



Sl	Product(s) / Material of test	Specific tests performed	* Test Method / Standard against which tests are performed	Range of Testing/ Limits of detection	Uncertainty of Measurement ⁺ (±)
1	I. WATER (Borewell Water, River Water, Municipal water,)	Boron as B	IS 3025 (Part 57) 6.0:2005 Reaffirmed 2010 / APHA 23rd Edn(2017) 4500-B / colorimetric Curcumin Method	0.5-5mg/L	0.096@1.32 mg/l
2		Calcium as Ca	IS 3025 (Part 40)5.0:1991 Reaffirmed 2009 / APHA 23rd Edn(2017) 3500 -Ca B / EDTA Titrimetric method .	5 – 200 mg/L	9.42@146.4 mg/l
3		Chloride as Cl	IS 3025 (Part 32)2.0:1988 Reaffirmed 2009 / APHA 23rd Edn(2017) 4500-Cl B / Argentometric method	10 – 1000 mg/L	4.76@62.6 mg/l
4		Copper as Cu	IS 3025 (Part 42)6.0:1992 Reaffirmed 2009 / APHA 23rd Edn(2017) 3111B / AAS Method – Direct	0.1 – 3.0 mg/L	0.06@1.1 mg/l
5		Fluoride as F	APHA 23rd Edn(2017) 4500-F D / SPANDS method	0.1 – 1.5 mg/L	0.08@1 mg/l
6		Iron as Fe	IS 3025 (Part 53)7.0:2003 Reaffirmed 2009 / APHA 23rd Edn(2017) 3111B / AAS Method Direct	0.1-5 mg/L	0.004@1.5 mg/l
7		Magnesium as Mg	IS 3025:1994 Reaffirmed 2009 (Part 46)6.0 / APHA 23rd Edn 3500(2017) - mg B / Volumetric Method Using EDTA	10 – 100 mg/L	1.48@30.04 mg/l
8		pH @ 25°C	IS 3025 (Part 11)2.0:1983 Reaffirmed 2006 / APHA 23rd Edn(2017) 4500 pH Value B / Electrometric method	2-12	0.06 @ 7
9		Residual Free Chlorine	IS 3025 (Part 26)3.0:1986 Reaffirmed 2009 / APHA 23rd Edn(2017) 4500-Cl B / Iodimetric Method	1-10.0 mg/L	0.778@8.62 mg/l
10		Sulphate as SO₄	IS 3025 (Part 24)4.0:1986 Reaffirmed 2009 / APHA 23rd Edn(2017) 4500-SO ₄ ²⁻ E / Turbidity method	20 – 400 mg/L	9.47@115 mg/l
11		Total Alkalinity	IS 3025 (Part 23)1.0:1986 Reaffirmed 2003 / APHA 23rd Edn(2017) 2320B / Titrimetric Method	2 – 100 mg/L	7.82@80 mg/l
12		Total Dissolved Solids	IS 3025 (Part 16)1.0:1984 Reaffirmed 2006 / APHA 23rd Edn(2017) 2540C / Gravimetric Method	20 – 2000 mg/L	27.42@1558 mg/l
13		Total Hardness	IS 3025 (Part 21)5.0:2009 / APHA 23rd Edn(2017) 2340C / EDTA Method	15 – 600 mg/L	14.2@185 mg/l



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14		Total Solids	IS 3025 (Part 15)1.0:1984 Reaffirmed 2009 / APHA 23rd Edn(2017) 2540B / Gravimetric Method	20 – 2100 mg/L	30@1600 mg/l
15		Total Suspended Solids	IS 3025 (Part 17)1.0:1984 Reaffirmed 2012 / APHA 23rd Edn(2017) 2540D / Gravimetric Method	20 – 100 mg/L	3@50 mg/l
16		Turbidity	IS 3025 (Part 10)1.0:1984 Reaffirmed 2009 /APHA 23rd Edn(2017) 2130B / Nephelometric method	1 – 10 NTU	0.74@8.02 NTU
17		Zinc as Zn	IS 3025 (Part 49) 6.0:1994 Reaffirmed 2009 Part 49 /APHA 23rd Edn(2017) 3111B/ AAS Method Direct	1-15 mg/l	0.12@ 2.02 mg/l
18	II. Pollution and Environment (Treated & condensate water , STP, Waste, Industrial and Cooling water)	Acidity	IS 3025 (Part 22)1.0: 1986 Reaffirmed 2009 /APHA 23rd Edn(2017) 2310B / Titrimetric Method	1 – 1000 mg/L 5-150000 mg/l	12.05@228.8 mg/l 3704 @67660 mg/l
19		Ammonical Nitrogen	IS 3025(Part 34) 2.5: 1988 Reaffirmed 2009 / APHA 23rd Edn(2017) 4500-NH ₃ B, C / Titrimetric Method	1 – 50 mg/L 10-500 mg/l	4.1 @42.4 mg/l
20		BOD @ 27°C 3 Days	IS 3025(Part 44) 1.0: 1983 Reaffirmed 2009 / APHA 23rd Edn(2017) 2310B / Oxygen Depletion method	1 – 100 mg/L 2-150000 mg/l	7.64@62 mg/l 4468 @42000mg/l
21		Boron as B	IS 3025 (Part 57)6.0 :2005 Reaffirmed 2010 / APHA 23rd Edn(2017) 4500-B B / colorimetric Curcumin Method	0.5 – 2.0 mg/L 0.5-10.0mg/l	0.0728@1.04 mg/l 0.35@5.1mg/l
22		Calcium as Ca	IS 3025 ((Part 40) 5.0:1991 Reaffirmed 2009 / APHA 23rd Edn(2017) 3500-Ca B / EDTA Titrimetric method	5 – 200mg/L 15 -10000mg/l	2.08@14.14 mg/l 146.96@2282mg/l
23		COD	IS 3025 (Part 58) 1.0:2006 Reaffirmed 2012 / APHA 23rd Edn 5220B(2017) /Open Reflux method	4 – 250 mg/l 4 - 300000 mg/l	16.58@192 mg/l 10540@124000mg/l
24		Chloride as Cl	IS 3025 (Part 32)2.0 :1988 Reaffirmed 2009 / APHA 23rd Edn(2017) 4500-Cl B / Argentometric method	10 – 600 mg/L 25 -100000 mg/l	7.0@49.45 mg/l 1242@14245 mg/l
25		Conductivity	IS3025(Part14)1.0:1985 Reaffirmed2013/APHA 23rd Edn 2017) 2510B/ Electrical Conductivity Method	1 - 2250µmohs/cm 1 - 50000 µmohs/cm	0.49@18.43µmohs/cm 0.75 @ 500 µmohs/cm 74.8@41300 µmohs/cm
26		Copper as Cu	IS 3025 (Part42)6.0:1992 Reaffirmed 2009 / APHA 23rd Edn(2017) 3111B / AAS Method – Direct Method	0.1 – 3mg/L 1 - 50mg/l	0.2338@5.22 mg/l 0.45@10.22 mg/l



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27	II.Pollution and Environment (Treated & condensate water, STP, Waste, Industrial and Cooling water)	Dissolved Oxygen	IS 3025 (Part 38)4.2:1989 Reaffirmed 2009 / APHA 23rd Edn(2017) 4500-O B //Azide Modification Method	1- 10 mg/L	0.63 @ 6.7 mg/l
28		Fluoride as	APHA 23rd Edn(2017) 4500-F D / SPANDS method	1-3mg/L 0.5-50000mg/l	<u>0.1@1.04</u> mg/l <u>802@11460</u> mg/l
29		Hexavalent Chromium as Cr6+	IS 3025 (Part 52)6.0:2003 Reaffirmed 2009 / APHA 23rd Edn(2017) 3500- Cr B /Diphenyl Carbazide Method	0.25-2 mg/L 0.25-500 mg/l	<u>0.05@1.5</u> mg/l 0.07 @27.8 mg/l
30		Iron as Fe	IS 3025 (Part 53)7.0 :2003 Reaffirmed 2009 / APHA 23rd Edn(2017) 3111B / AAS Method Direct	0.3 – 10mg/L 1-500mg/l	<u>0.15@3.5</u> mg/l <u>0.41@150</u> mg/l
31		Lead as Pb	IS 3025 (Part 47)7.0:1994 Reaffirmed 2009 / APHA 23rd Edn(2017) 3111B / AAS Method Direct	1- 10mg/L 1-50 mg/l	<u>0.25@5.7</u> mg/l
32		Magnesium as Mg	IS 3025 (Part 46) 6.0:1994 Reaffirmed 2009 / APHA 23rd Edn(2017) 3500-mg B / Volumetric Method Using EDTA	1 – 100 mg/L 1-5000 mg/l	2.32@12.32 mg/l 125@1300 mg/l
33		Nickel as Ni	IS3025(Part 54)7.0 : 2003 Reaffirmed 2009 / APHA 23rd Edn(2017) 3111B / AAS Method Direct	1- 3 mg/L 1-500mg/l	<u>0.066@1.48</u> mg/l 13.86@314.69 mg/l
34		Oil & Grease	IS3025(Part 39)5.0:1991 Reaffirmed 2009/Partition gravimetric Method	1 – 10mg/L 5-1000 mg/l	<u>0.02@7</u> mg/l <u>0.41@150</u> mg/l
35		Percent Sodium	SOP No: PPC/L/TP/20 Issue date: 09.09.2014, Issue No:01	5 – 60 % 5-100%	<u>3.76@50</u> %
36		pH @ 25°C	IS 3025 (Part 11)2.0:1983 Reaffirmed 2006 / APHA 23rd Edn(2017) 4500 pH Value /Electrometric method	1-12	0.060@8.82 <u>0.04@4.0</u> <u>0.06@7</u> , 0.04@9
37		Phenols	IS 3025 (Part 43):1992 Reaffirmed 2003 / APHA 23rd Edn(2017) 5530B, D / Direct Photometric Method	0.1 – 1 mg/L	0.011@0.16 mg/l
38		Potassium as K	IS 3025 (Part 45)5.0:1993 Reaffirmed 2009 / APHA 23rd Edn(2017) 3500-K B / Flame Emission Photometric Method	0.5 – 20 mg/L 0.5-500mg/l	0.54@10 mg/l 17.24@260 mg/l
39		Residual Free Chlorine	IS 3025 (Part 26)3.0 :1986 Reaffirmed 2009 /APHA 23rd Edn(2017) 4500B / Iodimetric Method	1- 10 mg/L 1-5000 mg/l	0.90@8.70 mg/l 31.12@344mg/l
40	Sodium Absorption Ratio	SOP No:PPC/L/TP/26 IssueDate:09.09.2014, Issue No:1	1 – 50 1-100	0.11@1.09 0.13@1.66	



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41	II. Pollution and Environment (Treated & condensate water, STP, Waste, Industrial and Cooling water)	Sodium Na	IS 3025 (Part:45) : 1993 Reaffirmed 2009 / APHA 23rd Edn(2017) 3500 Na B / Flame Emission Photometric Method	1 – 20mg/L 1-15000mg/l	0.82@13.04mg/l 247.96@5419mg/l
42		Sulphate as SO ₄	IS 3025 (Part 24)4.0:1986 Reaffirmed 2009 / APHA 23rd Edn(2017) 4500 SO ₄ ²⁻ / Turbidity method	1 – 1000 mg/L 1-10000mg/l	2.808@40.32 mg/l 9.47@115mg/l
43		Temperature	IS 3025 (Part 9)1.0:1984 Reaffirmed 2006/ APHA 23rd Edn(2017) 4500 SO ₄ ²⁻ / Turbidity method 2550B/Mercury Thermometer	20°C-50 °C 20°C-50 °C	0.08 @ 50° C
44		Total Alkalinity	IS 3025 (Part 23)1.0:1986 Reaffirmed 2003 / APHA 23rd Edn(2017) 2320B / Titrimetric Method	1 – 1000 mg/L 1-20000mg/l	38.58@670 mg/l 755@13250 mg/l
45		Total Chromium as Cr	IS 3025 (Part 52)7.0:2003 Reaffirmed 2009 / APHA 23rd Edn(2017) 3111B / AAS Method Direct	1 – 2 mg/L 1-500 mg/l	0.057@1.04 mg/l 5.1@150mg/l
46		Total Dissolved Solids	IS 3025:1984 Reaffirmed 2006 Part 16 1.0 / APHA 23rd Edn(2017) 2540C / Gravimetric Method	20 – 2100 mg/L 1-150000mg/l	27.42@1558 mg/l 417.04@20852 mg/l
47		Total Hardness	IS 3025:2009 Part 21 5.0 / APHA 23rd Edn(2017) 2340C / EDTA Method	15 – 300 mg/L 1-15000 mg/l	3.38@25.25 mg/l 82.54@614mg/l
48		Total Kjeldahl Nitrogen	IS 3025 (Part 34)5.2:1988 Reaffirmed 2009 / APHA 23rd Edn(2017) 4500B / Macro Kjaldhal Method	10 – 100mg/L 1-500 mg/l	0.35 @ 46 mg/l 5.36@90.94mg/l
49		Total Solids	IS 3025 (Part 15)1.0:1984 Reaffirmed 2009 / APHA 23rd Edn(2017) 2540B / Gravimetric Method	10 – 2300mg/L 20-150000mg/l	30@1600 mg/l 29.72@35400mg/l
50		Total Suspended Solids	3025 (Part 17)1.0:1984 Reaffirmed 2012 / APHA 23rd Edn(2017) 2540D / Gravimetric Method	1 – 200mg/L 20 – 10000 mg/l	3@50 mg/l 14@520 mg/l
51		Turbidity	IS 3025 (Part 10)1.0:1984 Reaffirmed 2009 / APHA 23rd Edn(2017) 2130B / Nephelometric method	1 – 10 NTU 1 – 1000 NTU	0.328@7.76 NTU
52		Zinc as Zn	IS 3025 (Part 49)6.0 :1994 Reaffirmed 2009 / APHA 23rd Edn(2017) 3111B / AAS Method Direct	1 –5 mg/L 1-50mg/l	0.062@1.02mg/l 2.14@32.6mg/l



BIOLOGICAL					
Sl no	Group of products, materials or items tested	Specific tests or types of tests performed	Specification, standard (method) or technique used	Range of testing/ Limit of detection	Measurement Uncertainty
1.	I. Packaged drinking water	Aerobic microbial count at 37 oC	IS:5402:2012	1 cfu / ml to 250 cfu / ml	NA
2.		Aerobic microbial count at 22 oC	IS:5402:2012	1 cfu/ml to 250 cfu/ml	NA
3.		Coliform	IS: 5401 (Part 1):2012 IS: 15185:2016	Qualitative present/absent per 250ml	NA
4.		Sulphite reducing anaerobes	IS: 13428:2005 (Annex-C)	Qualitative present/absent per 50 ml	NA
5.		Escherichia. coli	IS:5887 (part 1)1976 (2005) IS: 15185:2016	Qualitative present/absent per 250 ml	NA
6.		Faecal streptococci & Enterococci	IS:5887 (part-2)1976(2005) IS:15186:2002	Qualitative present/absent per 250 ml	NA
7.		Staphylococcus. Aureus	IS:5887(part 2) 1976(2005)	Qualitative : present/absent per 250 ml	NA
8.		Pseudomonas aeruginosa	IS:13428:2005 (Annex D)	Qualitative : Present /Absent per 250ml	NA
9.		Yeast & Mould	IS:5403:1999 RA2005	Qualitative : Present /Absent per 250ml	NA
10.		Salmonella	IS:5887 (part 3) 1999(2005) IS:15187(2016)	Qualitative : Present /Absent per 250ml	NA
11.		Shigella	IS:5887(part 7) 1999(2005)	Qualitative : Present /Absent per 250ml	NA
12.		Vibrio cholera	IS:5887(part 5) 1976(2005)	Qualitative : Present /Absent per 250ml	NA
13.	II. Drinking water IS:10500	Total count/Standard plate count	IS:1622:1981 RA: 2009	1 cfu/ml to 10000 cfu/ml	$4.27 \text{ Log}_{10} \pm 0.0060 \text{ log}_{10}$
14.		Coliform	ISO:9308 P-1 2014 IS:5401 P-1 2012 E. directive	1 cfu/ml to 1000 cfu/ml 2 mpn/100 ml to 1600 mpn/100 ml	NA
15.		Coliform	IS:1622:1981 RA:2009	Qualitative : Present /Absent per 100ml	NA
16.		Escherichia. coli	ISO:9308 P-1 2014 IS:5887 P-1 1976 RA-2005 IS:1622:1981 RA:2009	Qualitative :Present /Absent per 250ml Qualitative :Present /Absent per 100ml 2 MPN / 100 ml to 3000 MPN / 100 ml	NA



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17.		Faecal coliform	IS:1622:1981 RA-2009	2 MPN / 100 ml to 3000 MPN / 100 ml	NA
18.		Slime forming bacteria	IS:1622:1981 RA:2009	Qualitative : Present /Absent per drop	NA
19.		Enterococci	ISO:7899-2 2000 IS5887 P-2 1976 RA:2005(E.C directive)	Qualitative : Present /Absent per 250ml	NA
20.		Phytoplanktons	IS:1622:1981 RA:2009	Qualitative : Present /Absent	NA
21.	III. Borewell water IS: 10500	Total plate count/ Standard plate count	IS: 1622:1981 RA:2009	1 cfu / ml to 20000 cfu / ml	4.28 Log10 ± 0.0108 log10
22.		Coliform	IS: 1622:1981 RA:2009	2 MPN/100 ml to 6000 MPN / 100 ml	NA
23.		Escherichia. coli	IS: 1622:1981 RA:2009	2 MPN / 100 ml to 3000 MPN / 100 ml	NA
24.		Faecal coliform	IS: 1622:1981 RA:2009	2 MPN / 100 ml to 2000 MPN / 100 ml	NA
25.		Slime forming bacteria	IS: 1622:1981 RA:2009	Qualitative : Present /Absent	NA
26.		Phytoplankton	IS: 1622:1981 RA:2009	Qualitative : Present /Absent	NA
27.	IV. Effluent water/ waste water	Total coliform	APHA(23rd edition)9221 (B&C) APHA(23rd edition) 9221(D)	1.8 MPN / 100 ml to 200000000 MPN / 100 ml	NA
28.		Thermotolerant Escherichia. coli	APHA(23rd edition)9221(F)	1.8 MPN / 100 ml to 20000000 MPN / 100 ml	NA
29.		Faecal enterococcus/Streptococcus group	APHA(23rd edition) 9221(B&C)	1.8 MPN / 100 ml to 10000000 MPN / 100 ml	NA
30.		Faecal coliform	APHA(23rd edition) 9221(E)	1.8 MPN/ 100ml to 10000000 MPN/ 100 ml	NA
31.		Phytoplanktons	IS:1622:1981 RA2009 (only 4.2.4)	Qualitative : Present /Absent	NA