



## National Accreditation Board for Testing and Calibration Laboratories (NABL)

# Guidance for Classification of Product Groups in Testing & Calibration Field

ISSUE NO.: 01

ISSUE DATE: 12-Feb-2019

AMENDMENT NO.: 05

AMENDMENT DATE: 31-Dec-2021

## AMENDMENT SHEET

Sl.	Page No.	Clause No.	Date of Amendment	Amendment	Reasons	Signature QA Team	Signature Competent Authority
1.	8/65, 16/65	1.1.13, 1.2.12	15.05.2019	Deletion of Pet Foods from Food & Agricultural	Typographical error	-Sd-	-Sd-
2.	65/66 & 66/66	2.7	12.08.2019	Regrouping for Calibration of Medical devices	Internal review to align with other calibration disciplines	-Sd-	-Sd-
3.	28/67	1.3	06.09.2019	Addition of Discipline Diagnostic Radiology QA testing	New Discipline	-Sd-	-Sd-
4.	51/68	1.7.14	16.10.2019	Inclusion of ' <i>Geophysical testing</i> ----- under the existing 'Soil & Rock' group in Mechanical discipline	Introduction of sub-group of Geophysical testing	-Sd-	-Sd-
5.	59/68	1.11		Inclusion of New discipline-'Software & IT System testing'	Start of accreditation for software testing		
6.	-	-	31.12.2021	As highlighted	Internal Review	-Sd-	-Sd-
7.							
8.							
9.							
10.							

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## INTRODUCTION

This is a guidance document which will help laboratories to define its scope as per the recommended classification of product groups across Testing and Calibration fields. Further, this document in no ways implies that NABL grants accreditation for these defined product group(s) only, rather it facilitates the laboratory to categorize its testing/calibration activities & calculation of fees while submission of application towards accreditation.

**Note: - Please refer NABL 100 for Fee Structure**

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# 1. TESTING FIELD

## 1.1. BIOLOGICAL DISCIPLINE

### (Classification of Product Groups for Biological Testing)

#### 1.1.1. Animal Food & Feed

- Animal Nutrition Supplements
- Aquaculture feed additives
- Aquaculture feed ingredients
- Cotton seed cake
- Fish, Shrimps, Prawn feed
- Groundnut meal
- Guar Meal
- Oil Cake
- Pet Foods
- Poultry feed additives
- Rapeseed Meal
- Others

#### 1.1.2. Antimicrobial activity Products

- Adhesives Glues and Sealant
- Fuels and Oils
- Lubricants
- Packaging Materials
- Paints and surface coatings
- Pulp & Paper
- Soaps & Detergents
- Textiles & Fabrics
- Toys and Other Children's Products
- Water Miscible Products
- Wood & Wooden Products
- Others

#### 1.1.3. AYUSH Products

- Ayurvedic drugs
- Herbal formulations
- Homeopathic Drugs

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- Siddha Drugs
- Unani Drugs
- Others

#### **1.1.4. Biocides**

- Algicides
- Antiseptics
- Bactericides
- Disinfectants
- Fungicides
- Herbicides
- Insecticides
- Sanitizers
- Sporicides
- Viricides
- Weedicides
- Others

#### **1.1.5. Biological Monitoring**

- Blood alcohol
- Drugs & Drug Metabolites
- Fluoride
- Interferons
- Others

#### **1.1.6. Biological Tests on Other Miscellaneous Test Items**

- Adhesives Glues and Sealant
- Fuels and Oils
- Lubricants
- Packaging Materials
- Paints and surface coatings
- Pulp & Paper
- Soaps & Detergents
- Textiles & Fabrics
- Toys and Other Children's Products

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- Wood & Wooden Products
- Others

#### **1.1.7. Biologically Derived Pharmaceuticals**

- Enzymes
- Growth factors
- Hormones
- Monoclonal Antibodies (MABs)
- Recombinant Proteins
- Single Cell Proteins (SCP)
- Vaccines
- Others

#### **1.1.8. Biopesticides and Biofertilizers**

- Others

#### **1.1.9. Cell Culture**

- Cell permeability test
- Purity
- Others

#### **1.1.10. Cosmetics & Essential Oil**

- Perfumes
- Tooth Paste
- Hygiene products
- Cosmetics

#### **1.1.11. Drugs and Pharmaceuticals**

- Antibiotics
- Bioassays of Other Products (Other Than Those Products Mentioned Above)
- Chemotherapeutic Agents
- Drug Intermediates
- Drug Substances (Active Pharmaceuticals Ingredients (API))
- Endotoxins

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- Filtrable Solutions & Soluble Preparations
- Immunological Products
- Microbial limit test
- Non-Filterable Preparations Including Ointments
- Preservative efficacy
- Pyrogen tests
- Raw Materials
- Sterility tests
- Synthetic Drugs
- Veterinary Drugs
- Others

#### 1.1.12. Pollution & Environment

- Air /surface
- Bio burden Estimation of Classified and non-classified area
- Effluents/Waste water
- Sewage
- Soil
- Solid waste
- Others

#### 1.1.13. Food and Agricultural Products

- Bakery & Confectionery Products
- Beverages (Alcoholic / Non-Alcoholic)
- Canned & Processed Foods
- Cereals, Pulses & Cereal Products
- Coffee & Cocoa Products
- Edible Colors & Flavors
- Edible Oils & Fats
- Edible Salts
- Eggs & Egg Products
- Essential Nutrients Including Vitamins
- Food Additives & Preservatives
- Fruit & Fruit Products
- Gelatin and Other Gums

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- Herbs, Spices & Condiments
- Honey & Honey Products
- Infant Foods
- Jams, Juices, Sauces & Concentrates
- Meat & Meat Products
- Milk & Dairy Products (Except Human Milk)
- Natural Waxes
- Nuts & Nut Products
- Oil Seeds & By-Products
- Poultry & Poultry Products
- Snacks and Instant Mixes
- Starch & Starch Products
- Sugar & Sugar Products
- Tea
- Tobacco & Tobacco Products
- Vegetables & Vegetable Products
- Others

#### **1.1.14. Plants**

- Plants
- Plants material
- Other

#### **1.1.15. GM Products**

- Promoter & Terminator Screening
- Qualitative Detection
- Quantitative Analysis
- Others

#### **1.1.16. Industrial Cultures**

- Cultures for baking and brewing
- Dairy Starter Cultures
- Mushroom Spawn
- Probiotics Cultures
- Rhizobial Cultures

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- Starter cultures for Effluent Treatment Plant
- Others

#### **1.1.17. Marine /Aqua culture Food Products**

- Artemia & Artemia Products
- Crab & Crab Products
- Fish & Fish Products
- Molecular identification of bacterial, fungal, viral pathogens
- Oyster
- Prawn & Prawn Products
- Shrimps
- Others

#### **1.1.18. Medical Accessories & Surgical products**

- Blood Bags
- Catheter
- Condoms
- Copper T
- Hypodermic Needles
- Tubal Rings
- Others

#### **1.1.19. Molecular Analysis (Tests for Various Matrices-Human, Plants, Animal, Microbial)**

- 16S rDNA sequencing
- Bacterial Mutagenicity Tests
- Bacterial/ fungal/viral Pathogen Detection
- Detection of adulterants
- Fragment Analysis
- Gene Expression /Gene Copy Number
- Genotyping
- Next Gen- Sequencing
- Sister Chromatid Exchange Tests
- Transformation Assays In Cell culture
- Others

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### **1.1.20. Nutraceuticals & Functional Foods**

- Carotenoids
- Dietary Fibres
- Flavonoids
- Fortified Food
- Phytoestrogens
- Prebiotics
- Probiotics
- Soy Proteins
- Others

### **1.1.21. Nutritional Supplements**

- Others

### **1.1.22. Plants and Plant Materials**

- Identification of Bacterial /Fungal/Viral Pathogens
- Others

### **1.1.23. Residue Analysis**

- Antibiotic residue analysis by micro assay
- Others

### **1.1.24. Resistance to Microbial Attack**

- Electrical Components
- Leather & Leather Products
- Packaging Materials
- Paints and surface coatings
- Textiles and Fabrics
- Timber and Allied Material
- Wood and Wood Products
- Others

### **1.1.25. Seed Testing**

- Germination
- GM Testing

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- Purity
- Others

### 1.1.26. Toxicology

- Acute Toxicity (oral, dermal, inhalation)
- Ame's test
- Cytogenetics
- Cytotoxicity
- Eye irritation test
- Mucous membrane irritation test
- Mutagenicity (In -vitro)
- Skin sensitization test
- In vitro studies using cell culture/chick embryos
- Material mediated Pyrogenicity
- Hemolytic properties of material (Hemocompatibility) Implantation (bone, muscle, Subcutaneous)
- Others

Note: -The parameters such as Acute Oral & Acute dermal toxicity on pharmaceuticals products as well as the tests on specific pesticide products shall not be considered for accreditation in accordance with ISO/IEC 17025:2017 as these are the studies on long term basis. However, tests on Medical devices including surgical devices may be considered for accreditation as per ISO/IEC 17025:2017. Institutional Animal Ethical Committee (IAEC) approval for acute studies (Systemic Toxicity Studies) is mandatory.

### 1.1.27. Veterinary Testing

- Specified tests in biochemistry, Haematology, cytopathology, histopathology, serology, parasitology
- Others

### 1.1.28. Water

- Distilled /Demineralized Water
- Drinking Water
- Ground Water/ Surface Water
- Packaged Drinking Water
- Packaged Natural Mineral Water

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- Water for Construction Purpose
- Water for industrial purpose
- Water for Medicinal Purposes
- Water for Processed Food Industry
- Water for Swimming Pool and Spas
- Water Purifiers
- Others

#### **1.1.29. Wild Life Forensic**

- Others

#### **1.1.30. Miscellaneous**

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## 1.2. CHEMICAL DISCIPLINE

### (Classification of Product Groups for Chemical Testing)

#### 1.2.1. Adhesives

- Glues
- Natural gums
- Physical Properties
- Polymer based adhesives (Synthetic)
- Starch based adhesives
- Others

#### 1.2.2. Animal Food & Feeds

- Animal Nutrition Supplements
- Aquaculture feed additives
- Aquaculture feed ingredients
- Cotton seed cake
- Fish, Shrimps, Prawn feed
- Groundnut meal
- Guar Meal
- Oil Cake
- Pet Foods
- Poultry feed additives
- Rapeseed Meal
- Others

#### 1.2.3. Atmospheric Pollution

- Ambient air
- Ambient Noise Levels (Excluding vibration)
- Fugitive emission
- Meteorological Parameters
- Process/Vent Emissions
- Source Noise Levels (Excluding vibration) Particular Source to be specified
- Stack emission
- Vehicle emission
- Work Environment and Indoor Air Quality
- Others

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#### 1.2.4. AYUSH Products

- Ayurvedic drugs
- Herbal formulations
- Homeopathic Drugs
- Siddha Drugs
- Unani Drugs
- Others

#### 1.2.5. Building Material

- Aggregates
- Bitumen& asphalts
- Bricks & pre-casted blocks
- Cement
- Ceramics
- Concrete
- Construction chemicals
- Fly ash
- Gypsum & its products
- Lime
- Mortars
- Pozzolanic materials
- Refractory materials
- Sand
- Water-proofing compounds
- Others

#### 1.2.6. Corrosion tests

- Dezincification Tests
- Salt Spray Tests
- Other

#### 1.2.7. Cosmetics & Essential Oils

- Aromatic chemicals
- Cosmetics
- Essential oils and other natural fragrant raw materials

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- Fragrances and Indian attars
- Herbal based cosmetics
- Intermediates and miscellaneous chemicals for cosmetics
- Synthetic essential oils
- Others

### **1.2.8. Drugs & Pharmaceuticals**

- Capsules
- Chemical Methods
- Creams
- Drug Substance (API)
- Drops
- Gels
- Hormones
- Ointment
- Oral Liquids
- Oral Powders
- Parenteral Preparations
- Pharmaceutical Aid (Raw material except API)
- Physical and Physiological Methods
- Tablets
- Vitamins
- Others

### **1.2.9. Explosives & Pyrotechnics**

- Ammunitions
- Explosive chemicals & allied materials
- Industrial explosives & associated materials
- Physical Properties
- Pyrotechnics
- Others

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### 1.2.10. Fertilizers

- Bio-Fertilizer
- Fertilizer Mixtures
- Fortified Fertilizers
- Macronutrients
- Micronutrients
- Nitrogenous Fertilizers
- Phosphatic Fertilizers
- Potassic Fertilizers
- Others

### 1.2.11. Fire Fighting Equipment's& Accessories

- Aqueous film forming foam concentrates
- Dry Chemical Powder
- Foam Concentrates
- Others

### 1.2.12. Food & Agricultural products

- Bakery & confectionery products
- Beverages (Alcoholic / Non-alcoholic)
- Canned & processed foods
- Cereals, pulses & cereal products
- Coconut and coconut products/Natural Plant Derivatives/Products
- Coffee & cocoa products
- Edible colors & flavors
- Edible oils & fats
- Food additives & preservatives
- Fruit & fruit products
- Herbs, spices & condiments
- Honey & honey products
- Infant food
- Jams, juices, sauces & concentrates
- Meat & meat products
- Milk & dairy products (except Human Milk)
- Natural waxes

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- Nuts & nut products
- Oil seeds & by-products
- Poultry & poultry products
- Starch & starch products
- Sugar & sugar products
- Tea
- Tobacco & tobacco products
- Vegetables & vegetable products
- Others

#### **1.2.13. Plants**

- Plants
- Plants material
- Other

#### **1.2.14. Gases**

- Compressed Natural Gas (CNG)/ Piped Natural Gas (PNG)
- Gases for medical use and diving
- Industrial Gases
- Liquefied Gases
- Reference Gases & Mixtures
- Others

#### **1.2.15. Glass**

- Clear glass
- Laminated Glass
- Reflective Glass
- Stain Glass
- Textured or pattern glass
- Tinted glass
- Wired Glass
- Others

#### **1.2.16. Hazardous & Restricted Chemicals**

- Automatic dispensers
- Computing & communications equipment
- Consumer electronics

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- Large household appliances
- Leather products
- Lighting: lamps, lighting fixtures, light bulbs
- Paints
- Plastics & other polymeric products
- Power tools
- Prints
- Small household appliances
- Textile & Textile products
- Toys and sports equipment
- Zippers
- Others

#### **1.2.17. Industrial & Fine Chemicals**

- Alcohols & Alcohols based Chemical
- Bleaching Earth / Activated Bleaching Earth
- Chemical used in Rubber Industry
- Chemical used in Textile Industry
- Chemicals used in Agriculture
- Chemicals used in Electronic industry
- Chemicals used in Leather Industry
- Chemicals used in Photographic Industry
- Chemicals used in Refrigeration industry
- Disinfectants
- Electroplating Chemicals
- Inorganic Chemicals
- Organic Chemicals
- Others

#### **1.2.18. Inks, dyes & pigments**

- Duplicating inks
- Dye intermediates
- Inorganic pigment powder & pastes
- Natural dyes & colouring materials
- Organic pigment powder & pastes

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- Printing inks
- Synthetic dyes
- Writing inks
- Others

#### **1.2.19. Lac & Lac products**

- Lac
- Lac products
- Others

#### **1.2.20. Leather**

- Finished leather
- Leather accessories
- Leather products
- Semi-finished leather
- Synthetic leather
- Others

#### **1.2.21. Lubricants**

- Aviation lubricants
- Insulation oils
- Lubricant additives
- Microcrystalline wax
- Oils & greases
- Solid lubricants
- Others

#### **1.2.22. Marine /Aqua culture Food Products**

- Artemia & Artemia Products
- Crab & Crab Products
- Fish & Fish Products
- Oyster
- Prawn & Prawn Products
- Shrimps
- Others

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### 1.2.23. Metallic coatings & treatment solutions

- Anodizing solutions
- Conversion coatings
- Metal finishing materials
- Metallic coatings
- Plating solutions
- Others

### 1.2.24. Metals & Alloys

- Alloy steel
- Aluminum & its alloys
- Amalgam
- Carbon Steel (low carbon, medium carbon & high carbon steel)
- Chromium & its alloys
- Cobalt & its alloys
- Copper & its alloys
- Ferro-alloys
- Ferro-alloys
- Lead & lead alloys
- Magnesium & its alloys
- Nickel & its alloys
- Others
- Precious metals
- Rare earth alloys
- Special Steel
- Stainless steel
- Tin and tin alloys
- Titanium & titanium alloys
- Tool steel
- Tungsten & its alloys
- Zinc & Zinc alloys
- Others

### 1.2.25. Nutraceuticals & Functional Foods

- Carotenoids
- Dietary Fibers
- Flavonoids
- Fortified Food
- Phytoestrogens
- Prebiotics
- Probiotics
- Soy Proteins
- Others

### 1.2.26. Nutritional Supplements

- Others

### 1.2.27. Ores & Minerals

- Alkali Metal Ores
- Aluminum Ores
- Barium ore
- Chromium ores
- Cobalt ore
- Copper ores
- Gem & semi-precious stones
- Geochemical samples for trace elements
- Gypsum
- Iron ores
- Lead ores
- Limestone & dolomite
- Manganese ores
- Mercury
- Mercury ore
- Mineral for insulation materials
- Mineral for refractories
- Mineral sands
- Minor elements
- Molybdenum Ores

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- Nickel ores
- Precious metals ores
- Radioactive metals ores
- Rare metals ores
- Rock phosphate
- Silica sands
- Tin ores
- Titanium ores
- Tungsten ores
- Zinc ores
- Others

#### **1.2.28. Paints & Surface Coating**

- Drying oils
- Gums, driers & paint removers
- Paints & enamels
- Physical Properties
- Pigments & extenders
- Polishes
- Powder coatings
- Resin coatings
- Solvents & thinners
- Varnishes
- Others

#### **1.2.29. Paper and Pulp**

- Composite packing material
- Newsprint and board packing material
- Paper
- Paper board
- Pulp
- Pulpwood
- Others

### 1.2.30. Pesticide Formulations

- Aqueous Capsule Suspensions (CS)
- Aqueous Suspension Concentrates (SC)
- Aqueous Suspo-Emulsions (SE)
- Dispersible Concentrates (DC)
- Dustable Powders (DP)
- Emulsifiable Powders (EP)
- Emulsifiable Concentrates (EC)
- Emulsifiable Granules (EG)
- Emulsions for Seed Treatment (ES)
- Emulsions, Oil in Water (EW)
- Granules (GR)
- Liquid Vaporizers (LV)
- Long lasting insecticidal NETS or NETTING(LN)
- Micro- Emulsions (ME)
- Mixed Formulations of CS and EW(ZW)
- Mixed Formulations of CS and EW(ZW)
- Mixed Formulations of CS and SC(ZC)
- Mosquito Coils (MC)
- Oil based Suspension Concentrates (OD)(Oil Dispersion)
- Oil Miscible Liquids (OL)
- Powders for Dry Seed Treatment (DS)
- Soluble Concentrates (SL)
- Solutions for Seed treatment (LS)
- Suspension Concentrates for Seed Treatment (FS)
- Tablets for Direct Application (DT)
- Technical Concentrates (TK)
- Ultra-Low Volume Liquids (UL)
- Vaporizing Mats (MV)
- Water Dispersible Granules (WG)
- Water Dispersible Powders for Slurry Seed Treatment (WS)
- Water Dispersible Tablets (WT)
- Water Soluble Granules (SG)
- Water Soluble Powders (SP)
- Water Soluble Powders for Seed Treatment (SS)

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- Water Soluble tablets (ST)
- Wettable Powders (WP)
- Others

### 1.2.31. Petroleum and Products

- Aviation fuels
- Crude petroleum
- Liquefied / compressed gases
- Petrochemicals, Petroleum solvents
- Petroleum additives
- Petroleum feed stocks
- Petroleum products
- Waxes and jellies
- Others

### 1.2.32. Plastic & Resins

- Plastic films
- Plastics & polymers
- Raw materials
- Resin
- Others

### 1.2.33. Pollution & Environment

- Effluents toxicity (Bioassay only qualitative- 90% survival of fish after 96 hours in 100 percent effluent)
- Municipal Solid wastes
- Soil/ Sediments
- Used/ Waste oil
- Waste Water (Effluents/Sewage)
- Wastes (Liquid/Slurry/Sludge/Solid/Semi-Solid)
- Others

### 1.2.34. Residues and contaminants in Food and Agricultural Products

- Antibiotics
- Chlorinated dioxins & dibenzofurans

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- Halogenated hydrocarbons
- Mycotoxins
- Pesticides
- Phenols
- Poly Chlorinated Biphenyl
- Polycyclic aromatic hydrocarbons
- Polyhalogenated biphenyls
- Trace metal elements
- Others

### **1.2.35. Residues and contaminants in Water**

- Antibiotics
- Chlorinated dioxins & dibenzofurans
- Halogenated hydrocarbons
- Mycotoxins
- Pesticides
- Phenols
- Poly Chlorinated Biphenyl
- Polycyclic aromatic hydrocarbons
- Polyhalogenated biphenyls
- Trace metal elements
- Others

### **1.2.36. Rubber & Rubber Products**

- Hard rubber / ebonite Rubber
- Latex goods
- Natural / synthetic Latex
- Natural rubber
- Rubber compound
- Rubber Products
- Rubber vulcanizates
- Synthetic rubber
- Textile rubber composite
- Thermoplastic elastomers
- Others

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### 1.2.37. Soap detergent & Toiletries

- Detergent
- Soaps
- Toiletries
- Wetting & Emulsifying agent
- Others

### 1.2.38. Soil and Rock

- Clays
- Soil
- Agriculture Soil
- Rock
- Stones
- Others

### 1.2.39. Solid Fuels

- Briquettes
- Charcoal
- Coal
- Coal tar/Bitumen
- Coke
- Oil Shale
- Others

### 1.2.40. Textile

- Agro-textiles
- Automotive textiles
- Carpet & rugs
- Domestic Textiles
- Fibre & filaments
- Finished fabric
- Garments & Apparels
- Geo-textiles
- Grey Fabrics
- Industrial Textiles

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- Made-ups
- Medical textile
- Packaging textiles
- Protective Textiles
- Sports textiles
- Technical textiles
- Terry Fabrics & its products
- Yarns & chords
- Others

#### **1.2.41. Warfare Chemicals**

- Blister Agents
- Blood Agents
- Choking Agents
- Mustard Agents
- Nerve Agents
- Potential CW Agents
- Psychotomimetic Agents
- Riot Control Agents
- Toxins
- Others

#### **1.2.42. Water**

- Construction Water
- Drinking Water
- Ground Water
- Industrial Water
- Irrigation water
- Packaged Drinking water
- Surface Water
- Swimming Pool Water
- Water from purifiers
- Others

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#### 1.2.43. Bio-stimulant

- Botanical extracts, including seaweed extracts
- Bio -chemicals
- Protein hydrolysates and amino acids
- Vitamins
- Cell free Microbials products
- Antioxidants
- Anti-transpirants
- Humic & fulvic acid and their derivations
- Others

#### 1.2.44. Miscellaneous

## **1.3. DIAGNOSTIC RADIOLOGY QA TESTING DISCIPLINE**

**(Classification of Product Groups for Diagnostic Radiology QA Testing)**

- 1.3.1. Radiography (X-ray -Fixed Portable, Mobile)**
- 1.3.2. Computed Tomography (CT)**
- 1.3.3. Mammography**
- 1.3.4. Interventional Radiology & Fluoroscopy**

## 1.4. ELECTRICAL DISCIPLINE

### (Classification of Product Groups for Electrical Testing)

#### 1.4.1. Bridges & Potentiometers

- AC bridges
- AC potentiometers
- DC bridges
- DC potentiometers
- Ratiometers
- Others

#### 1.4.2. Cables and Wires

- Automobile cables
- Bare cables & wires
- Elastomeric cables
- Insulated cables & wires
- Joints & terminations of polymeric & power cables
- LF wires & cables with PVC insulation & sheath
- Paper insulated cables
- Power cables
- Thermo-couple compensating cables
- Welding cables
- Others

#### 1.4.3. Capacitors

- Capacitance attenuators
- Motor capacitors
- Precision capacitors
- Series capacitors
- Shunt capacitors
- Surge protection capacitors
- Others

#### 1.4.4. Cells and Batteries

- Button cells
- Dry batteries
- Heavy duty batteries
- Lead acid batteries
- Nickel cadmium batteries
- Others

#### 1.4.5. Conductors and Conducting Materials

- Aluminum conductors
- Copper conductors
- Enameled / Insulated wires
- Paper covered conductors
- Winding wires
- Others

#### 1.4.6. Domestic Electrical Appliances

- Baking ovens
- Electric & steam irons
- Electric call bells & buzzers
- Electric coffee makers
- Electric food mixers & juicers
- Electric grills & roasters
- Electric kettles & jugs
- Electric shavers
- Electric steam cookers
- Electric stoves & hot plates
- Electric toasters
- Flexible heating pads
- Hair dryers
- Microwave ovens
- Refrigerators, food freezers & ice makers
- Vacuum cleaners & suction appliances
- Washing machines
- Water heaters

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- Others

#### **1.4.7. Electrical Indicating & Recording Instruments**

- Ammeters
- Digital recorders
- Earth resistance tester
- Electricity meters
- Galvanometers & null detectors
- Graphic recording instruments
- Insulation resistance tester
- Ohmmeters
- Phase meters
- Power factor meters
- Transducers
- Varmeters
- Voltmeters
- Watthour meters
- Watt meters
- Others

#### **1.4.8. EMI / EMC Test Facility**

- Fast transient burst test
- Immunity to conducted disturbances
- Immunity to electromagnetic HF fields
- Immunity to electrostatic discharge (ESD)
- Radio interference measurement
- Surge immunity test
- Others

#### **1.4.9. Environmental Test Facility**

- Acceleration test
- Bump test
- Cold test
- Damp heat test
- Driving rain
- Dry heat test

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- Dust test
- Glow wire
- Impact test
- Ingress protection test
- Robustness of termination test
- Salt mist test
- Sealing test
- Seismic test
- Soldering test
- Storage test
- Vibration test
- Others

#### **1.4.10. Frequency & Time Measuring Instruments**

- Clocks & watches
- Counters
- Frequency meters
- Stop watches
- Tachometers
- Time interval meters
- Wave meters
- Others

#### **1.4.11. High Voltage Test Facility**

- Alternating voltage test
- Artificial pollution test
- Dielectric test
- Direct voltage test
- Impulse current test
- Lightning impulse voltage test
- Partial discharge test
- Radio interference voltage test
- Switching impulse voltage test
- Wet test
- Others

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#### 1.4.12. Inductors and Transformers

- Auto transformers
- Current transformers
- Distribution transformers
- Inductors
- Neutral earthing transformers
- Phase shifting transformers
- Power transformers
- Pulse transformers
- Ratio transformers
- Reactors
- Voltage transformers
- Others

#### 1.4.13. Insulating Materials & Insulators

- Antistatic materials
- Ceramics
- Electrical grade paper
- Insulating Oils
- Insulating tapes
- Insulating varnish
- Laminates
- Polymer films
- Polymers for cable insulation & sheath
- Rubber products
- Sleeving
- Transformer oils
- Others

#### 1.4.14. Lamps, Luminaires and accessories

- Emergency lights
- Flood lights
- Fluorescent lamps
- General purpose luminaires
- Halogen lamps

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- Industrial luminaires
- Lamp holders
- Mercury vapor lamps
- Portable luminaires
- Recessed luminaires
- Road & street light luminaires
- Sodium vapor lamps
- Starters, ballasts & capacitors
- Tungsten filament lamps
- Others

#### **1.4.15. Magnetic Materials**

- Flux meters
- Magnetic sheets
- Magnets, solenoids & Helmholtz coils
- Others

#### **1.4.16. Miscellaneous**

- AC / DC transfer instruments
- Plastic materials & products
- Others

#### **1.4.17. Power System and Stabilizers**

- Stabilized power supplies (AC & DC)
- Servo operated voltage stabilizers (AC)
- Uninterrupted power systems (UPS)
- Others

#### **1.4.18. Resistors, resistance boxes & potential dividers**

- AC shunts
- Conductance boxes
- DC shunts
- Potential dividers
- Precision resistors
- Resistance boxes

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- Volt ratio boxes
- Others

#### **1.4.19. Rotating Electrical Machines**

- Alternators
- Centrifugal pumps
- Increased safety motors
- Induction motors
- Other pumps & motors
- Self-priming pumps
- Submersible pumps
- Universal motors
- Others

#### **1.4.20. Safety Testing Facility**

- Others

#### **1.4.21. Short-Circuit Test Facility**

- General tests on HV switchgear & control gear
- Inductive load switching on HVAC circuit-breakers
- Synthetic testing of HVAC circuit-breakers
- Others

#### **1.4.22. Switchgear & Protective Equipment**

- Circuit breakers & controllers
- Fuses & fuse links
- Motor starters
- Power system protection relays
- Protection & control relays
- Switches & isolators
- Time switches
- Others

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#### 1.4.23. Transmission Line Equipment and Accessories

- Aluminum conductors
- Busbars
- Bushings
- Circuit breakers
- Conductor & earth wire accessories
- Electric power connectors
- Fuses
- Insulators
- Isolators & air brake switches
- Lightning arrestors
- Line traps
- Metal fittings
- Switch gear & control gear
- Transformers & capacitors
- Transmission line spacers / dampers
- Others

#### 1.4.24. Wiring accessories

- Adhesive / Insulating tape
- Cable trunking & ducting systems
- Ceiling roses
- Conduits
- Electronic type fan regulator
- Fittings
- Plugs & sockets
- Switches
- Others

#### 1.4.25. Energy Efficiency of Domestic Electrical Appliances

- Room Air Conditioners
- Frost Free Refrigerators
- Distribution Transformer
- Room Air Conditioner (Cassettes, Floor Standing)
- Direct Cool Refrigerator

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- Electric Geysers
- Variable Capacity Inverter Air conditioners
- Washing Machine
- Ceiling Fans
- LPG -Stoves
- Tubular Florescent Lamp
- Others

#### **1.4.26. Energy Efficiency of Commercial / Industrial Appliances**

- Light Commercial Air Conditioner
- Chillers
- Pump Sets
- Solar Water Heater
- Deep freezers
- Diesel Engine Driven Mono-set Pumps
- DG Sets
- Induction Motors
- Others

## 1.5. ELECTRONICS DISCIPLINE

### (Classification of Product Groups for Electronics Testing)

#### 1.5.1. Audio Equipment

- Amplifiers
- Buzzers & ringers
- Loud speakers / Head phones
- Microphones
- Others

#### 1.5.2. Domestic Electronic Appliances & Accessories

- AM / FM radio receiver
- Cassette players / recorders & its components
- CD players / recorders & its components
- DVD players/Blu Ray Players
- Electronic fan regulators
- LCD/LED Display/TV & its components
- Microwave ovens
- Picture tubes
- Static Energy meters (1  $\Phi$  and 3  $\Phi$ )
- TV antenna(dish)
- TV tuner/DTH (set-top box)
- Others

#### 1.5.3. Electronic Components & Equipment Sub-Assemblies

- Attenuators/AD-DA converters
- Capacitors
- Connectors
- Deflection yokes
- Diode
- Electronic Ballast
- Electronic Counters
- Filters
- Fuses
- Inductive Coils

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- Integrated circuits
- Laminates
- Mobile Phone – GSM
- Mobile Phone -CDMA
- Mux-demux
- Oscilloscope/Function generator/ signal generator
- Passive components
- Plugs (excluding power supply)
- Potentiometer
- Printed circuit boards
- Resistors
- Semi-conductor devices
- Solid State Relays
- Switches
- Tab / Note pad
- Transceivers
- Transformers (excluding power supply)
- Transistor Amplifiers
- Transistors
- Others

#### 1.5.4. EMC Test Facility

- Burst Immunity Test
- Conducted Emission Test
- Conducted RF Susceptibility Test
- Damped Oscillatory wave Immunity Tests
- Electrical Fast Transient (EFT)
- Electrostatic Discharge Immunity Test
- High Energy / Telecom Surge Immunity Test
- Impulse Voltage withstand Test
- Power Frequency Magnetic Field Immunity Test
- Pulse Magnetic Field Immunity Test
- Radiated Emission Test
- Radiated Magnetic Field Emission Test
- Radiated Radio Frequency Disturbances Power Test

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- RF Radiated Susceptibility Test
- Voltage dips, short interruption & voltage variations Immunity Test
- Voltage Fluctuation & Flicker Test
- Others

#### 1.5.5. Environmental Test Facility

- Acceleration Test
- Bump Test
- Cold Test
- Composite Temperature & Humidity Test
- Damp Heat (Cyclic) Test
- Damp Heat (Steady State) Test
- Driving Rain Test
- Drop & Topple Test
- Dry Heat Test
- Impact Test
- Low Air Pressure Test / Altitude Test
- Mechanical Shock Test
- Mould Growth (Fungus) Test
- Protection against penetration of dust & water
- Robustness of Terminations Test
- Salt Mist Test
- Sand and dust Test
- Sealing Test (Gross \ Fine Leak)
- Seismic Test
- Solar Radiation Test
- Temperature Cycling Test
- Thermal Shock Test
- Tropical Exposure Test
- Vibration Test
- Others

### 1.5.6. Equipment Used in Clinical Laboratory

- Auto Clave
- Cell counter
- Centrifuge
- Cyclomixer
- Densitometer
- Electronic Analytical Balance
- Electrophoresis system
- ELISA reader
- ESR Analyser
- Hot Air oven
- Hot Air Sterilizer
- Hot plate
- Incubators
- Laminar Air Flow
- Microscope
- Na, K Analyzer
- Photometers (Colorimeter)
- Refrigerator
- Rotary shaker
- Semi autoanalyzer
- Sterilizer
- Urine analyzer
- VDRL shaker
- Water Bath
- Others

### 1.5.7. IT Equipment

- CPU/Disk drives/optical devices/Solid state drives/DIMM/Main board
- GPU/USB devices/Wi-Fi Hub/ PCI extension cards
- Keyboards
- Monitors / VDUs/Modem
- Network devices
- Personal computers / Laptop / Note Book/tablets
- Printers / scanner/Copier

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- Servers
- Others

### 1.5.8. Medical Electrical Equipment

- ACT Machine
- Audiometer
- Auto Refractometer
- BIPAP Ventilator
- Blood Filtration Appliance
- Blood Fluid Warmer
- Blood Storage Cabinet
- Boyle's Apparatus
- BP Apparatus
- Brain Stimulators
- Breath Hydrogen (H<sub>2</sub>) monitor
- Capnography
- Cardiopulmonary bypass machine (CPB)
- CO<sub>2</sub> Monitor
- Coagulation Analyzer
- Cold light source
- Cryo Surgical Appliances (Heating Part)
- Cryostat
- CTG Machine
- Daytona
- Defibrillator
- Dental X Ray
- Diagnostic Muscular Simulator
- Dialysis Apparatus
- Diode Laser. Doppler
- ECG Monitor
- Echo Cardiograph
- ECT machine
- EEG Machine
- Electro and Phonograph (Intra Cardiac)
- Electro Cardio Graph Recorder

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- Electro Myography
- Electronic Traction
- Endoflator
- Endoscopy
- EOG Machine
- ETO Sterilizer
- Field Analyzer
- Fetal Monitor
- Glucometer
- Harmonic Scalpel
- Heart-Lung machine
- HF Surgical Diathermy
- High Pressure Injection Equipment
- Hypothermia Appliances
- Incubator with CO<sub>2</sub>
- Incubator (Stationary and Portable)
- Infusion Pumps
- Intelligent Tourniquet
- Interferential therapy
- Invasive Arterial Blood Pressure (IBP)
- IVF Work Station
- Keratometer
- Laser Surgery equipment
- Lithotripsy (Impulse Apparatus)
- Magnetic Particle Imaging system (MPI)
- Magnetic Resonance Imaging system (MRI)
- Mammography
- Medical Laser Systems
- Multiparameter Monitor
- Muscles Stimulator (For Diagnostic and Therapy)
- Nebulizer
- Nerve Stimulators
- Noninvasive Blood Pressure
- Nuclear Magnetic Resonance Tomography
- Oxygen Concentration Monitor

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- Pacemaker (External)
- Pachometer
- Patient Monitor
- Perfusion Pump
- Perdish Warmer
- Photo and Laser Coagulator
- Phototherapy Unit
- Pneumatic Drill
- Pressure Chambers for Hyper Baric Therapy
- Pulse Oximeter
- Radiant Heat Warmer
- Renal Dialysis machine
- Respirators ( Not Manual)
- Retinal Camera
- Shortwave Diathermy
- Sigmoidoscopy
- Slit Lamp with Ophthalmoscope
- Spirometry Devices
- Stadiometer
- Surgical Diathermy
- Syringe Pump
- Test Tube Warmer
- Therapeutic Ultrasound Device
- Tonometer
- Transcutaneous Electrical Nerve Stimulator
- Tread Mill
- Trivector Dry Bath
- Ultrasonic Diathermy
- Urine analyzer
- Vascular Infusion System
- VDRL shaker
- Ventilator (Adult & Infant)
- Water Bath
- Wax Bath
- Others

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### 1.5.9. Telecommunication equipment (For TEC CAB Designation)

- Wire Telephone Equipment
- G3 Fax Machine
- Modem
- Cordless Telephone
- ISDN Customer Premises Equipment
- Private Automatic Branch Exchange
- HF Radio
- Conferencing and Presentation Equipment
- Mobile Radio Trunking System
- Conferencing Equipment
- VHF UHF Radio System Equipments
- Equipments Operating in 2.4 GHz and 5 GHz Band
- IP Terminal
- Point of Sale Devices
- Media Gateway
- DSL Equipments
- Signalling Gateway
- Session Border Controller
- Softswitch
- Repeater for Cellular Network
- Base Station for Cellular Network
- Compact Cellular Network
- Mobile Handset
- PON Family of Broadband Equipments
- Transmission Terminal Equipment
- IoT Gateway
- Tracking Device
- Smart Electricity Meter
- Smart Watch
- Smart Camera
- Satellite Communication Equipments
- LAN Switch
- Router
- End Point Device for Environmental Monitoring

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- Feedback Device
- Media Gateway
- Inband Switch
- IP Multimedia Conferencing Equipment
- IP Security Equipment
- Optical Fibre Cable
- Precision Timing Control
- PTP PMP Microwave
- Mobile Management Entity
- SGSN or GGSN
- BSC RNC
- Cell Broadcast Centre
- GMLC
- HLR AUC HSS
- eNodeB (ITSAR)
- Mobile Device (ITSAR)
- IP Router (ITSAR)
- P-GW/PDN-GW (ITSAR)
- UICC (ITSAR)
- IP Router (ITSAR)
- Mobility Management Entity (MME) (ITSAR)
- Cryptographic Controls (ITSAR)
- Wi-Fi CPEs (ITSAR)
- Others

#### 1.5.10. Miscellaneous Products

- AC and DC Drives
- Anti-static accessories, wrist strap
- Electro-magnetic components & equipment
- Electro-mechanical components & equipment
- Fire alarm systems
- Franking machines
- Harness and cables
- Lighting equipment, LED display Board Controller
- Measuring instruments

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- Opto-electronic components & equipment
- Photo-voltaic equipment
- Piezo electric devices
- Telephones/EPABX & Fax machines
- Transducers
- Others

#### 1.5.11. Power Supplies & Stabilizers

- Charge Controller
- Inverters
- Inverters (Charge controller unit)
- Regulated Power supplies (AC/DC)
- SMPS power supplies
- UPS (online/line interactive)
- Voltage stabilizers (step/servo motor operated)
- Others

#### 1.5.12. Safety Testing Facility

- Abnormal operating and fault conditions
- Clearances and creepage distances
- Constructional requirements with regard to the protection against electric shock
- Electric shock hazard under normal operating conditions
- Electric strength test
- Hazardous radiations
- Heating under normal operating conditions
- Insulation resistance test
- Ionizing radiation
- Laser radiation
- Mandrel test
- Measurement of temperature rises
- Mechanical strength
- Over current and earth fault protection in primary circuits
- Protection against hazardous moving parts
- Protection from electric shock and energy hazards
- Protection from hazards

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- Protection of equipment users from over voltages on telecommunication networks
- Protection of telecommunication network service persons, and users of other equipment connected to the network, from hazards in the equipment
- Protection of the telecommunication wiring system from overheating
- Provisions for earthing and bonding
- Resistance to fire, Touch current and protective conductor current
- Ultraviolet light conditioning test
- Others

### **1.5.13. Energy Efficiency of Domestic Electronic Appliances**

- Color TV
- Computer (Notebooks/Laptops)
- Ballast (Electronic/ Magnetic)
- Office equipment's (Printer, Copier, Scanner, MFD's)
- Solid State Inverter
- Microwave Oven
- LED Lamps
- Others

## 1.6. FLUID FLOW DISCIPLINE

### (Classification of Product Groups for Fluid Flow Testing)

#### 1.6.1. Air & Gases

- Air velocity devices (Anemometers & Pitot tubes)
- Flow metering devices in pipelines
- Flow rate controlling valves
- Flow rate measuring meters
- Leak rate of gases
- Others

#### 1.6.2. Liquids

- Flow metering devices in pipelines
- Flow rate controlling valves
- Flow rate measurement of corrosive liquids
- Flow rate measuring meters
- Leak rate of liquids
- Pumps & turbines
- Others

#### 1.6.3. Miscellaneous

## 1.7. FORENSIC DISCIPLINE

### Classification of Product Groups for Forensic Science Testing

#### 1.7.1. Biological Sciences

- Biology & Serology
- DNA Fingerprinting
- Others

#### 1.7.2. Chemical Science

- Chemistry
- Explosive
- Narcotics
- Toxicology
- Others

#### 1.7.3. Crime scene Management

- Others

#### 1.7.4. Forensic Electronics & Computer Forensics

- Others

#### 1.7.5. Forensic Psychology

- Others

#### 1.7.6. Physical Science

- Ballistics
- Finger print
- Physics
- Photography
- Question document
- Others

#### 1.7.7. Miscellaneous

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## 1.8. MECHANICAL DISCIPLINE

### (Classification of Product Groups for Mechanical Testing)

#### 1.8.1 Automotive Components

- Bonded Rubber Wheels
- Complete Vehicle on Chassis Dynamometer
- Component Testing
- Internal Combustion Engine:
- Knock Characteristic of Fuel
- Others

#### 1.8.2 Building, Infrastructure & Construction Materials

- Adhesives, Pre-formed Joint Seals, Materials & Fillers
- Admixture
- Aggregates, Natural, Crushed, Recycled & Synthetic
- Coarse Aggregate
- Fine Aggregate
- Ballast
- Bitumen, Modified Bitumen, Bitumen Felts & Bitumen Emulsion
- Bituminous Mixes & Recycled (RAP) Mix Materials
- Bituminous Mix/ Bituminous Macadam/ Dense Bituminous Macadam
- Bricks, Paver Blocks, Pavement Shapes
- Concrete Paving Blocks
- Precast Hollow and Solid Concrete Blocks
- Precast Autoclaved Cellular (Aerated) Concrete Blocks
- Preformed Foam Cellular Concrete Blocks
- Burnt Clay Building Bricks
- Pulverised Fuel Ash Lime Bricks
- Building Lime
- Cement, Cementitious Materials & Cement Additives
- Ordinary Portland Cement 33, 43, 53, Grades
- Ordinary Portland Cement 43S, 53S Grades
- Portland Pozzolana Cement (Fly Ash Based)
- Portland Pozzolana Cement (Calcined Clay Based)
- Portland Slag Cement

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- White Portland Cement
- Low Heat Cement
- Rapid Hardening Portland Cement
- Sulphate Resisting Portland Cement
- Hydrophobic Portland Cement
- Super sulphated Cement
- High Alumina Cement
- Microfine Ordinary Portland Cement
- Composite Cement
- Pulverized fuel Ash
- Metakaolin
- Silica Fume
- Ultrafine Ground Granulated Blast Furnace Slag
- Cement Concrete Flooring Tiles
- Fresh Cement Concrete
- Hardened Cement Concrete
- Coatings, Membrane & Film Forming Materials
- Coating Material on Reinforcing Steel
- Concrete, Mortar, Shotcrete, Grout & Epoxy mixes Concrete Mixers
- Hot Applied Sealing Compound for concrete
- Construction Chemicals & Performance Additives
- Doors & windows, Shuttering, Frames & Formworks
- Fuel Ash, Fly Ash, Pulverized Bottom Ash & Pond Ash
- Gypsum Boards, False Ceiling & Cladding Materials
- Joint Reinforcing Tape, Seals & Modular Joints
- Preformed Fillers for expansion Joints
- Joint Treatment Materials for Gypsum Board Construction
- Plumbing & drainage fittings
- Pozzolanic materials, Slags, Industrial Waste & Ore Residues
- Refractory materials, Insulation Profiles & Shapes
- Tiles- Concrete, Ceramic, Synthetic & Composite
- Tile adhesive
- Ready Mixed Building Mortar
- Block Jointing Mortar
- Tile Grout

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- Chemical Grout
- Cement grout (non-Shrink)
- Curing Compound
- Integral Cement water proofing compound
- Ceramic tiles
- Chequered cement concrete tiles
- Wooden Flush Door shutter
- Timber Panelled and Glazed shutters
- Timber Panelled and Glazed shutters Windows and Ventilator shutter
- Wooden Flush Door Shutters (Cellular and Hollow Core Type) (Ply wood panels)
- Moulded Raised High Density Fibre (HDF) panel Door
- Solid panel Foam UPVC Door Sutters
- Integral Water proofing Compounds for Cement Mortar and Concrete
- Concrete Admixtures Cement and Concrete
- Mineral wool (Rock wool, Glass wool, Slag wool) & Bonded Mineral Wool-Thermal Insulation
- Block Board
- Medium Density Fibre Board
- Particle Board
- Pre-laminated Medium Density Fibre Board
- Prelaminated Particle Board
- Fibre Hard Boards
- Shuttering Plywood
- Veneered Particle Board
- Veneered Decorative Plywood
- Marine plywood
- Plywood for General Purpose
- Plywood
- Fire Retardant Plywood
- High Strength aircraft Ply wood
- Timber
- Medium Strength Aircraft Ply wood
- Reinforcement Steel and FRP & Structural Steel
- Wall, floor, ceiling & Cladding Panels & Shapes
- Building Hardware, Fittings & Structural Fixtures
- Fasteners, Bolts, Nuts, Hooks, Rivettes & Washers

- Pipes, Cast Iron, Cement, Steel, PVC, HDPE, PP & FRP
- Pre-stressing Materials & Anchorage Components
- Reinforced Earth Mixes & RSW Embankment Materials
- Reinforcement - Steel
- Retroreflective Signboards, Cones, RPM & Delineators
- Road Marking Materials Hot & Cold Applied, Tapes
- Road Marking Paints (Ready Mixed)
- Thermoplastic Road Marking Material
- Prestressing Strands H.T Strands /LRPC Strands
- Anti-Striping Agent
- Gypsum Building Plaster (Including Light Weight Premix)
- Coated/Laminated Gypsum Boards
- Fire resistant Gypsum boards
- Reinforced Gypsum Boards
- Plain Gypsum Boards
- Foundry Sand
- Granular Subbase
- Macadam
- Wet Mix Macadam
- APP Membrane
- Refractory Materials
- Others

### 1.8.3 Heating, Ventilating, and Air Conditioning (HVAC)

- Air Conditioners
- Condensing Unit
- Coolers
- Cooling Towers
- Heaters
- Refrigeration
- Others

### 1.8.4 Leather and Leather Products

- Finished leather
- Footwears

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- Industrial Products
- Leather products
- Semi-finished leather
- Others

#### 1.8.5 Mechanical Properties of Metals

- Biomaterials
- Copper materials, alloys & products
- Ferrous materials, alloys & products
- Metal powders & sintered products
- Metallic coatings
- Other Non-Ferrous metals, alloys & products
- Welds & welded test specimens
- Others

#### 1.8.6 Metallography Test

- Aluminum materials, alloys & products
- Copper materials, alloys & products
- Ferrous materials, alloys & products
- Metal powders & sintered products
- Metallic coatings
- Other Non-Ferrous metals, alloys & products
- Welds & welded test specimens
- Others

#### 1.8.7 Noise & Vibration

- Dynamic Balancing
- Measurement of Insertion Loss Ducts and Mufflers
- Measurement of Mechanical Vibrations & Performance
- Measurement of Noise Reduction of Sound Isolating Enclosures
- Mechanical Shock Testing
- Vibration Characteristics of Materials, Components, Assemblies and Structures
- Vibration Record on Transmission Line
- Vibration Test on Connection and Relay
- Others

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### **1.8.8 Paper & Paper products**

- Paper
- Paper Board
- Pulp
- Pulpwood
- Others

### **1.8.9 Performance/Durability/ Safety Test**

- Domestic Appliances
- Industrial Equipment /Instruments/Products
- Medical Equipment /Devices except Implants
- Scientific or Measuring Equipment
- Others

### **1.8.10 Plastics and Plastic Products**

- Decorative laminates
- Fibre reinforced plastic products
- Flexible & rigid foams
- Moulded components
- Packaging & containers
- Plastic films
- Plastic materials & products
- Plastic pipes and Accessories
- Plastic sheets
- Polymeric Products
- Others

### **1.8.11 Precious Stones**

- Gemstones
- Diamond
- Studded Jewelry
- Pearl
- Others

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### 1.8.12 Properties of Powder Metallurgical Products

- Stainless Steel
- Others

### 1.8.13 Rubber and Rubber Products

- Gaskets, seals & packings
- Industrial belts
- Natural rubber & products
- Synthetic rubber & products
- Tyres
- Others

### 1.8.14 Soil and Rock

- Clays & Soils
- Geophysical tests
- In-situ tests
- Classification test
- Stones / Rock
- Others

### 1.8.15 Soil- Basic

- Water content
- Specific Gravity – Fine Grained Soil
- Specific Gravity – Coarse Grained Soil
- Grain size Analysis – Dry, Wet & Hydrometer
- Liquid Limit / Plastic Limit
- Shrinkage limit
- Light Compaction
- Heavy Compaction
- Unconfined Compression Strength
- Triaxial (UU)
- Direct Shear test
- California Bearing Ratio
- Consolidation Test
- Free Swell Index

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#### **1.8.16 Soil- Advanced**

- Swelling Pressure
- Relative Density Test
- Laboratory Permeability
- Triaxial (CU)
- Triaxial (CD)

#### **1.8.17 Soil- Field**

- Determination of Dry Density of soil in place by Core-cutter Method
- Determination of Dry Density of soil in place by Sand Replacement Method
- Plate Load Test
- Cyclic Plate Load Test
- Pile Load Test
- A--Vertical Load (Compression)
- B - Lateral Load
- C - Pull Out Test (Uplift)
- Field CBR test
- Modulus of Subgrade Reaction
- Electrical Resistivity
- Standard Penetration Test
- Dynamic Cone Penetration Test
- Static Cone Penetration Test
- Field Vane Shear Test

#### **1.8.18 Rock- Basic**

- Compressive Strength
- Water Content, Density & Porosity
- Point Load Index Test

#### **1.8.19 Rock- Advanced**

- Modulus of Elasticity
- Slake Durability Index
- Brazilian Test

### 1.8.20 Solar Panel

- Others

### 1.8.21 Sub Assembly/Ancillaries/Accessories

- Bearing
- Compressors
- Cutting & hand tools
- Engines
- Lifting gear, chain, wire ropes & strands
- Pipes, hoses, valves & fittings
- Pumps
- Springs
- Springs & energy absorbing devices
- Threaded fasteners
- Others

### 1.8.22 Textile Materials

- Agro Textiles
- Automotive Textiles
- Carpet and Rugs
- Coated fabrics
- Fabrics (Woven and Non-Woven)
- Fibre ropes & cords
- Fibres
- Garments and Apparel
- Geo Textiles
- Handloom textiles
- Industrial textiles
- Jute & its products
- Khadi textiles
- Medical Textiles
- Packaging Textiles
- Protective Textiles
- Sports Textiles
- Technical Textiles

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- Upholstery fabrics (other than automotive)
- Wool & its products
- Yarns
- Zippers & fasteners
- Others

#### **1.8.23 Thermal Tests**

- Ageing Test
- In Combustibility Test
- Insulating Value
- Thermal Conductivity
- Thermal Shrinkage
- Others

#### **1.8.24 Toys and Similar products**

- Others

#### **1.8.25 Wood and Wood Products**

- Plyboard
- Timber
- Others

#### **1.8.26 Miscellaneous**

## 1.9. NON-DESTRUCTIVE TESTING DISCIPLINE

### (Classification of Product Groups for Non-Destructive Testing)

#### 1.9.1. Building Materials – Reinforced Concrete Structures

- Carbonation test
- Cover Meter Test
- Crack width measurement in reinforcement concrete structures
- Deflection measurement data (Load Test)
- Half Cell Potential difference test
- Pile Integrity test
- Rate of Corrosion test by LPR (Linear polarization resistance)
- Rebound Hammer Test
- Ultrasonic Pulse Velocity Tests
- Others

#### 1.9.2. Metals and Alloys

- Eddy Current Testing facility
- Emerging Areas Testing Facility
- Leak Testing Facility
- Magnetic Particle Testing
- Penetrant Testing Facility
- Radiography Testing Facility
- Ultrasonic Testing Facility
- Under Water Testing Facility
- Others

#### 1.9.3. Miscellaneous

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## 1.10. PHOTOMETRY DISCIPLINE

### Classification of Product Groups for Photometry Testing

#### 1.10.1. Glasses/ Mirrors

- Mirrors
- Reflectors
- Safety Glass
- Others

#### 1.10.2. Light Sources (Electric Lamp)

- Color Characteristics
- Initial Rating Test
- Life Test
- Luminous Flux Output
- Others

#### 1.10.3. Luminaires

- Ballast Lumen Factor
- Downward & Upward Light Output Ratio (DLOR/ULOR)
- Luminous Intensity Distribution
- MHI Value in Lumens
- Others

#### 1.10.4. Miscellaneous



## 1.11. RADIOLOGICAL DISCIPLINE

### (Classification of Product Groups for Radiological Testing)

#### 1.11.1 Environment (Radioactive contaminants)

- Air
- Air Filters
- Liquid effluents
- Ores, Minerals & Metals
- Soil, Vegetation, Biota
- Wipes, swabs
- Others

#### 1.11.2 Food and Agriculture Products (Radioactive contaminants)

- Bakery & Confectionary
- Crops & Crops produce
- Marine foods
- Meat & Meat products
- Milk & Milk products
- Poultry products
- Spices & food ingredients
- Others

#### 1.11.3 Radiation Monitors

- Area survey instruments
- Control monitors
- Environmental radiation monitors
- Fixed monitors
- Personnel monitoring dosimeter
- Therapy level dosimeter
- Others

#### 1.11.4 Radiation Sources

- Accelerators
- Beam welding equipment
- Brachytherapy
- Cesium machines

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- Cobalt machines
- Diffraction X-ray machines
- Electron Industrial irradiators
- Industrial Accelerators
- Isotopic sources used in industrial gauges
- Isotopic sources used in medical brachy therapy
- Medical Accelerators
- Neutron generators
- Simulators
- Others

#### 1.11.5 Radiological Equipment and Nucleonic Equipment

- Gamma switches
- Industrial gamma radiography
- Industrial irradiators
- Liquid scintillation counter
- Medical gamma camera
- Medical spectrometer
- Nucleonic level gauges
- Nucleonic moisture and density gauges
- Nucleonic weighing machines
- Radiography camera
- RIA counter
- Smoke detectors containing sources
- Thickness gauges
- Others

#### 1.11.6 Water (Radioactive Contaminants)

- Drinking water
- Packaged drinking water
- Treated water
- Water for Industrial use
- Others

#### 1.11.7 Miscellaneous

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## 1.12. SOFTWARE & IT SYSTEM DISCIPLINE

### (Classification of Product Groups for Software & IT System Testing)

#### 1.12.1. Software Testing

- Telecom software/ Protocol
- Embedded systems.
- Mobile Device and Mobile Applications
- e-Governance Application and solution Evaluation
- Gaming Software.
- IOT Block Chain, AI or drone software/ system/ application
- Data analytics Software
- Lottery Software
- E-Procurement System Software
- Process and control software
- Web Application and Website
- Linguistics Software
- Sector specific Software
- Testing & evaluation for regulatory compliance
- Others

## 2. CALIBRATION FIELD

### 2.1. ELECTRO TECHNICAL DISCIPLINE

(Classification of Product Groups for Electro Technical Calibration)

#### 2.1.1. Alternating Current (< 1 GHz)

- Attenuation
- Capacitance
- Current
- Dielectric loss angle
- Dissipation factor
- Energy
- Distortion
- Dissipation factor
- Inductance
- Impedance
- FM Modulation
- AM Modulation
- Phase angle
- Power
- Power factor
- Resistance
- Reflection Coefficient
- Voltage
- High Voltage (1 kV and above)
- Voltage & current ratio
- Others

#### 2.1.2. Direct Current

- Current
- Power
- Resistance
- Capacitance
- Inductance

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- Voltage
- High Voltage (1 kV and above)
- Voltage & current ratio
- Others

### 2.1.3. Electrical equipment

- Current Transformers
- Voltage Transformers
- Oscilloscopes
- Bridges
- CT-VT Comparator
- Oscilloscope
- pH meter (Simulation method)
- Conductivity Meter (Simulation method)
- Turbidity Meter (Simulation method)
- Oxidation Reduction Potential Meter (Simulation method)
- Others

### 2.1.4. EMI/ EMC

- Antenna Factor
- Attenuation
- Automotive Transient Generator
- Coupling Factor/ Coupling Loss Directivity
- Conducted RF Test System
- Combination Wave Surge Test System
- Damped Oscillatory Wave Generator
- Decoupling of Common Mode Disturbance
- Electrostatic Discharge
- Electrical Fast Transients
- EMI Test Receiver
- Isolation
- Impulse Voltage
- Impulse/ Immunity Generator
- Insertion Loss/ RF Attenuation
- Impedance
- Longitudinal conversion Loss

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- Preamplifier Gain
- Phase angle
- RF Power Amplifier
- Ring Wave Generator
- Telecom Surge Test System
- Return loss (VSWR)
- Voltage Dips/ Interruptions
- Voltage Division Factor
- Others

#### 2.1.5. RF/Microwave (1 GHz and Above)

- Attenuation
- Impedance
- FM Modulation
- AM Modulation
- Power
- VSWR
- Others

#### 2.1.6. Temperature Simulation

#### 2.1.7. Time & Frequency

- Frequency counters
- Frequency meters
- H.F. frequency
- L.F. frequency
- Microwave/RF frequency
- Stop watches
- Time interval
- Timers
- Others

#### 2.1.8. Miscellaneous

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## 2.2. FUILED FLOW DISCIPLINE

### (Classification of Product Groups for Fluid Flow Calibration)

#### 2.2.1. Flow Measuring Devices

- Anemometers
- Gas flow meters
- Liquid flow meters
- Orifice meters
- Pitot tubes
- Ford Cup
- Flow Cup
- Rotameter
- Top Loading Calibrator
- Turbine Meter
- Orifice Plates
- Flow Nozzles
- Averaging Pitot Tubes
- Venturi Meters
- Others

#### 2.2.2. Miscellaneous

## 2.3. MECHANICAL DISCIPLINE

### (Classification of Product Groups for Mechanical Calibration)

#### 2.3.1. Acceleration, & Speed

- Accelerometer
- Speedometer
- Tachometer
- Stroboscope
- Speed Transducer / Sensor / Indicator
- Centrifuge
- Vibration Machine/Table
- Planetary Mixer
- Flow Table
- Others

#### 2.3.2. Acoustics

- Sound calibrators
- Sound level meters
- Audiometers
- Others

#### 2.3.3. Density and Viscosity

- Densitometers
- Hydrometers
- Capillary Viscometer
- Dial type Viscometer
- Digital Viscometer
- Flow / Ford Cup
- Others

#### 2.3.4. Dimension (Basic-Measuring Instrument, Gauges etc.)

- Linear - Measuring Instruments
- Vernier & Digital Calipers,
- External Micrometers,
- Depth Micrometers,
- Micrometer Head,

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- Micrometer Setting Pieces,
- Bench Micrometer & Micrometer Head, Bore Gauges, Stick Micrometers, Tripoint Internal Micrometers, Depth Gauges, Dial Gauge, Steel Scales & Line Standards, Measuring Tape, Pie-Tape, Extensometer)
- Linear - Measuring Aids  
(Straight Edges, Engineers Parallels, Surface Plate (Cast Iron), Surface Plate (Granite), Angle Plates, Right Angle & Box Angle Plates, Engineers Square, Granite Squares, Cylindrical Square, V-Block, Welded V- Blocks, Universal and Elongated V-Blocks, Test Mandrels (Straight), Test Mandrels (Taper), Bench Centre, Vernier Height Gauge)
- Angle Measuring Devices  
(Angle Gauges, Bevel Protractors, Combination Set, Sine Centre, Sine Bar & Sine Table, Spirit Levels, Frame Level, Electronic Level, Inclinometer, Clinometers, Auto Collimator, Polygon Mirrors, Prisms, Rotary Table, Index Table, Rotary Calibrator)
- Surface Topography Measuring Devices  
(Surface Roughness Masters, Depth Masters, Radius Standards, Master Sphere For CMM, Optical Flats, Optical Parallels, Hemi-Sphere (Roundness Master), Magnification Master (Flick Standard), Master Cylinder, Cylindrical Square, Roughness Tester-Portable, Roughness Tester- Stand Alone, Contour Profiler, Roundness Tester, Form Tester)
- Gauges  
(Setting Master, Plug Gauges, Plug Gauges, Setting Master Ring Gauges, Ring Gauges, Snap Gauges, Taper Gauges)
- Others

### 2.3.5. Dimension (Precision- Precision Instruments and Surface Topology)

- Linear – Reference (Measuring) Equipment  
(Gauge Block Comparators, Microscope/ Universal Length Measuring Machine (ULM), Length Measuring Machine, Universal Measuring Microscope (UMM), Profile Projector, Bore Comparator, Dial Gauge Calibrator, Floating carriage Micrometer, Coordinate Measuring Machines, Laser Interferometer, Flatness Interferometer)
- Linear & Form – Reference Equipment  
(Gauge Blocks, Gauge Block Accessories, Long Gauge Blocks, Length Bar, Step Gauges, Caliper Checker, Check Master, Height Setting Micrometers, Electronic Height Gauges, Height Master, Raiser Blocks, Cylindrical Setting Standards, Roundness Master S (Hemi-Sphere, Magnification Standard, Master Cylinder, Optical Flat), Surface Roughness Masters (Surface Masters, Depth Standard), Radius Standard/ Contour Master, Glass Scale, Graticule and Glass Grid)
- Others

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### 2.3.6. Hardness & Impact

- Test blocks, Brinell
- Test blocks, Rockwell
- Test blocks, Vickers
- Testing machines, Brinell
- Testing machines, Rockwell
- Testing machines, Vickers
- Knoop Hardness
- Impact testing machine (Izod)
- Impact testing machine (Charpy)
- Durometer
- Rubber hardness tester
- Others

### 2.3.7. Force

- Load cells
- Proving Ring
- Push Pull Gauge
- Force gauges
- Tensile testing machines
- Compression testing machines
- Universal Testing Machine
- Force Proving Instruments
- Mobile Force Measuring System
- Others

### 2.3.8. Mass and Volume

- Weighing machine/scale
- Mass/Weight Standards
- Volumetric Glassware
- Burettes
- Pipettes
- Volumetric flask
- Piston operated volumetric apparatus
- Others

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### 2.3.9. Pressure and Vacuum

- Hydraulic DWT/Pressure Balance
- Pneumatic DWT/Pressure Balance
- Vacuum/Absolute DWT/Pressure Balance
- Precision Pressure Calibrator
- Barometer
- Pressure transducer with digital indicator
- Pressure transmitter with digital indicator
- Industrial Pressure Gauge (analog/dig)
- Pressure Switches
- Magnahelic Gauge, Pirani Gauge
- Vacuum Gauge
- Differential Pressure Gauge
- Manometer
- Pressure recorders
- Others

### 2.3.10. Torque Generating & Measuring devices

- Torque Testing Machine
- Torque Transducer
- Torque Transmitters
- Torque Multiplying Gearbox
- Torque Wrenches (Type I & II)
- Continuous rotating torque tool (Oil Pulse/Pneumatic/Electrical/Hydraulic)
- Handheld pneumatic assembly tools
- Hydraulic impulse tools
- Torque controlled DCNR
- Impact torque wrenches/Tools
- Rotary and percussive pneumatic Tools
- Others

### 2.3.11. Miscellaneous

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## 2.4. OPTICAL CALIBRATION

### (Classification of Product Groups for Optical Calibration)

#### 2.4.1. Equipment

- Ultraviolet radiometers
- Infrared radiometers
- Optical and radiation detectors
- Others

#### 2.4.2. Optical

- Attenuation
- Colour/Chromaticity co-ordinates
- Colour temperature
- Distribution of luminous intensity
- Illuminance
- Irradiance
- Laser power & energy measurements
- Length
- Luminance
- Luminous intensity
- Luminous flux
- Lux Meter
- Power
- Radiance (UV/IR)
- Radiant Power/ Radiant Flux
- Transmittance
- Spectral irradiance
- Spectral radiance
- Spectral reflectance
- Spectral responsivity
- Wavelength
- Others

#### 2.4.3. Miscellaneous

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## 2.5. RADIOLOGICAL DISCIPLINE

### (Classification of Product Groups for Radiological Calibration)

#### 2.5.1. Radiological measurements

- Dosimeter
- Area Survey Meter
- Others

#### 2.5.2. Radio Isotope/Source Calibration

#### 2.5.3. Miscellaneous

## 2.6. THERMAL DISCIPLINE

### (Classification of Product Groups for Thermal Calibration)

#### 2.6.1. Specific heat & Humidity

- Absolute humidity
- Dew point
- Environmental chambers
- Humidity measuring devices
- Relative humidity
- Specific heat of gases
- Specific heat of liquids
- Specific heat of solids
- Others

#### 2.6.2. Temperature

- Digital temperature indicators & recorders
- Liquid-in-glass thermometers
- Optical pyrometers
- Platinum resistance thermometers
- Radiation pyrometers
- Temperature controlled autoclaves, ovens & furnaces
- Temperature controlled chambers & incubators
- Temperature controlled freezers & refrigerators
- Temperature measurement
- Thermocouples
- Others

#### 2.6.3. Miscellaneous

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## 2.7 MEDICAL DEVICES CALIBRATION

### (Classification of Product for Medical Devices Calibration)

#### 2.7.1 Discharge Equipment/ Devices

- Suction Pump
- Flow meter with Humidifier
- Pressure Gauge of Oxygen Cylinder
- BP Apparatus (Sphygmomanometer)
- Nebulizer (Electric)
- Syringe Pump
- Infusion Pump
- Enteral Feeding Pump
- CPAP
- BiPAP
- Boyles Apparatus
- Anesthesia Machine
- Others

#### 2.7.2 Patient Conditioning/ Maintenance

- Incubator
- Autoclave
- Defibrillator
- Ventilator
- Electro Surgical Unit/ Diathermy Machine/ Cautry Machine.
- External Pace Maker
- Electronic Tourniquet
- Dialysis Machine
- Heart Lung Machine
- Patient Warmer
- OT Table
- Radiant Warmer
- Irradiance Meter
- Phototherapy Unit
- Others

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### 2.7.3 Monitoring Unit

- Patient Monitors
- Apnea Monitors
- Fetal Monitor
- Therapeutic Stimulator
- Weighing Scale
- Hematology Analyser
- Others

### 2.7.4 Imaging/ Plotters

- Trans illuminator light source
- EEG
- Fetal Doppler
- ECG
- X-Ray Diagnostic Equipment
- Others

### 2.7.5 Medical Device Analyzer/ Simulator Equipment

- Electrical Safety Analyzer
- Infusion Device Analyzer
- Incubator Analyzer
- Defibrillator Analyzer
- Gas Flow Analyzer
- Electro Surgical Analyzer
- Vital Sign Simulator
- Patient Monitor Simulator
- Others

### 2.7.6 Miscellaneous



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