scanner [Option ID = 5986]
3. Thermal scanner [Option ID = 5987]
4. Laser scanner [Option ID = 5988]

58) Pick up the wavelength ranges associated with UV spectroscopy.[Question ID = 1498][Question Description = 158\_6\_PHSC\_AUG22\_Q58]

1. 0.8 - 500  $\mu\text{m}$  [Option ID = 5989]
2. 400 - 100 nm [Option ID = 5990]
3. 380 - 750 nm [Option ID = 5991]
4. 0.01 - 10 nm [Option ID = 5992]

59) Match List I with List II

List I	List II
A. Electronegativity	I. Good conductor of heat and electric current
B. Ionization energy	II. Type of ion formed by Group 2A elements
C. Metal	III. Subatomic particles that are transferred to form positive and negative ions
D. Cation	IV. The ability of an atom to attract electrons when the atom is in a compound
	V. Energy required to remove an electron from an atom

Choose the correct answer from the options given below:

[Question ID = 1499][Question Description = 159\_6\_PHSC\_AUG22\_Q59]

1. A - IV, B - V, C - I, D - II [Option ID = 5993]
2. A - V, B - III, C - IV, D - I [Option ID = 5994]
3. A - I, B - III, C - IV, D - V [Option ID = 5995]
4. A - II, B - III, C - IV, D - I [Option ID = 5996]

60) What is another name for the transition metals?[Question ID = 1500][Question Description = 160\_6\_PHSC\_AUG22\_Q60]

1. Noble gases [Option ID = 5997]
2. Group 3-12 elements [Option ID = 5998]
3. Group 1 elements [Option ID = 5999]
4. Group 18 elements [Option ID = 6000]

61) Given below are two statements, one is labelled as Assertion A and the other is labelled as Reason R



**Assertion A:** Mulching controls soil erosion and improves soil water retention.

**Reason R:** Intensive tillage-based agricultural production system has had a negative impact on qualities of soil, water, and biodiversity.

In light of the above statements, choose the *correct* answer from the options given below

[Question ID = 1501][Question Description = 161\_6\_PHSC\_AUG22\_Q61]

1. Both A and R are true and R is the correct explanation of A [Option ID = 6001]
2. Both A and R are true but R is NOT the correct explanation of A [Option ID = 6002]
3. A is true but R is false [Option ID = 6003]
4. A is false but R is true [Option ID = 6004]

62) Match List I with List II

List I	List II
Book	Author
A. <i>The Nature and Properties of Soils</i>	I. H. S. Mavi
B. <i>Introduction to Agrometeorology</i>	II. G. Joseph and C. Jeganathan
C. <i>Fundamentals of Remote Sensing</i>	III. Micheal N. Demers
D. <i>Fundamentals of Geographic Information Systems</i>	IV. Nyle C. Brady and Ray R. Weil

Choose the correct answer from the options given below:

[Question ID = 1502][Question Description = 162\_6\_PHSC\_AUG22\_Q62]

1. A - V, B - I, C - II, D - III [Option ID = 6005]
2. A - V, B - II, C - I, D - IV [Option ID = 6006]
3. A - IV, B - I, C - II, D - III [Option ID = 6007]
4. A - IV, B - II, C - I, D - III [Option ID = 6008]

63) Who has put forward the 'Law of Minimum'?[Question ID = 1503][Question Description = 163\_6\_PHSC\_AUG22\_Q63]

1. E. A. Mitscherlich [Option ID = 6009]
2. Bernhard Baule [Option ID = 6010]
3. von Liebig [Option ID = 6011]
4. F. F. Blackman [Option ID = 6012]

64) When did the 'All India Coordinated Research Project on Long-Term Fertilizer Experiments (AICRP-LTFE)' start?

[Question ID = 1504][Question Description = 164\_6\_PHSC\_AUG22\_Q64]

1. 1910 [Option ID = 6013]
2. 1950 [Option ID = 6014]
3. 1970 [Option ID = 6015]
4. 1980 [Option ID = 6016]

65) Following are four stages of gully development. Arrange these in order.

- A. Healing stage
- B. Development stage
- C. Stabilization stage
- D. Formation stage

Choose the *correct* answer from the options given below

[Question ID = 1505][Question Description = 165\_6\_PHSC\_AUG22\_Q65]

1. A, B, C, D [Option ID = 6017]
2. D, B, A, C [Option ID = 6018]
3. D, C, B, A [Option ID = 6019]
4. D, B, C, A [Option ID = 6020]

66) Match List I with List II

List I	List II
Name of Theory	Theory proposed
A. Hydrodynamics	I. Daniel Bernoulli
B. Acoustics	II. Marie Curie
C. Mechanics	III. Johannes Kepler
D. Aerodynamics	IV. Hermann von Helmholtz
	V. Ludwig Prandtl

Choose the correct answer from the options given below:

[Question ID = 1506][Question Description = 166\_6\_PHSC\_AUG22\_Q66]

1. A - I, B - II, C - III, D - IV

[Option ID = 6021]

2. A - I, B - II, C - III, D - V

[Option ID = 6022]

3. A - II, B - III, C - IV, D - V

[Option ID = 6023]

4. A - I, B - IV, C - III, D - V

[Option ID = 6024]

67) Given below are two statements, one is labelled as Assertion A and the other is labelled as Reason R

**Assertion A:** The effective rainfall erosion index of a given area is linearly proportional to the percent of ground that is not covered by vegetation

**Reason R:** Rain erosion index includes both the kinetic energy of rain and the maximum 30-min rain intensity

In light of the above statements, choose the *most appropriate* answer from the options given below

[Question ID = 1507][Question Description = 167\_6\_PHSC\_AUG22\_Q67]

1. Both A and R are correct and R is the correct explanation of A [Option ID = 6025]

2. Both A and R are correct but R is NOT the correct explanation of A [Option ID = 6026]

3. A is correct but R is not correct [Option ID = 6027]

4. A is not correct but R is correct [Option ID = 6028]

68) Which one of the following are Phosphate-solubilizing bacteria?

[Question ID = 1508][Question Description = 168\_6\_PHSC\_AUG22\_Q68]

1. Azospirillum [Option ID = 6029]

2. Penicillium [Option ID = 6030]

3. Bacillus [Option ID = 6031]

4. Azotobacter [Option ID = 6032]

69) "PUSA STFR METER KIT" is used for [Question ID = 1509][Question Description = 169\_6\_PHSC\_AUG22\_Q69]

1. Plant N content [Option ID = 6033]

2. Crop irrigation requirement [Option ID = 6034]

3. Pesticide formulation [Option ID = 6035]

4. Soil available N content [Option ID = 6036]

70) Which of the following is NOT a 'deemed-to-be-university'? [Question ID = 1510][Question Description = 170\_6\_PHSC\_AUG22\_Q70]

1. Indian Agricultural Research Institute [Option ID = 6037]

2. Indian Veterinary Research Institute [Option ID = 6038]

3. National Dairy Research Institute [Option ID = 6039]

4. Central Institute of Agricultural Engineering [Option ID = 6040]

71) The youngest leaf is brownish or dead due to deficiency of \_\_\_\_\_ element

[Question ID = 1511][Question Description = 171\_6\_PHSC\_AUG22\_Q71]

1. Boron [Option ID = 6041]

2. Manganese [Option ID = 6042]

3. Phosphorus [Option ID = 6043]

4. Potassium [Option ID = 6044]

72) Movement of nutrients from soil to root in convective flow of water is \_\_\_\_\_

[Question ID = 1512][Question Description = 172\_6\_PHSC\_AUG22\_Q72]

1. Mass flow [Option ID = 6045]

2. Diffusion [Option ID = 6046]

3. Osmosis [Option ID = 6047]

4. Root interception [Option ID = 6048]

73) Mineral particles less than 2 mm in equivalent diameter, ranging between specified size limits is \_\_\_\_\_

[Question ID = 1513][Question Description = 173\_6\_PHSC\_AUG22\_Q73]

1. Ped [Option ID = 6049]
2. Soil separates [Option ID = 6050]
3. Soil order [Option ID = 6051]
4. Stoniness [Option ID = 6052]

**74) Which of the following is/are limitations of Stoke's law?[Question ID = 1514][Question Description = 174\_6\_PHSC\_AUG22\_Q74]**

1. The effect of different particles depends on the settling velocity of particles [Option ID = 6053]
2. Constant temperature during mechanical analysis [Option ID = 6054]
3. Both 1 & 2 [Option ID = 6055]
4. None of these [Option ID = 6056]

**75) The solubility product of  $PbF_2$  is  $3.2 \times 10^{-8}$  ; Calculate the solubility of  $PbF_2$  in mole  $L^{-1}$**

**[Question ID = 1515][Question Description = 175\_6\_PHSC\_AUG22\_Q75]**

1.  $2 \times 10^{-3}$  [Option ID = 6057]
2. 0.49 [Option ID = 6058]
3.  $3 \times 10^{-2}$   
[Option ID = 6059]
4. 0.2 [Option ID = 6060]

**76) A soil sample collected with a cylindrical core sampler having height of 15 cm and diameter of 6 cm has a fresh weight of 500 g and oven dry weight of 450 g. Calculate bulk density[Question ID = 1516][Question Description = 176\_6\_PHSC\_AUG22\_Q76]**

1. 1.38 [Option ID = 6061]
2. 1.17 [Option ID = 6062]
3. 1.06 [Option ID = 6063]
4. 1.25 [Option ID = 6064]

**77) Necrosis of apical meristem is the deficiency of \_\_\_\_\_**

**[Question ID = 1517][Question Description = 177\_6\_PHSC\_AUG22\_Q77]**

1. Copper [Option ID = 6065]
2. Boron [Option ID = 6066]
3. Calcium [Option ID = 6067]
4. Potassium [Option ID = 6068]

**78) Funtional element was introduced by \_\_\_\_\_**

**[Question ID = 1518][Question Description = 178\_6\_PHSC\_AUG22\_Q78]**

1. Nicholas [Option ID = 6069]
2. Priestly [Option ID = 6070]
3. Warrington [Option ID = 6071]
4. Arnon [Option ID = 6072]

**79) Calculate the void ratio of a soil having bulk density of  $1.60 \text{ g cm}^{-3}$ [Question ID = 1519][Question Description = 179\_6\_PHSC\_AUG22\_Q79]**

1. 0.66 [Option ID = 6073]
2. 0.24 [Option ID = 6074]
3. 0.35 [Option ID = 6075]
4. 0.80 [Option ID = 6076]

**80) Critical limit approach was developed by \_\_\_\_\_**

**[Question ID = 1520][Question Description = 180\_6\_PHSC\_AUG22\_Q80]**

1. Waugh and Fitts [Option ID = 6077]
2. Cate and Nelson [Option ID = 6078]
3. Collwell [Option ID = 6079]
4. Truog [Option ID = 6080]

**81) Most easily weathered mineral is \_\_\_\_\_**

**[Question ID = 1521][Question Description = 181\_6\_PHSC\_AUG22\_Q81]**

1. Olivine [Option ID = 6081]
2. Illmenite [Option ID = 6082]
3. Orthoclase [Option ID = 6083]
4. Quartz [Option ID = 6084]

82) Nutrient mobility was given by \_\_\_\_\_

[Question ID = 1522][Question Description = 182\_6\_PHSC\_AUG22\_Q82]

1. Mitscherlich [Option ID = 6085]
2. Bray [Option ID = 6086]
3. Liebig [Option ID = 6087]
4. Wallace [Option ID = 6088]

83) Exhaustive hydrolysis and leaching in desert soils lead to the formation of \_\_\_\_\_ clay minerals

[Question ID = 1523][Question Description = 183\_6\_PHSC\_AUG22\_Q83]

1. Illitic [Option ID = 6089]
2. Kaolinitic [Option ID = 6090]
3. Smectites [Option ID = 6091]
4. Allophanes [Option ID = 6092]

84) If  $t^{1/2}$  is 46 days, how much of this material will be left from 1 mole of this substance after 184 days?[Question ID = 1524][Question Description = 184\_6\_PHSC\_AUG22\_Q84]

1. 0.2625 mole [Option ID = 6093]
2. 0.2652 mole [Option ID = 6094]
3. 0.2662 mole [Option ID = 6095]
4. 0.2623 mole [Option ID = 6096]

85) Soils formed due to the influence of parent material masking the effect of climate is \_\_\_\_\_

[Question ID = 1525][Question Description = 185\_6\_PHSC\_AUG22\_Q85]

1. Endodynamomorphic [Option ID = 6097]
2. Ectodynamomorphic [Option ID = 6098]
3. Metamorphic [Option ID = 6099]
4. Lateritic [Option ID = 6100]

86) Calculate the normality of the solution containing 5 g of NaOH dissolved in 250 mL of aqueous solution.

[Question ID = 1526][Question Description = 186\_6\_PHSC\_AUG22\_Q86]

1. 0.5 [Option ID = 6101]
2. 1.0 [Option ID = 6102]
3. 0.1 [Option ID = 6103]
4. 0.05 [Option ID = 6104]

87) Given below are two statements, one is labelled as Assertion A and the other is labelled as Reason R

Assertion A: Drainage increase the soil temperature

Reason R: Drainage decreases the heat capacity

In light of the above statements, choose the *most appropriate* answer from the options given below

[Question ID = 1527][Question Description = 187\_6\_PHSC\_AUG22\_Q87]

1. Both A and R are correct and R is the correct explanation of A [Option ID = 6105]
2. Both A and R are correct but R is NOT the correct explanation of A [Option ID = 6106]
3. Only A is correct [Option ID = 6107]
4. Only R is correct [Option ID = 6108]

88) A solution of 0.30 % is equivalent to \_\_\_\_\_ ppm

[Question ID = 1528][Question Description = 188\_6\_PHSC\_AUG22\_Q88]

1. 3000 [Option ID = 6109]
2. 30 [Option ID = 6110]
3. 30000 [Option ID = 6111]
4. 3 [Option ID = 6112]

89) Elements trapped in between precipitate particles is \_\_\_\_\_

[Question ID = 1529][Question Description = 189\_6\_PHSC\_AUG22\_Q89]

1. Surface attraction [Option ID = 6113]
2. Occlusion [Option ID = 6114]
3. Precipitation [Option ID = 6115]
4. Inclusion [Option ID = 6116]

90) E value was given by \_\_\_\_\_

[Question ID = 1530][Question Description = 190\_6\_PHSC\_AUG22\_Q90]

1. Larsen [Option ID = 6117]
2. Russel [Option ID = 6118]
3. Fried and Dean [Option ID = 6119]
4. Beer and Lambert [Option ID = 6120]

91) What is the normality of HCl if 15 ml of 0.1N  $\text{Na}_2\text{CO}_3$  is consumed to titrate 10 ml of HCl?

[Question ID = 1531][Question Description = 191\_6\_PHSC\_AUG22\_Q91]

1. 1.5 [Option ID = 6121]
2. 1.0 [Option ID = 6122]
3. 0.5 [Option ID = 6123]
4. 0.15 [Option ID = 6124]

92) Absorption of ions by plant roots along the electrochemical potential is \_\_\_\_\_

[Question ID = 1532][Question Description = 192\_6\_PHSC\_AUG22\_Q92]

1. Active absorption [Option ID = 6125]
2. Passive absorption [Option ID = 6126]
3. Diffusion [Option ID = 6127]
4. Root interception [Option ID = 6128]

93) Partially weathered bedrock is \_\_\_\_\_ horizon

[Question ID = 1533][Question Description = 193\_6\_PHSC\_AUG22\_Q93]

1. R [Option ID = 6129]
2. C [Option ID = 6130]
3. Biomantle [Option ID = 6131]
4. D [Option ID = 6132]

94) Movement of a nutrient ion in response to concentration gradient is \_\_\_\_\_

[Question ID = 1534][Question Description = 194\_6\_PHSC\_AUG22\_Q94]

1. Massflow [Option ID = 6133]
2. Diffusion [Option ID = 6134]
3. Osmosis [Option ID = 6135]
4. Root interception [Option ID = 6136]

95) Weathering Index of Kaolinite is \_\_\_\_\_

[Question ID = 1535][Question Description = 195\_6\_PHSC\_AUG22\_Q95]

1. 10 [Option ID = 6137]
2. 8 [Option ID = 6138]
3. 7 [Option ID = 6139]
4. 9 [Option ID = 6140]

96) Whiptail of cauliflower is due to the deficiency of [Question ID = 1536][Question Description = 196\_6\_PHSC\_AUG22\_Q96]

1. Copper [Option ID = 6141]
2. Zinc [Option ID = 6142]
3. Molybdenum [Option ID = 6143]
4. Nitrogen [Option ID = 6144]

97) As compared to temperate climate a poikilothermic organism living in the arctic is richer in [Question ID = 1537]

[Question Description = 197\_6\_PHSC\_AUG22\_Q97]

1. Cholesterol [Option ID = 6145]
2. Long-chain fatty acids [Option ID = 6146]
3. Protein [Option ID = 6147]
4. Unsaturated fatty acids [Option ID = 6148]

98) Carbohydrates present on the plasma membrane [Question ID = 1538][Question Description = 198\_6\_PHSC\_AUG22\_Q98]

1. has structural role [Option ID = 6149]
2. forms channel [Option ID = 6150]
3. act as carrier [Option ID = 6151]
4. helps in molecular recognition [Option ID = 6152]

99) Which of the following enzymes is NOT present in lysosomes?

[Question ID = 1539][Question Description = 199\_6\_PHSC\_AUG22\_Q99]

1. Phosphatase [Option ID = 6153]
2. Polymerase [Option ID = 6154]
3. Lipase [Option ID = 6155]
4. Protease [Option ID = 6156]

100) Plane of formation of the cell plate in a plant cell is governed by[Question ID = 1540][Question Description = 200\_6\_PHSC\_AUG22\_Q100]

1. Phragmoplast [Option ID = 6157]
2. Nucleus [Option ID = 6158]
3. Centriole [Option ID = 6159]
4. Microtubules [Option ID = 6160]

101) Which of the following is present only in plants?

[Question ID = 1541][Question Description = 201\_6\_PHSC\_AUG22\_Q101]

1. Plasmodesmata [Option ID = 6161]
2. Desmosomes [Option ID = 6162]
3. Gap junctions [Option ID = 6163]
4. None [Option ID = 6164]

102) The nucleosome[Question ID = 1542][Question Description = 202\_6\_PHSC\_AUG22\_Q102]

1. contains DNA and nonhistone proteins2 [Option ID = 6165]
2. has a core of histones with DNA wound around it [Option ID = 6166]
3. is fully responsible for DNA packaging into chromosomes [Option ID = 6167]
4. surrounds nuclear pore [Option ID = 6168]

103) Ribosomes are synthesized by[Question ID = 1543][Question Description = 203\_6\_PHSC\_AUG22\_Q103]

1. Nucleus [Option ID = 6169]
2. Nucleolus [Option ID = 6170]
3. Endoplasmic reticulum [Option ID = 6171]
4. Mitochondria [Option ID = 6172]

104) Which of the following is the smallest is the carbohydrate - triose?

[Question ID = 1544][Question Description = 204\_6\_PHSC\_AUG22\_Q104]

1. Ribose [Option ID = 6173]
2. Glucose [Option ID = 6174]
3. Glyceraldehyde [Option ID = 6175]
4. Dihydroxyacetone [Option ID = 6176]

105) Which of the following are examples of Epimers?[Question ID = 1545][Question Description = 205\_6\_PHSC\_AUG22\_Q105]

1. Glucose and Ribose [Option ID = 6177]
2. Glucose and Galactose [Option ID = 6178]
3. Galactose, Mannose and Glucose [Option ID = 6179]
4. Glucose, Ribose and Mannose [Option ID = 6180]

106) Which of the following is NOT a Polymer of Glucose?

[Question ID = 1546][Question Description = 206\_6\_PHSC\_AUG22\_Q106]

1. Glycogen [Option ID = 6181]
2. Cellulose [Option ID = 6182]
3. Amylase [Option ID = 6183]
4. Insulin [Option ID = 6184]

107) Which class of carbohydrates is considered non-sugar?

[Question ID = 1547][Question Description = 207\_6\_PHSC\_AUG22\_Q107]

1. Monosaccharides [Option ID = 6185]
2. Disaccharides [Option ID = 6186]
3. Polysaccharides [Option ID = 6187]
4. Oligosaccharides [Option ID = 6188]

108) A molecule of amylopectin contains 1500 glucose residues and is branched after every 30 residues. How many

reducing ends are there?[Question ID = 1548][Question Description = 208\_6\_PHSC\_AUG22\_Q108]

1. 0 [Option ID = 6189]
2. 1 [Option ID = 6190]
3. 2 [Option ID = 6191]
4. 5 [Option ID = 6192]

**109) Which of the following vitamins aids in blood clotting?[Question ID = 1549][Question Description = 209\_6\_PHSC\_AUG22\_Q109]**

1. Vitamin K [Option ID = 6193]
2. Vitamin C [Option ID = 6194]
3. Vitamine D [Option ID = 6195]
4. Vitamin A [Option ID = 6196]

**110) Beri Beri is caused due by the deficiency of[Question ID = 1550][Question Description = 210\_6\_PHSC\_AUG22\_Q110]**

1. Vitamin B<sub>12</sub> [Option ID = 6197]
2. Vitamin B<sub>2</sub> [Option ID = 6198]
3. Vitamin B<sub>6</sub> [Option ID = 6199]
4. Vitamine B<sub>1</sub> [Option ID = 6200]

**111) Which of the following vitamins perform a coenzyme function?[Question ID = 1551][Question Description = 211\_6\_PHSC\_AUG22\_Q111]**

1. Vitamine A [Option ID = 6201]
2. Vitamin B [Option ID = 6202]
3. Vitamin C [Option ID = 6203]
4. Vitamin A, B & C [Option ID = 6204]

**112) Which of the following is NOT a herbicide?**

[Question ID = 1552][Question Description = 212\_6\_PHSC\_AUG22\_Q112]

1. Sodium chlorate [Option ID = 6205]
2. Sodium arsenite [Option ID = 6206]
3. Polyphosphate [Option ID = 6207]
4. Triazines [Option ID = 6208]

**113) Organo mercurial compounds are**

[Question ID = 1553][Question Description = 213\_6\_PHSC\_AUG22\_Q113]

1. Herbicides  
[Option ID = 6209]
2. Fungicides  
[Option ID = 6210]
3. Fumigants  
[Option ID = 6211]
4. Insecticides  
[Option ID = 6212]

**114) The first organic pesticide to be used commercially was[Question ID = 1554][Question Description = 214\_6\_PHSC\_AUG22\_Q114]**

1. Bordeaux mixture [Option ID = 6213]
2. Burgandy mixture [Option ID = 6214]
3. DDT [Option ID = 6215]
4. 2,4-D [Option ID = 6216]

**115) Bordeaux mixture is[Question ID = 1555][Question Description = 215\_6\_PHSC\_AUG22\_Q115]**

1. Organochlorine [Option ID = 6217]
2. Antibiotic [Option ID = 6218]
3. Organophosphate [Option ID = 6219]
4. Inorganic fungicide [Option ID = 6220]

**116) The pesticide used in the foundation of buildings for preventing termite attack is[Question ID = 1556][Question Description = 216\_6\_PHSC\_AUG22\_Q116]**

1. DDT [Option ID = 6221]
2. BHC [Option ID = 6222]
3. Endrin [Option ID = 6223]
4. Aldrin [Option ID = 6224]

**117) The solubility of gases in water can be calculated using[Question ID = 1557][Question Description = 217\_6\_PHSC\_AUG22\_Q117]**

1. Henry's law [Option ID = 6225]
2. Raoult's law [Option ID = 6226]
3. Avogadro's law [Option ID = 6227]
4. Gay-Lussac's law [Option ID = 6228]

**118) Fluoride pollution mainly affects[Question ID = 1558][Question Description = 218\_6\_PHSC\_AUG22\_Q118]**

1. Kidney [Option ID = 6229]
2. Brain [Option ID = 6230]
3. Heart [Option ID = 6231]
4. Teeth [Option ID = 6232]

**119) UN conference on human environment was held in the year[Question ID = 1559][Question Description = 219\_6\_PHSC\_AUG22\_Q119]**

1. 1988 [Option ID = 6233]
2. 1962 [Option ID = 6234]
3. 1972 [Option ID = 6235]
4. 1992 [Option ID = 6236]

**120) The term oligotrophic in lake ecosystem refers to[Question ID = 1560][Question Description = 220\_6\_PHSC\_AUG22\_Q120]**

1. higher nutrients in water [Option ID = 6237]
2. high aquatic productivity [Option ID = 6238]
3. algal blooms [Option ID = 6239]
4. low nutrients and low productivity [Option ID = 6240]