

PREVIEW QUESTION BANK

Module Name : Soil Science-ENG
Exam Date : 09-Jul-2023 Batch : 14:30-16:30

Sr. No.	Client Question ID	Question Body and Alternatives	Marks	Negative Marks
Objective Question				
1	2001	Which one of the following is not one of the features of parliamentary form of government? 1. Majority party rule 2. Collective Responsibility 3. Integrated and Independent Judiciary 4. Dissolution of the lower house A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
2	2002	Which of the following term implies that 'India is a neither a dependency nor a dominion of any other nation'? 1. Socialist 2. Sovereign 3. Secular 4. Democratic A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
3	2003	Which of the following form the maximum water composition on the earth's surface? 1. Oceans 2. Ice caps 3. Glaciers 4. Lakes A1 : 1 A2 : 2	4.0	1.00

		A3 : 3		
		A4 : 4		
Objective Question				
4	2004	Which one of the following does not fall under the category of 'biomes? 1. Forest 2. Sky 3. Desert 4. Grassland A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
5	2005	IUCN publishes information about which of the following species as Red List of threatened species? 1. Endangered Species 2. Vulnerable Species 3. Extinct Species 4. Rare Species A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
6	2006	Who was the first Indian to win an individual medal in Olympics? 1. Milkha Singh 2. Karnam Malleshwari 3. P. T. Usha 4. K. D. Jadhav A1 : 1 A2 : 2 A3 : 3	4.0	1.00

A4 : 4

Objective Question

7	2007	Who among the following reformers founded "Arya Samaj"? 1. Raja Ram Mohan Roy 2. Swami Dayananda Saraswati 3. Atmaram Pandurang 4. Ishwarchandra Vidyasagar A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

8	2008	What does "Triratna" mean in Buddhism? 1. Tripitaka 2. Buddha, Dhamma (dharma), Sangha 3. Satya, Ahimsa, Karuna 4. Sheel, Samadhi, Sangha A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

9	2009	Who started the Indian Reforms Association? 1. Narayan Guru 2. Swami Vivekananda 3. Krishna swami Aiyar 4. Keshav Chandra Sen A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

10	2010	4.0	1.00
	Consider the following statements (A). UN General Assembly has declared 2023 as the international year of millets (B). Odisha govt. ropes in FICCI to promote millets globally (C). Odisha Millets Mission is a flagship programme of the Odisha government to revive millets in farms and on plates Choose the correct answer from the options given below: 1. (A) and (B) only. 2. (B) and (C) only. 3. (A) and (C) only. 4. (A), (B) and (C). A1 : 1 A2 : 2 A3 : 3 A4 : 4		

Objective Question

11	2011	4.0	1.00
	Phomopsis blight occurs in which of the following crops? 1. Brinjal 2. Bajra 3. Sugarcane 4. Potato A1 : 1 A2 : 2 A3 : 3 A4 : 4		

Objective Question

12	2012	4.0	1.00
	Endemic pests can be described as? 1. Pest occurs in a few specific area. 2. Pest occurs in same area, year after year. 3. Pest occurs frequently in current season in abundance. 4. Pest occurs in severe form. A1 : 1 A2 : 2		

A3 : 3

A4 : 4

Objective Question

13	2013	Which country is the largest producer of raw silk?	4.0	1.00
		1. Japan 2. India 3. China 4. South Korea		
		A1 : 1		
		A2 : 2		
		A3 : 3		
		A4 : 4		

Objective Question

14	2014	Transfer of Ownership is the example of which utility.....	4.0	1.00
		1. Time utility 2. Place utility 3. Possession utility 4. Form utility		
		A1 : 1		
		A2 : 2		
		A3 : 3		
		A4 : 4		

Objective Question

15	2015	What happens to the total number of chromosomes during mitotic cell division?	4.0	1.00
		1. gets doubled 2. gets halved 3. remains the same 4. divides into four		
		A1 : 1		
		A2 : 2		
		A3 : 3		

		A4 : 4		
Objective Question				
16	2016	What is the minimum forest cover to be maintained as per the National Forest Policy, 1988? 1. One-half 2. One-third 3. One-fourth 4. Two-third A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
17	2017	Who among the following is known as the "Father of Agronomy"? 1. Stephen Hales 2. Gregor Johann Mendel 3. Peter Decresenzi 4. D N Walia A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
18	2018	Which of the following plant hormones helps in shoot elongation? 1. Auxin 2. Gibberellic acid 3. Absciscic acid 4. Cytokinin A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				

19	2019	Select from the following the chemical property of soil..... 1. Colour 2. pH 3. Texture 4. Structure A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

20	2020	The process of separating quality grains from chaff is called as..... 1. Winnowing 2. Threshing 3. Harvesting 4. Tilling A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

21	161001	The people, who consume _____ on regular basis as staple food, are likely to be affected by 'goitre' caused by abnormal hormone secretion from thyroid. 1. Finger millet 2. Sorghum 3. Barnyard millet 4. Pearl millet A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

22	161002		4.0	1.00
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		Which among the following crops is not grouped under sensitive to soil salinity category? 1. Chickpea 2. Pigeonpea 3. Peas 4. Field beans A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
23	161003	Which of the following nutrients is absorbed by plants without any combination with other nutrients? 1. Nitrogen 2. Phosphorus 3. Potassium 4. Sulphur A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
24	161004	The depth of soil up to which plant roots penetrate to draw water and plant nutrients is called 1. Effective soil depth 2. Effective rooting depth 3. Root length 4. Plough layer soil A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
25	161005		4.0	1.00

Which year India celebrated as "The National Year of Millets"?

1. 2023
2. 2022
3. 2019
4. 2018

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

26	161006	The concentrations of which amino acids in the grain of the quality protein maize are nearly twice compared to the normal maize? (A). Tryptophan (B). Methionine (C). Cysteine (D). Lysine Choose the correct answer from the options given below: 1. (A), and (B) only. 2. (B) and (C) only. 3. (C) and (D) only. 4. (A) and (D) only. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

27	161007	Weed seeds are killed in which phase of composting? 1. Mesophilic phase 2. Second mesophilic phase 3. Thermophilic phase 4. Maturation phase A1 : 1 A2 : 2 A3 : 3	4.0	1.00
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A4 : 4

Objective Question

28	161008	What is the safe limit of aflatoxins concentration in kernel of groundnut for direct consumption? 1. 9 ppb 2. 19 ppb 3. 29 ppb 4. 39 ppb A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

29	161009	Which experimental design takes care of the missing value; and ANOVA can be estimated without the use of missing plot technique? 1. RCBD 2. Strip-plot design 3. Latin square design 4. CRD A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

30	161010	Which among the following is the disadvantage of drip irrigation? 1. Soil moisture fluctuates from field capacity to different degrees of extreme dryness 2. It increases salinity hazard to plant 3. It restricts area of root growth 4. It enhances weed infestation A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

31

161011

4.0

1.00

Match **List I** with **List II**

List I	List II
(Different ploughs)	(Use of ploughs)
(A). Tractor drawn mouldboard plough	(I). Small squares remain unploughed
(B). Animal drawn mouldboard plough	(II). Deep ploughing and inversion
(C). Disc plough	(III). Incorporation of manures, fertilizers and plant residues
(D). Indigenous plough	(IV). Cutting of creeping or spreading grass and inversion

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

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

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

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

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

32	161012	Which crop is effectively used as an indicator plant for determining permanent wilting point of soil in the laboratory as it depletes the available soil moisture evenly and completely? 1. Sunflower 2. Sorghum 3. Maize 4. Jute A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

33	161013		4.0	1.00
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Which of the following millets contains the highest protein in the grain?

1. Foxtail millet
2. Proso millet
3. Pearl millet
4. Little millet

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

34	161014	The World's first Natural Farming and Organic Agricultural University is established in which country? 1. Australia 2. Argentina 3. India 4. France A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

35	161015	Desert soils have the characteristics of (A). They occur in arid climate (both hot and cold), occupying western part of Rajasthan, Gujarat, Haryana and Punjab and cold arid soils in Leh, Ladakh region of Jammu and Kashmir. (B). In hot dry deserts aeolian action carry sand and deposits in the direction of wind to form thick sandy surface. (C). They are heavy soils with >10% clay, and very less profile development. (D). Moderately to strongly alkaline (pH 7.9-9.0), low in organic matter, high in salts, and calcareous Choose the correct answer from the options given below: 1. (A), (B) and (D) only. 2. (A), (C) and (D) only. 3. (B), (C) and (D) only. 4. (A), (B) and (C) only. A1 : 1 A2 : 2	4.0	1.00
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		A3 : 3		
		A4 : 4		

Objective Question

36	161016	"Stability series" signifies the weatherability of the common primary minerals. It is proposed by: 1. Jenny (1941) 2. Goldich (1938) 3. Jackson et al. (1964) 4. Joffe (1949) A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

37	161017	Examples of tectosilicates in soils are: (A). Quartz (B). Cristobalite (C). Orthoclase (D). Plagioclase Choose the correct answer from the options given below: 1. (A), (B) and (C) only. 2. (A), (B), (C) and (D). 3. (A), (C) and (D) only. 4. (B), (C) and (D) only. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

38	161018	The size (diameter) of silt as per International Union of Soil Sciences (IUSS) is: 1. 0.002 mm 2. 2.0 mm 3. 0.02 mm 4. 0.20 mm	4.0	1.00
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		A1 : 1		
		A2 : 2		
		A3 : 3		
		A4 : 4		
Objective Question				
39	161019	(A). Humic acid (HA) is the portion of organic matter which is soluble in alkali, but insoluble in acid. (B). Humic acid (HA) is the portion of organic matter which is soluble in acid, but insoluble in alkali. (C). Fulvic acid (FA) is the portion of organic matter which is soluble in alkali and acid. (D). Humin is the portion of organic matter which is insoluble in both alkali and acid. Choose the correct answer from the options given below: 1. (A), (B) and (D) only. 2. (A), (B) and (C) only. 3. (A), (C) and (D) only. 4. (B), (C) and (D) only. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
40	161020	Potassium sulphate is a preferred source of K for crops like 1. Tobacco 2. Wheat 3. Rice 4. Sorghum A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
41	161021		4.0	1.00

- (A). Because of the dominance of the kaolinite mineral, black soils exhibit swell-shrink properties.
- (B). After heavy rains, red soils are highly prone to crusting.
- (C). The kaolinite-dominant red and laterite soils contain the lowest amount of all forms of K.
- (D). Black soils are characterized by high clay content and consequently, high available water holding capacity.

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

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

42	161022	If a soil solution is concentrated four times, then the activity ratio of potassium (K)-calcium (Ca) in solution will 1. Increase eight times 2. Decrease two times 3. Increase two times 4. Decrease four times A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

43	161023	(A). Exchangeable acidity in soil is the acidity associated with exchangeable Al^{3+} and H^+ ions, which can be replaced in a strongly acid soil by an unbuffered salt solution, such as KCl or NaCl. (B). Active acidity in soil is the activity of hydrogen (H^+) ions in the soil solution which is measured and expressed as pH value. (C). Residual/reserve acidity is associated with H^+ and Al^{3+} ions that are bound in non-exchangeable form by clay and organic matter in soils. (D). Total acidity is the sum of exchangeable acidity plus residual acidity in a soil. Choose the correct answer from the options given below: 1. (A), (B) and (D) only. 2. (A), (B) and (C) only. 3. (B), (C) and (D) only. 4. (A), (B), (C) and (D).	4.0	1.00
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		A1 : 1		
		A2 : 2		
		A3 : 3		
		A4 : 4		
Objective Question				
44	161024	Given below are two statements, one is labelled as Assertion (A) and other one labelled as Reason (R). Assertion (A) : Dehydrogenase activity reflects the total range of the oxidative activity of soil micro-organisms and may be considered a good indicator of the oxidative metabolism in soils. Reason (R) : Dehydrogenase oxidize soil organic matter by transferring protons and electrons from organic substrates to inorganic acceptors. In light of the above statements, choose the <i>correct</i> answer from the options given below. - Both (A) and (R) are true and (R) is the correct explanation of (A). - Both (A) and (R) are true but (R) is NOT the correct explanation of (A). (A) is true but (R) is false. (A) is false but (R) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
45	161025	Given below are two statements, one is labelled as Assertion (A) and other one labelled as Reason (R). Assertion (A) : The concepts of quantity (Q), intensity (I) and buffering capacity (Q/I) are useful in describing and measuring the potassium (K) supplying power of soils. The intensity factor is a measure of K in soil solution that is immediately available for absorption by plant root. Reason (R) : The absorption of K is influenced by the activity of other cations like Ca^{2+} and Mg^{2+} in the soil solution; thus, the potassium activity ratio is used, in place of K concentration alone, to indicate the intensity factor. In light of the above statements, choose the <i>correct</i> answer from the options given below. - Both (A) and (R) are true and (R) is the correct explanation of (A). - Both (A) and (R) are true but (R) is NOT the correct explanation of (A). (A) is true but (R) is false. (A) is false but (R) is true. A1 : 1 A2 : 2 A3 : 3	4.0	1.00

A4 : 4

Objective Question

46161026

4.01.00

Match **List-I** with **List-II**

List-I	List-II
(Indicator)	(Element)
(A). Eriochrome Black T	(I). Iron
(B). Potassium Chromate	(II). Boron
(C). Orthophenanthroline	(III). Chlorine
(D). Azomethine-H	(IV). Calcium

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

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

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

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

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

47	161027	By which regulation of Registration Committee opines that the insecticide is being introduced for the first time in India, it may, pending any enquiry, register it provisionally for a period of two years 1. Section 9(3) 2. Section 9(3B) 3. Section 9(4) 4. Section 9(4B) A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

48	161028		4.0	1.00
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		Abamectin 01.90% EC is registered in India for the purpose of controlling 1. Lepidopteran pest 2. Dipteran pest 3. Mites 4. Nematodes A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
49	161029	In Chlorantraniliprole 0.40% GR formulation, what does GR means 1. Liquid formulation 2. Suspension formulation 3. Solid formulation 4. Greasy formulation A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
50	161030	<i>Ampelomyces quisqualis</i> 2.0% WP is registered in India as biopesticide. It is recommended for the control of 1. Powdery mildew 2. Sucking pest 3. Lepidopteran pest 4. Spider mite A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
51	161031		4.0	1.00

For the analysis (detection and quantification) of thermolabile compounds which one of the following is not suitable

1. UPLC
2. LC-MS/MS
3. Spectrophotometer
4. GC-MS

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

52	161032	If Limit of detection (LOD) value of any method is 2 ppm then Limit of quantification (LOQ) value will be in the range of 1. 2-3 ppm 2. 6-7 ppm 3. 8-10 ppm 4. < 2 ppm A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

53	161033	What is most suitable for QuEChERS 1. It's a residue analysis technique 2. Sample preparation technique 3. Mass detection technique 4. Sample drawing technique A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

54	161034		4.0	1.00
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Match **List-I** with **List-II**

List-I	List-II
(Name of pesticide)	(Biological activity)
(A). Dinotefuran	(I). Acaricide
(B). Azoxystrobin	(II). Insecticide
(C). Flufenacet	(III). Herbicide
(D). Dicofol	(IV). Fungicide

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

1. (A) - (II), (B) - (IV), (C) - (III), (D) - (I)
2. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
3. (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
4. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

55 161035

4.0

1.00

Thin Layer Chromatography (TLC) is used in the wet laboratory for the purpose of

1. Quantification of mixture
2. Detection of single compound
3. Detection of mixture
4. Quantification of single compound

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

56 161036

4.0

1.00

In which part of neem, major bioactive constituents are present

1. Leaf
2. Bark
3. Root
4. Seed

A1 : 1

		A2 : 2		
		A3 : 3		
		A4 : 4		

Objective Question

57	161037	Plant which is a very good indicator of boron deficiency in an area	4.0	1.00
		1. Rice 2. Cauliflower 3. Brinjal 4. Maize		
		A1 : 1		
		A2 : 2		
		A3 : 3		
		A4 : 4		

Objective Question

58	161038	Liquid ammonia is used as fertiliser. What per centage of N is present in it	4.0	1.00
		1. 71 2. 65 3. 48 4. 82		
		A1 : 1		
		A2 : 2		
		A3 : 3		
		A4 : 4		

Objective Question

59	161039	India's estimated water potential from surface flow is	4.0	1.00
		1. 400 Mha m 2. 180 Mha m 3. 70 Mha m 4. 300 Mha m		
		A1 : 1		
		A2 : 2		

		A3 : 3		
		A4 : 4		

Objective Question

60	161040	For Darcy's law the value of Reynolds number is 1. < 1 2. $1 - 2$ 3. $2 - 3$ 4. > 3 A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

61	161041	The unit of intrinsic permeability is 1. LT^{-2} 2. LT^{-1} 3. L^2 4. L^2T A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

62	161042	Which of the following method is used to estimate time of concentration 1. CN method 2. Kirpich formula 3. Rational formula 4. Manning's formula A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

63	161043	The area under hyetograph represents 1. Rainfall intensity 2. Total rainfall amount 3. Flood flow 4. Runoff volume A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

64	161044	Through which of the following states the Yamuna river does not flow 1. Uttarakhand 2. Punjab 3. Haryana 4. Delhi A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

65	161045	Jal Shakti Abhiyan programme was started during the year 1. 2022 2. 2021 3. 2020 4. 2019 A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

66	161046		4.0	1.00
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		'Bandharas' a traditional water harvesting structure is found in which of the following states 1. Rajasthan 2. Maharashtra 3. Madhya Pradesh 4. Uttar Pradesh A1 : 1 A2 : 2 A3 : 3 A4 : 4		
Objective Question				
67	161047	Nearly, how much percentage of grounwater resources is used for irrigation? 1. 62 2. 80 3. 92 4. 56 A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
68	161048	What percentage of total water resources is used currently by India's agricultural sector? 1. 70 - 75 2. 75 - 80 3. 80 - 85 4. 85 - 90 A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
69	161049		4.0	1.00

The volume of rainwater consumed by the crop is known as

1. Blue water
2. Green water
3. Grey water
4. Virtual water

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

70	161050	The GAP (Ganga Action Plan) - a project to clean up the polluted water of Ganga - plans to intercept and divert municipal sewage falling into the river from 25 large urban conglomerates in which of the followings three states? 1. UP, Haryana and Punjab 2. UP, Bihar and West Bengal 3. Himachal Pradesh, UP and Haryana 4. Odisha, Bihar and West Bengal A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

711003251

4.01.00

Make the right match of soil horizons

List-I	List-II
(A). Horizon with CaSO_4 enrichment (>5%) than underlying material.	(I). Salic Horizon
(B). Horizon with secondary salt enrichment (>2-3%).	(II). Duripan
(C). This horizon is half cemented by SiO_2 . Its air dry peds do not slake in water.	(III). Gypsic Horizon
(D). Continuously frozen horizon.	(IV). Permafrost

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

1. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
2. (A) - (III), (B) - (I), (C) - (II), (D) - (IV)
3. (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
4. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

72 1003252

4.0 1.00

Match the following geochemical reactions:

List-I	List-II
(A). $\text{Fe}^{2+} \rightarrow \text{Fe}^{3+} + \text{e}^-$	(I). Reduction
(B). $\text{N}_2 + 3\text{H}_2 \rightarrow 2\text{NH}_3$	(II). Hydration
(C). $\text{CaSO}_4 + 2\text{H}_2\text{O} \rightarrow \text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ (Gypsum)	(III). Hydrolysis
(D). $\text{KAlSi}_3\text{O}_8 + \text{H}_2\text{O} \rightarrow \text{HAlSi}_3\text{O}_8 + \text{K}^+ + \text{OH}^-$	(IV). Oxidation

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

1. (A) - (IV), (B) - (I), (C) - (II), (D) - (III)
2. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
3. (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
4. (A) - (III), (B) - (IV), (C) - (I), (D) - (II)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

73 1003253

4.0 1.00

Soil solum is composed of:

1. O, A and B horizons.
2. Regolith minus(-) C horizon.
3. Only statement 1 is correct.
4. Both statements 1 and 2 are correct.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

74 1003254

4.0 1.00

Black soil is mainly related with the crop of:

1. Tea
2. Coffee
3. Cotton
4. Sugarcane

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

75 1003255

4.0 1.00

Match the following Rock types

List-I	List-II
(A). Igneous	(I). Marble
(B). Sedimentary	(II). Shale
(C). Metamorphic	(III). Granite
(D). Unclassified	(IV) Sand dunes

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

1. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
2. (A) - (III), (B) - (II), (C) - (I), (D) - (IV)
3. (A) - (I), (B) - (III), (C) - (II), (D) - (IV)
4. (A) - (III), (B) - (I), (C) - (II), (D) - (IV)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

76 1003256

4.0 1.00

Which of the following is the category of metamorphic rock?

1. Gabbro
2. Quartzite
3. Sandstone
4. Conglomerate

A1 : 1

		A2 : 2		
		A3 : 3		
		A4 : 4		
Objective Question				
77	1003257	Which is true about laterite soil? (A). The laterite soil develops in areas with high temperature and heavy rainfall. (B). The laterite soil develops in areas with high temperature and low rainfall. (C). Humus content of the soil is low. (D).Humus content of the soil is high. (E). Laterite soils are suitable for cultivation with adequate doses of manures and fertilizers. Choose the correct answer from the options given below: 1. (A), (C) and (E) are true. 2. (B), (D) and (E) are true. 3. (A) and (C) are true. 4. (A) and (D) are true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
78	1003258	Which two new soil orders have been added in US Soil Taxonomy after 1975? 1. Entisols and Inceptisols 2. Vertisols and Andisols 3. Histosols and Gelisols 4. Andisols and Gelisols A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
79	1003259		4.0	1.00

		Casagrande apparatus is used for determination of 1. Liquid limit 2. Shrinkage limit 3. Sticky consistency 4. Friable consistency A1 : 1 A2 : 2 A3 : 3 A4 : 4		
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Objective Question

80	1003260	In case of kriging the weight given to a known sampled data value depends on 1. Only the distance of the sampled point from the unsampled point 2. Only the direction of the sampled point from the unsampled point 3. Both distance and direction 4. Mean values of the sampled points A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

81	1003261	COLE is a dominant property of which of the following soils? 1. Andisols 2. Gelisols 3. Oxisols 4. Vertisols A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

82	1003262		4.0	1.00
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If the water rises up to 30 mm height in a capillary tube (from top surface of free water in a jar) at the normal temperature and pressure, then what is the radius of the capillary tube?

1. 0.00048 mm
2. 0.0048 mm
3. 0.00063 mm
4. 0.0063 mm

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

831003263

4.01.00

Given that ϵ , γ , and E_v are the longitudinal, tangential and volume expansion strains, respectively. Also that σ , τ and P are the, normal, shearing and pressure stresses, respectively. Now match the following equations rightly.

List-I	List-II
(Equation)	(Name of Theory)
(A). $E = \sigma/\epsilon$	(I). Bulk Modulus
(B). $G = \tau/\gamma$	(II). Young's Modulus
(C). $k=P/ E_v$	(III). Modulus of Shearing
(D). $\sigma_b = 3FL/2bd^2$	(IV). Modulus of Rupture

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

1. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
2. (A) - (I), (B) - (III), (C) - (II), (D) - (IV)
3. (A) - (II), (B) - (III), (C) - (I), (D) - (IV)
4. (A) - (III), (B) - (II), (C) - (I), (D) - (IV)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

84	1003264		4.0	1.00
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Make the right match of soil consistency equivalents:

List-I	List-II
(A). Mass wetness at which soil suspension is transformed form a liquid state to semi liquid state.	(I). Liquid limit
(B). Mass wetness at which soil can be rolled into a thread of 3 mm diameter without breaking	(II). Shrinkage limit
(C). Mass wetness at which soil water system changes from a viscous liquid to a plastic body.	(III). Plastic limit
(D). Mass wetness at which soil changes form semi-rigid to rigid soil with no change in volume	(IV).Flocculation limit

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

1. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
2. (A) - (I), (B) - (III), (C) - (II), (D) - (IV)
3. (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
4. (A) - (IV), (B) - (III), (C) - (I), (D) - (II)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

85	1003265	Plant available water in soil is held between 1. Saturation to wilting point 2. Field capacity to hygroscopic coefficient 3. Only field capacity 4. Field capacity to wilting point. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

Make the right match:

List-I	List-II
(A). Amount of heat required to raise the temperature of 1 gram of soil by 1 °C.	(I). Thermal diffusivity
(B). Amount of heat required to raise the temperature of 1 cm ³ of soil by 1 °C.	(II). Thermal conductivity
(C). Quantity of heat transmitted through unit length of a soil per unit cross section per unit time	(III). Specific heat
(D). Ratio of thermal conductivity to volume specific heat	(IV). Heat capacity

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

1. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
2. (A) - (I), (B) - (II), (C) - (IV), (D) - (III)
3. (A) - (I), (B) - (III), (C) - (IV), (D) - (II)
4. (A) - (III), (B) - (IV), (C) - (II), (D) - (I)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

87	1003267	If the laboratory temperature rises from 20 °C to 27 °C, time for taking reading of soil water suspension in textural analysis for soil separates will: 1. Increase 2. Remain the same 3. Decrease 4. Temperature rise have no relevance on terminal velocity. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

88	1003268	Saltation, suspension and surface creep are the categories of which type of erosion? 1. Erosion by animals 2. Water erosion 3. Wind erosion 4. Man made erosion A1 : 1	4.0	1.00
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		A2 : 2		
		A3 : 3		
		A4 : 4		

Objective Question

89	1003269	We should use vertical mulches in which type of soil? 1. Red soil 2. Desert soil 3. Alluvial soil 4. Black soil A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

90	1003270	Ratio of amount of soil particles passed with runoff past a particular point to the amount of soil erosion (total soil particles detached in the catchment before that point) is called: 1. Count ratio 2. Sediment delivery ratio 3. Bifurcation ratio 4. Soil particle count ratio A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

91	1003271	Lyotropic series or Hofmeister series that indicates the relative adsorbability of cations to a charged surface such as soil colloid. For bivalent cations, the sequence is given below: 1. $\text{Ca}^{2+} < \text{Sr}^{2+} < \text{Ba}^{2+} < \text{Mg}^{2+}$ 2. $\text{Mg}^{2+} < \text{Ba}^{2+} < \text{Ca}^{2+} < \text{Sr}^{2+}$ 3. $\text{Ba}^{2+} < \text{Mg}^{2+} < \text{Ca}^{2+} < \text{Sr}^{2+}$ 4. $\text{Mg}^{2+} < \text{Ca}^{2+} < \text{Sr}^{2+} < \text{Ba}^{2+}$ A1 : 1	4.0	1.00
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		A2 : 2		
		A3 : 3		
		A4 : 4		

Objective Question

92	1003272	Given below are two statements: Statement (I): The concept of A-Value is given by Fried and Dean (1952). Statement (II): It is hypothesized that when the plant is supplied with two sources of a particular nutrient, the plant will absorb this nutrient from each of these sources in proportion to the respective amounts available. In light of the above statements, choose the <i>most appropriate</i> answer from the options given below. - Both Statement (I) and Statement (II) are correct. - Both Statement (I) and Statement (II) are incorrect. - Statement (I) is correct but Statement (II) is incorrect. - Statement (I) is incorrect but Statement (II) is correct. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

93	1003273	Diocahedral smectites are the most common in soils. Different members of diocahedral smectites are: (A). Montmorillonite (B). Beidellite (C). Chlorite (D). Nontronite Choose the correct answer from the options given below: (A), (B) and (D) only. (A), (C) and (D) only. (B), (C) and (D) only. (A), (B) and (C) only. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

94	1003274		4.0	1.00
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The Universal Soil Loss Equation ($A = RKLSCP$) is proposed by:

1. Zingg (1940)
2. Smith (1941)
3. Wischmeier (1959)
4. Wischmeier and Smith (1978)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

95	1003275	Given below are two statements, one is labelled as Assertion (A) and other one labelled as Reason (R). Assertion (A) : Oxidation of iron is a disintegrative weathering process in minerals containing ferrous as part of their crystal structure. Reason (R) : Reduction in size and increase in electrical charge on oxidation of Fe^{2+} to Fe^{3+} create electrical and structural imbalances in these minerals. In light of the above statements, choose the <i>correct</i> answer from the options given below. 1. Both (A) and (R) are true and (R) is the correct explanation of (A). 2. Both (A) and (R) are true but (R) is NOT the correct explanation of (A). 3. (A) is true but (R) is false. 4. (A) is false but (R) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

96	1003276	In the "stability series" of weatherability of minerals, the most stable mineral having three-dimensional network of silicon tetrahedra is: 1. Biotite 2. Quartz 3. Olivines 4. Muscovite A1 : 1 A2 : 2 A3 : 3	4.0	1.00
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		A4 : 4		
Objective Question				
97	1003277	Carrier hypothesis is used to describe basically the active accumulation of ions across the cell membrane and it was proposed by: 1. Mitchell 2. Lundegardh 3. Barber 4. Epstein A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
98	1003278	The commonly used K-fertilizer is commercially manufactured using K-bearing minerals such as: (A). Sylvinite (B). Kainite (C). Sylvite (D). Langbeinite Choose the correct answer from the options given below: 1. (A), (B) and (D) only. 2. (A), (B), (C) and (D). 3. (B), (C) and (D) only. 4. (A), (B) and (C) only. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
99	1003279		4.0	1.00

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

Assertion (A) : Allophane and Imogolite are the aluminosilicates that exhibit short-range (or local) order, and are essentially poorly-crystalline or the structure is disordered.

Reason (R) : Structures with short-range order exhibit order over several nanometres, but on a larger scale, the structure is disordered.

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

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

100	1003280		4.0	1.00
Potassium minerals (A). Potassium-containing minerals common in soils are the dioctahedral micas such as muscovite, glauconite and illite (hydrous mica). (B). The trioctahedral micas are biotite and phlogopite; and the feldspars: sanidine, orthoclase and microcline. (C). Transitional clay minerals and allophanes also contain small amount of K (~1%). (D). Except illite, transitional clay minerals and allophanes, all other species of silicate minerals are mainly concentrated in the finer fractions of the soil. Choose the correct answer from the options given below: 1. (A), (B) and (D) only. 2. (B), (C) and (D) only. 3. (A), (C) and (D) only. 4. (A), (B) and (C) only. A1 : 1 A2 : 2 A3 : 3 A4 : 4				

Objective Question

101	1003281		4.0	1.00

Removal of silica from soil and accumulation of sesquioxides (goethite, gibbsite, etc.) with or without the formation of iron stone and concretions is called:

1. Ferruginisation
2. Podzolization
3. Laterization
4. Braunification

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

102	1003282	Zinc minerals can be arranged in decreasing order of solubility : (A). $\text{Zn}(\text{OH})_2$ (Amorphous) (B). ZnCO_3 (Smithsonite) (C). ZnO (Zincite) (D). Zn_2SiO_4 (Willemite). Choose the correct answer from the options given below: 1. $B > A > C > D$ 2. $A > B > C > D$ 3. $C > A > B > D$ 4. $A > C > D > B$ A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

103	1003283	Given below are two statements, one is labelled as Assertion (A) and other one labelled as Reason (R). Assertion (A) : The potential difference, known as zeta potential (ζ), between the fixed part and the freely mobile portion of the solution side of the double layer governs the stability of the colloids. Reason (R) : When the zeta potential attains the value of zero, the given colloidal system is said to correspond to the isoelectric state of the system concerned. In light of the above statements, choose the <i>correct</i> answer from the options given below. 1. Both (A) and (R) are true and (R) is the correct explanation of (A). 2. Both (A) and (R) are true but (R) is NOT the correct explanation of (A). 3. (A) is true but (R) is false. 4. (A) is false but (R) is true.	4.0	1.00
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		A1 : 1		
		A2 : 2		
		A3 : 3		
		A4 : 4		
Objective Question				
104	1003284	Given below are two statements: Statement (I): Molybdenum is a component of nitrate reductase, nitrogenase, xanthine oxidase/dehydrogenase and sulphite oxidase. Statement (II): Biological nitrogen fixation (BNF) is catalysed by the Mo-containing enzyme, nitrogenase (essentially comprising of Mo-Fe-S protein and a Fe-S cluster protein) which directly transfers electrons to N₂. In light of the above statements, choose the <i>most appropriate</i> answer from the options given below. - Both Statement (I) and Statement (II) are correct. - Both Statement (I) and Statement (II) are incorrect. - Statement (I) is correct but Statement (II) is incorrect. - Statement (I) is incorrect but Statement (II) is correct. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
Objective Question				
105	1003285	Given below are two statements, one is labelled as Assertion (A) and other one labelled as Reason (R). Assertion (A) : Plasticity is the property which enables a soil to take up water to form a mass that can be deformed into any shape and to maintain the shape even after the deformation pressure is removed. Reason (R) : The plate-like shape of clay particles with more than 15% clay and binding and lubricating effect of adsorbed water provide plasticity to the soil. In light of the above statements, choose the <i>correct</i> answer from the options given below. - Both (A) and (R) are true and (R) is the correct explanation of (A). - Both (A) and (R) are true but (R) is NOT the correct explanation of (A). (A) is true but (R) is false. (A) is false but (R) is true. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00

Objective Question

106	1003286	Defluorinated phosphate rock is having the following characteristics: (A). It is prepared by mixing powdered high grade phosphate rock with small quantity of sodium carbonate or sodium sulphate and phosphoric acid. (B). This mixture is calcined at a temperature of 1350 °C. (C). The product contains 38%-42% P₂O₅. (D). Out of total P₂O₅ content about 50% is soluble in 2% citric acid. Choose the correct answer from the options given below: 1. (A), (B) and (C) only. 2. (A), (B) and (D) only. 3. (A), (C) and (D) only. 4. (B), (C) and (D) only. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

107	1003287	The ratio of total volume of soil (Vt) to the total mass of dry soil (Ms) is expressed as cm³/g or m³/Mg and termed as: 1. Effective volume 2. Specific volume 3. Wet bulk density 4. Dry bulk density A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

108	1003288		4.0	1.00
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Langmuir (1918) developed the basic theory of adsorption of gases on solids with certain assumptions. These are:

(A). The surface of solid is made up of adsorption sites, each of which can adsorb one gas molecule.

(B). The presence of a gas molecule on one site does not affect the properties of the neighbouring sites.

(C). All the adsorption sites are different in their affinity for that gas molecule.

(D). The rate of adsorption is proportional to the number of adsorption sites and the pressure of gas.

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

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

109	1003289	The equilibrium activity ratio (AR_e^K) of the (Q/I) plot of soil refers to that value of the activity ratio in the equilibrium soil solution where the exchange phase neither gains nor releases exchangeable K^+ ions from or to the soil solution phase in contact. This value (AR_e^K) provides a measure of the 1. Specifically held K in soil 2. Inherent K availability in soil 3. Hysteresis of K adsorption-desorption in soil 4. Hysteresis of K adsorption-desorption in water A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

110	1003290	The cation exchange equation for heterovalent systems which is of more practical value than the homovalent ion exchange systems was propounded by: 1. Vanselow (1932) 2. Gapon (1933) 3. Kerr (1928) 4. Kerr-Vanselow (1932) A1 : 1 A2 : 2	4.0	1.00
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A3 : 3

A4 : 4

Objective Question

111	1003291	Slaking of mineral constituents of certain rocks is mainly due to 1. Hydrolysis 2. Oxidation 3. Reduction 4. Hydration A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

112	1003292	Schofield's ratio law remains valid if (A). There are appreciable negative charges on the soil colloid. (B). There are no appreciable negative charges on the soil colloid. (C). Soil solution is fairly dilute. (D). Non-exchangeable ions are not released from the clay lattice. Choose the correct answer from the options given below: 1. (A), (B) and (D) only. 2. (A), (B) and (C) only. 3. (B), (C) and (D) only. 4. (A), (C) and (D) only. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

113	1003293		4.0	1.00
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Given below are two statements:

Statement (I): According to the concept of nutrient mobility, Bray (1954) classified the nutrients into two groups namely, "mobile" nutrient ions such as nitrate (NO_3^-), chloride (Cl^-) and bicarbonate (HCO_3^-), and "immobile" nutrients ions such as potassium (K^+), magnesium (Mg^{2+}) and calcium (Ca^{2+}).

Statement (II): Another concept of available or bio-available nutrient was given by Barber (1995) which is defined as the "one that is present in a pool of ions in the soil and can move to the plant root during plant growth if the root is close enough".

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

1. Both Statement (I) and Statement (II) are correct.
2. Both Statement (I) and Statement (II) are incorrect.
3. Statement (I) is correct but Statement (II) is incorrect.
4. Statement (I) is incorrect but Statement (II) is correct.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

114	1003294	Anhydrous NH_3 is usually applied in soil through injector. After application in soil a number of temporary yet dramatic changes occur in the NH_3 retention zone such as: (A). Formation of retention zone of both ammonia (NH_3) and ammonium (NH_4^+) having circular to oval shape (3-13 cm diameter). (B). Drastic increase in concentrations of both NH_3 and NH_4^+ in the range of 1000-3000 ppm. (C). Increase in concentration of NO_2^- to toxic levels (100-300 ppm) because of reduction of activity of Nitrobacter at high pH (9.0-9.5). (D). Tremendous increase in population of microorganisms because free NH_3 (non-ionized NH_4) is less toxic to plants, animals, microorganisms. Choose the correct answer from the options given below: 1. (A), (B) and (D) only. 2. (A), (B) and (C) only. 3. (A), (C) and (D) only. 4. (B), (C) and (D) only. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

115	1003295		4.0	1.00
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Match **List-I** with **List-II**

List-I	List-II
(A). Schoonover	(I). Phosphate potential
(B). Gapon	(II). Gypsum requirement
(C). Schofield	(III). Membrane potential
(D). Donnan	(IV). Ion exchange reaction

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

1. (A) - (II), (B) - (IV), (C) - (I), (D) - (III)
2. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
3. (A) - (IV), (B) - (III), (C) - (II), (D) - (I)
4. (A) - (III), (B) - (I), (C) - (IV), (D) - (II)

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

116 1003296

4.0 1.00

Thermodynamic sequence of redox reactions in soil follows the order:

(A). MnO_2 (B). NO_3^- (C). $\text{Fe}(\text{OH})_3$ (D). CO_2 (E). SO_4^{2-} Choose the **correct** answer from the options given below:

1. (A) $\text{MnO}_2 > \text{(B) NO}_3^- > \text{(C) Fe}(\text{OH})_3 > \text{(D) CO}_2 > \text{(E) SO}_4^{2-}$
2. (B) $\text{NO}_3^- > \text{(A) MnO}_2 > \text{(E) SO}_4^{2-} > \text{(C) Fe}(\text{OH})_3 > \text{(D) CO}_2$
3. (B) $\text{NO}_3^- > \text{(A) MnO}_2 > \text{(C) Fe}(\text{OH})_3 > \text{(E) SO}_4^{2-} > \text{(D) CO}_2$
4. (C) $\text{Fe}(\text{OH})_3 > \text{(A) MnO}_2 > \text{(B) NO}_3^- > \text{(D) CO}_2 > \text{(E) SO}_4^{2-}$

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

117 1003297

4.0 1.00

Given below are two statements:

Statement (I): Isomorphous substitution of cations by those of different charges (but having similar sizes within permissible limits) within the tetrahedral and the octahedral layer-lattice clay minerals leads to the development of net unbalanced charge within the lattice.

Statement (II): Isomorphous substitution within Al-octahedral and Si-tetrahedral layers of higher-valent cations by lower-valent cations having similar sizes leads to permanent (pH-independent) negative charge.

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

1. Both Statement (I) and Statement (II) are correct.
2. Both Statement (I) and Statement (II) are incorrect.
3. Statement (I) is correct but Statement (II) is incorrect.
4. Statement (I) is incorrect but Statement (II) is correct.

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

118	1003298	Given below are two statements: Statement (I): Topography or relief is the configuration of land surface. Statement (II): Topography influences soil formation primarily through its effects on modifying water and temperature relations. In light of the above statements, choose the <i>most appropriate</i> answer from the options given below. 1. Both Statement (I) and Statement (II) are correct. 2. Both Statement (I) and Statement (II) are incorrect. 3. Statement (I) is correct but Statement (II) is incorrect. 4. Statement (I) is incorrect but Statement (II) is correct. A1 : 1 A2 : 2 A3 : 3 A4 : 4	4.0	1.00
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Objective Question

119	1003299		4.0	1.00
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(A). The positive charges associated with the surfaces of kaolinite, iron and aluminium oxides and allophone attract anions, such as Cl^- and NO_3^- . Such adsorbed anions can exchange with other anions in equivalent quantities.

(B). The force of this type of adsorption is solely electrostatic and these form outer-sphere complex having water molecules between anion and charge sites.

(C). There is another mechanism called ligand adsorption wherein weak inorganic acid anion such as phosphate, molybdate, selenate, arsenate and organic acid anions such as citrate, oxalate are adsorbed even when there is net negative charge on the surface.

(D). In ligand adsorption mechanism, the anions replace surface OH groups or protonated OH_2^+ groups and get directly linked with structural cations, such as Al, or Fe, forming inner-sphere complexes.

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

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

A1 : 1

A2 : 2

A3 : 3

A4 : 4

Objective Question

120 1003300

4.0 1.00

Match **List-I** with **List-II**

List-I	List-II
(A). Darcy's law	(I). Thermal flux is directly proportional to temperature gradient.
(B). Fick's law	(II). Water flux is directly proportional to hydraulic gradient
(C). Fourier's law	(III). Electric current flux is proportional to potential gradient
(D). Ohm's law	(IV). Gas flux is directly proportional to partial pressure gradient.

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

1. (A) - (I), (B) - (II), (C) - (III), (D) - (IV)
2. (A) - (II), (B) - (IV), (C) - (I), (D) - (III)
3. (A) - (IV), (B) - (I), (C) - (III), (D) - (II)
4. (A) - (III), (B) - (I), (C) - (II), (D) - (IV)

A1 : 1

A2 : 2

A3 : 3

A4 : 4