



**Egyptian Accreditation Council
EGAC**

**EGAC Policy on Implementation and
use of Proficiency Testing
PB14G**

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**Egyptian Accreditation Council
EGAC**

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EGAC Policy on implementation and use of Proficiency Testing

This document defines the policy for EGAC's implementation of Proficiency Testing, it is applied for the assessment of all accredited laboratories.

Note: According to ISO/IEC 17025:2017 ,

The laboratory shall monitor its performance by comparison with results of other laboratories, where available and appropriate. This monitoring shall be planned and reviewed and shall include, but not be limited to, either or both of the following:

- a) participation in proficiency testing;*
- b) participation in interlaboratory comparisons other than proficiency testing.*

2. POLICY

EGAC considers proficiency testing as an important tool in the review of the performance of laboratories. It provides a basis for improving the quality of testing and calibration.

EGAC requires its accredited/applicant laboratories to develop a plan for (four years) participation in Proficiency Testing schemes, relevant to their scope. EGAC will review this plan and its implementation by the Laboratory.

It is EGAC's policy to encourage Laboratories to participate in PT schemes that are being operated in their areas, also encouraging the formation of new proficiency testing schemes where considered necessary and cost effective for the laboratories.

Regionally, EGAC also encourage its accredited laboratories for achieving some proficiency testing schemes by subscribing this CAB's in the frame work of cooperation with the regional accreditation bodies (AFRAC, ARAC, APLAC,) in the fields of calibration , testing and medical laboratories, EGAC nominates the required number of required accredited CABs and send the nomination to the region and then receives the samples to be distributed on the selected CABs, EGAC follow the process for the participated CABs until it completed with its results.

3. Types of accepted proficiency testing:

For accreditation; acceptable types of proficiency testing in the following order according to availability are:

1. Accredited Proficiency testing schemes according to (ISO/IEC 17043:2010).
2. Unaccredited PT schemes.
3. Inter laboratory Comparison designed primarily for other purposes ,
4. Measurement audit , in case of impossibility implementing with any of the above .

4.1 PT requirements for applicant Lab.

Applicant Lab shall provide proficiency testing , at least one PT in each Major sub-discipline according to EGAC scope of accreditation demonstrated at (Annex I) for the (testing / calibration) laboratory.

Applicant also shall provide a plan of proficiency testing cover the rest of lab (testing / calibration) activities to implement it during its accreditation cycle

The required frequency of participation in the proficiency testing should be relevant to the technical scope as will be assessed by EGAC, however it should not in any case be less than the frequent time explained in (9) below (within the period between two subsequent reassessments) for each major sub discipline of the laboratory's scope of accreditation.

Sub-disciplines may need to be more divided requiring more PT schemes; this will be advised by EGAC assessors/ experts. Major disciplines and sub disciplines as illustrated in Annex I and are published on EGAC's website.

4. 2 PT requirements during the Document review and preliminary assessment

The quality and extent of the accompanying documentation allow for a correct evaluation of the proficiency testing already carried out.

Assessors shall check the following before starting the assessment:

- The plan for the participation of the laboratory in the PT schemes, along with its justifications.
- The successful execution of this plan, according to the laboratory's success report.
- The results achieved in proficiency tests are adequately documented in the laboratories before they can be considered as part of an accreditation procedure.
- Accredited laboratories are maintaining their own records of performance in all types of proficiency testing, including the outcomes of investigations of any unsatisfactory results and any subsequent corrective or preventive actions.
- The period for keeping the records of proficiency testing results and other documentation is at least (Previous and Current) accreditation cycle, to establish the competence and stability of the accredited laboratory.
- Accredited laboratories have a written procedure covering participation in proficiency testing, including how the performance in proficiency testing is used to demonstrate the laboratory's competence and procedures followed in the event of unsatisfactory performance.
- Assessors shall check the conformity of the frequency and regularity of the laboratory's participation in the proficiency testing with regard to EGAC policy.

4.3 PT requirements during the assessment process

During the assessment, the assessment team would obtain the laboratory's plan for participation in

the proficiency testing schemes and a report on the participation of the laboratory in proficiency tests. This report of proficiency tests shall always be part of the documentation of the laboratory's accreditation or sequential assessment procedure. Such a report should contain:

- Plan for the participation of the laboratory in the PT schemes.
- Success reporting of this plan.
- Dates of proficiency tests already carried out.
- Organizer of PT scheme.
- Test materials, measured quantities, parameters, artifacts, calibration equipment.
- Matrices (where applicable).
- Acceptability criteria.
- Results (satisfactory/questionable/unsatisfactory)
- Corrective actions and follow ups, where required.

If the laboratory submits a greater number of proficiency tests, then the assessment team should limit its assessment to a sufficient number chosen in a representative way. From the survey on proficiency tests and considering the above mentioned main points, proficiency tests that are to be checked on-site are to be selected by the assessment team

The laboratory shall be prepared to justify non-participation in readily available proficiency testing schemes, where one or more appropriate schemes exist.

5. Corrective actions and additional measures

According to ISO/IEC 17025:2017

Data from monitoring activities shall be analysed, used to control and, if applicable, improve the laboratory's activities. If the results of the analysis of data from monitoring activities are found to be outside pre-defined criteria, appropriate action shall be taken to prevent incorrect results from being reported.

CAB should make analysis for PT report results (Satisfactory/ questionable / Unsatisfactory), EGAC will accept the PT provider's acceptance criteria if available based on Lab. analysis, otherwise it will set one according to the PT results presented to the laboratory.

The laboratories (Testing / Calibration) are required to make the results available to be analyzed by EGAC. These results should be adequately documented in the laboratories before they can be considered as part of an accreditation process.

The laboratories are required to demonstrate their ability to take the necessary corrective action when appropriate.

Records of proficiency testing results should be analyzed and kept, to establish the competence and stability of the accredited laboratory.



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The general conclusions that have been drawn by the laboratory from the participation in proficiency tests concerning their work and, if necessary, where corrective actions have been taken, shall be studied by the assessment team.

If the laboratory did not have satisfactory results then, the explanations and corrective actions shall be checked for sufficiency and suitability. The assessment team shall study these actions to gain information about a laboratory's competence. These actions may include the following internal and/or external quality measures:

- Calibration of measuring devices.
- Use of quality control charts.
- Performance of duplicate/multiple determinations/measurements and appropriate statistical methods.
- Use of standard methods for calibration/ testing.
- **For testing (including medical laboratories):**
 - Regular use of certified reference materials, where appropriate or use of purchasable or in-house calibration and control materials.
 - Introduction of "blind" test materials into the laboratory (e.g. by the Quality Manager).
- **For calibration:**

Regular use of cross checks methods, where appropriate and the use of higher level calibrations.
- All kinds of proficiency tests already carried out on the laboratory's own initiative.

In any case, if there are doubts concerning the competence after studying the corrective actions, the technical assessor should find out - in agreement with the laboratory - whether interlaboratory comparisons with other laboratories or the participation in existing interlaboratory comparison schemes should be performed. The extent, selected type, the way of performing and evaluating the proficiency tests shall be explained to the laboratory by the assessment. Other internal as well as external quality measures may be considered, e.g.:

- To repeat the PT.
- To check internal quality assurance measures.
- To ask for detailed report on corrective actions.
- To make an on-site surveillance

6. Additional proficiency tests may be required when:

- a. A significant Changes of personnel / main used std. operating in the accredited scope, which may affect the technical competence of the laboratory,
- b. External quality measures taken for the test methods/types of tests applied in the scope of accreditation are not sufficient, regarding, e.g.:
 - Number of proficiency tests performed in specific scopes
 - Extension of the scope of accreditation
 - Insufficiently validated and documented in-house methods
 - Procedural steps deviating from the test standard
- c. A significant ratio result of the proficiency tests submitted by the laboratory is unsatisfactory as defined by the acceptability criteria.
- d. The conclusions drawn and the necessary corrective actions of the laboratory have not been carried out or documented, or are not sufficient
- e. Assistance in detecting systematic errors in the laboratory is needed and if the laboratory has no other means to provide evidence of its technical competence and quality of measurement.

7. Determination of acceptability criteria

7.1 General rules

Generally the assessment team should use the criteria stated by the organizer of the proficiency testing scheme.

If the organizer of inter-laboratory comparisons does not provide any criteria for acceptance of results (e.g. inter-laboratory comparisons for validation of procedures and/or certification of reference substances), then the assessment team, in agreement with the laboratory under assessment, should define - according to his technical knowledge - their own acceptance limits or they may take over the acceptability criteria of the laboratory defined by itself on the basis of their own experience.

7.2 Regulatory authorities' criteria

If the laboratory is active in the concerned mandatory area, the assessment team should use the criteria set by the regulatory authority.

If the laboratory is not active in the mandatory area, but is taking part in the proficiency testing scheme for purposes of internal quality assurance, then the assessment team should use the criteria defined for the intended use by the

laboratory, after checking the ability of the laboratory to set criteria.

Note: The criteria set by the authority or customer should normally have precedence over the criteria given by the accreditation body

8. Proficiency Testing frequency



- For Calibration laboratories fields:

EGAC accept PT for its calibration laboratories activities according to its each Major Sub-discipline to be renewed each accreditation cycle unless there is no change at the lab. (back to 7.a :7e).

- For Testing laboratories fields:

a)EGAC accept PT for its testing laboratories activities according to its each Major Sub-discipline :

- Physical Properties
- Mechanical Quantities
- Electromagnetic properties
- Construction Material

to be renewed each accreditation cycle unless there is no change at the lab. (back to 7.a :7e)

b) For critical major sub-discipline (field/s) :

- Biological Testing.
- Environmental Tests.
- Food Tests.

to be renewed each (2 years/Cycle) unless there is no change at the lab. (back to 7.a :7e).

- Medical laboratories fields

For Medical laboratories discipline , it's frequency is committed by its related PT provider scheme.

9. Results for un participating on a successful Proficiency testing

If the laboratory did not participate or has unsatisfactory results after all extra measures taken,then:

- In the initial or reassessment process its accreditation will not be completed.
- For the laboratory which is already accredited It will be suspended, reduced of its scope or withdrawn according to EGAC's procedures and regulations.

10. PT requirements for Medical Laboratories

Due to the special nature of the Medical Laboratories, EGAC emphasizes the following requirements:

- The applicant Medical Laboratory shall prepare plans for participation in PT schemes, these plans shall be relevant to its scope of tests and matched with the PT programs provided by

accredited or EGAC trusted PT providers (providers that meet requirements of ISO/IEC 17043).

- For special scopes that include preparation and interpretation processes (e.g. pathology, cytogenetic, etc.) the lab shall participate in PT program(s) that cover(s) preparation and interpretation processes (where applicable).
- The Medical Laboratory shall treat the PT samples in the same manner as the patient samples and as mentioned in the PT scheme protocol.
- The applicant Medical Laboratory shall successfully deliver reports that prove successful participation.

Successful participation required to submit for application/extension:

- The lab shall pass at least 75% of a whole PT cycle.
- If the PT cycle is not yet complete, the lab shall pass samples that represent at least 75% of the whole cycle.

A 'No result/Late result' will be considered as failed unless the lab justifies the condition.

In case the lab replaces an only equipment item in certain discipline/sub-discipline/analyte, the lab will have a suspension in this discipline/sub-discipline/analyte for six months at most, the period during which the lab shall show successful participation in PT by passing 80% of the samples in this 6 month period.

To retain accreditation for discipline/sub-discipline/analyte:

- The lab shall maintain the continuous participation.
- The lab shall send reports of all PT results through the past 6 months.
- The lab shall pass at least 50% of the 6 month results such that the Lab successfully passes at least 75% of the whole cycle.
- The lab shall send self-assessment report that includes the lab performance through the past six months and the root causes and corrective actions/justifications for **failed** or **unreported/Late** test results.

- **Refusing to regularly send the above-mentioned reports will result in suspension of the lab scope in this particular discipline/sub-discipline/analyte for three months.**

Unsuccessful participation occurs in one of the following cases:

- 1- Failure to regularly participate in PT programs.
- 2- Unsatisfactory performance for the same discipline/sub-discipline/analyte during the 6 month period (at least 50%) or the whole cycle (at least 75%).
 - i. Failure of z score/SDI will be considered as unsatisfactory.
 - ii. A 'No result/Late result' will be considered as unsatisfactory unless the lab justifies the condition.



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- If a laboratory has unsatisfactory results or 'unjustifiable No result/Late result' for a discipline/sub-discipline/analyte, the lab will have a suspension in this discipline/sub-discipline/analyte for six months at most, where the laboratory has to send evidence of successful participation as mentioned under that for application/extension, before reinstatement of accreditation in this discipline/sub-discipline/analyte.
- If the lab fails to show evidence of successful participation during the suspension period, a **reduction of scope/withdrawal of accreditation** will be done for this discipline/sub-discipline/analyte.

11. REFERENCES

ILAC-P9:06 :2014
ISO/IEC 17043 : 2010
ISO/IEC 17011: 2017
ISO/IEC 17025 :2017
ISO 15189 :2012
IAF/ILAC-A2_02
ISO 5725
EA-4/18 INF: 2010

Annex (I) EGAC scope of accreditation for (Testing/Calibration / Medical)

| No | Fields | Major Discipline | | Major Sub- Discipline | |
|----|--------------------------|------------------|--|-----------------------|--------------------------------------|
| | | Code | Name | Code | Name |
| 1 | Calibration Laboratories | A | Electrical quantities /DC and Low Frequency (< = 1 MHz) quantities | 1 | Voltage AC & DC |
| | | | | 2 | Current AC & DC |
| | | | | 3 | Voltage Ratio |
| | | | | 4 | AC/DC transfer (voltage and current) |
| | | | | 5 | Power and Energy |
| | | | | 6 | Resistance |
| | | | | 7 | Capacitance |
| | | | | 8 | Inductance |
| | | | | 9 | Dissipation Factor |
| | | | | 10 | Oscilloscope Functions |
| | | | | 11 | Process calibrators |
| | | | | 12 | Logic State Analysis |
| | | | | 13 | High Voltage quantities |
| | | B | Electrical quantities /Microwave & High Frequency (> 1 MHz) quantities | 1 | Modulation (AM, FM, PM) |
| | | | | 2 | Impedance (reflection coefficient) |
| | | | | 3 | Power |
| | | | | 4 | Attenuation |
| | | | | 5 | Adaptors |
| | | | | 6 | Antennas |
| | | | | 7 | Function Generation |
| | | | | 8 | Spectrum Analysis |
| | | | | 9 | S-parameters |
| | | | | 10 | Noise |
| C | Magnetic quantities | 1 | Magnetic Flux Density | | |

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|--|----------|--|---------------------|-----------------------|-------------------------------|---------------------|
| | | | | 2 | Magnetic Material properties | |
| | D | Time and Frequency | | 1 | Time Interval | |
| | | | | 2 | Frequency | |
| | | | | 3 | Rise/Fall Time | |
| | | | | 4 | Phase Angle | |
| | E | External Dimensional Quantities | | 1 | Length Measurements: | |
| | | | | 1.a | Laser Wavelength | |
| | | | | 1.b | Length Gages | |
| | | | | 1.c | Line Scales & Distances | |
| | | | | 1.d | Length Measuring Instruments | |
| | | | | 1.e | Diameter | |
| | | | | 4 | External Micrometer | |
| | | | Roughness | 1.g | Roughness | |
| | | | | 1.k | Work Pieces | |
| | | | | 1.i | Coordinate Measuring Machines | |
| | | | | 1.j | Machine Tools | |
| | | | Angle Gauges | | 2 | angle measurements: |
| | | | | 2.a | Angle Gages | |
| | | | | 2.b | Index Tables | |
| | | | | 2.c | Clinometers | |
| | | Dimensional Gauges | | 3 | Gauge Block | |
| | | | 14 | Surface plate | | |
| | | | 15 | Gauge Block Compactor | | |
| | | External Dimensional Quantities | | 5 | External Micrometer | |
| | | | 6 | Caliper | | |

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|----------|--|-----------------------|--------------------|-------------------------------|
| | Dimensional Equipment | 7 | Ruler | |
| | | 8 | Dial Indicator | |
| | | 9 | Internal Thread | |
| | | 10 | External Thread | |
| | | 11 | Tape | |
| | | 12 | Depth gage | |
| | | 13 | Height gage | |
| | | 15 | Steel Square angle | |
| | | 16 | Profile projector | |
| | | 17 | Round test | |
| | | 18 | Microscope | |
| | | 19 | Linear scale | |
| | | 20 | Contracer | |
| | | 21 | Surftest | |
| | 22 | Formtracer | | |
| | 23 | Laser scan micrometer | | |
| | 24 | Dial Gauge tester | | |
| | F | Force | 1 | Load Cell |
| | | | 2 | Strain Gauge |
| | | | 3 | Load cell Machine |
| | | Mass | | Standared Mass Set |
| | | | | Balances |
| | | | | Mass Compartor |
| | | Pressure | 4 | Pressure Transducer Hydraulic |
| 5 | Pressure Gauge – Hydraulic | | | |
| 6 | Pressure & Vacuum quantities pneumatic | | | |
| 7 | Pressure Safety valve | | | |

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|-----------------|----------|--------------------------------|-------------------------------|-----------|--|
| | | | Torque | 8 | Torque cell |
| | | | | 9 | Torque wrench |
| | | | | 10 | Acceleration, Speed, & Vibration; |
| | | G | Acoustical quantities | 1 | Microphones |
| | | | | 2 | Sound Level |
| | | | | 3 | Artificial Mastoids |
| | | | | 4 | Noise Dosimeters |
| | | H | Fluid quantities | 1 | Gas and Liquid Flow Rate |
| | | | | 2 | Volume of Flowing Gases and Liquids |
| | | | | 3 | Velocity of Gases |
| | | | | 4 | Mass, Volume, & Density of Gases/Liquids |
| | | | | 5 | Viscosity |
| | | I | Optical quantities | 1 | Quantities of Optical Radiation |
| | | | | 2 | Photometric quantities |
| | | | | 3 | Optical System properties |
| | | | | 4 | Lasers |
| | | | | 5 | Fiber Optics |
| | | | | 6 | Spectrophotometer |
| | | J | Resistance Thermometer | 1 | Platinum resistance thermometers |
| | | | | 2 | Thermocouples |
| | | | | 3 | RTD |
| | | | Glass thermometer | 4 | Liquid-In-Glass Thermometers |
| | | | Radiation Thermometer | 5 | Radiation Thermometers |
| | | | | 10 | Infrared thermometers |
| Humidity | 6 | | Humidity | | |
| | 7 | | Thermo-hygrometer devices | | |
| | 8 | wood and grain moisture meters | | | |

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|--|--|----------|--------------------------------|----|---|
| | | | Temperature sources | 9 | Temperature indicator and simulator |
| | | | | 10 | Dry blocks |
| | | | | 11 | Incubator |
| | | | | 12 | Baths freezer and refrigerator |
| | | | | 13 | Climatic chambers |
| | | | | 14 | Oven |
| | | K | Medical Equipment | 1 | Airway/Low/High Pressure |
| | | | | 2 | Volume (Low/High) Flow, Air Flow Speed |
| | | | | 3 | Heart Rate, Synchronization, External Non-Invasive Pacer |
| | | | | 4 | Respiration, Oxygen Concentration |
| | | | | 5 | Pulse Amplitude/ Rate/ Width, & A -V Interval |
| | | | | 6 | Function generation |
| | | | | 7 | R-wave Detection |
| | | | | 8 | Temperature, Relative Humidity |
| | | | | 9 | Electrical properties: (Voltage, Earthlings, Leakage ...) |
| | | L | Environmental Equipment | 1 | Particle size/counter devices |
| | | | | 2 | Air content analyzers |
| | | | | 3 | Water content analyzers |
| | | | | 4 | Noise |
| | | | | 5 | Dust |
| | | | | 6 | Lux meter |
| | | | | 7 | Gas analyzers |

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|----------|--|------------------------------|---------------------|-----------------------------|--|
| | | | | | |
| 2 | Testing Laboratories (Not including medicine and forensic science) | Testing Technology: | | | |
| A | | Chemical | 1 | Wet Chemistry | |
| | | | 2 | Spectroscopy | |
| | | | 3 | Chromatography | |
| | | | 4 | Surface Analysis Techniques | |
| | | | 5 | Electrochemical | |
| | | | 6 | Thermal Analysis | |
| | | | 7 | Combustion | |
| | | | 8 | Corrosion | |
| B | | Physical Properties | 1 | Density | |
| | | | 2 | Particle size | |
| | | | 3 | Porosity | |
| | | | 4 | Colligative properties | |
| C | | Mechanical Quantities | 1 | Tensile | |
| | | | 2 | Compression | |
| | | | 3 | Shear | |
| | | | 4 | Torsion | |
| | | | 5 | Fracture | |
| | | | 6 | Impact Resistance | |
| | | | 7 | Hardness | |
| | | 8 | Material properties | | |
| | | 9 | Metallography | | |

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|--------------------------|----------|-----------------------------------|-----------|--|
| | | | 10 | Machines: (such as Impact Testing Machines, Tensile Machines ...) |
| | D | Electromagnetic properties | 1 | Electrical Resistance |
| | | | 2 | Electrical Current |
| | | | 3 | Electrical Voltage |
| | | | 4 | Electromagnetic Compatibility EMC |
| | E | Environmental Tests | 1 | Potable Water (organisms, organic ...) |
| | | | 2 | Non-potable (Sea Water, Irrigation ...) |
| | | | 3 | Waste Water (industrial, agricultural...) |
| | | | 4 | Water Sediments & Mussels |
| | | | 5 | Radiochemistry |
| | | | 6 | Solid/Hazardous Waste |
| | | | 7 | Lead |
| | | | 8 | Asbestos |
| | | | 9 | Air [Chemical (content, contamination ...) & Physical (particles, color, density ...)] |
| | F | Biological Testing | 1 | Plant Virology Human Virology |
| | | | 2 | Bacteriology |
| | | | 3 | Biology |
| | | | 4 | Microbiology |
| | G | Others | 1 | Sensory testing |
| | | | 2 | Thermodynamics |
| Products Testing: | | | | |
| | H | Construction Material | 1 | Concrete |
| | | | 2 | Cement |
| | | | 3 | Masonry |
| | | | 4 | Bituminous Materials |
| | | | 5 | Asphalts, Road Oils, & Tars |

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|--|--|----------|--------------------------|-----------|--|
| | | | | 6 | Lime and Limestone |
| | | | | 7 | Marble |
| | | | | 8 | Soils |
| | | | | 9 | Doors & windows (Frames, Locks ...) |
| | | I | General Materials | 1 | Adhesives and sealants |
| | | | | 2 | Fasteners |
| | | | | 3 | Agricultural |
| | | | | 4 | Animal Products |
| | | | | 5 | Foods (animal & vegetal food, dietary, beverages, ...) |
| | | | | 6 | Animal Feeds |
| | | | | 7 | Additives & Supplements |
| | | | | 8 | Fertilizers |
| | | | | 9 | Residues in food and agricultural products |
| | | | | 10 | Herbicides, Insecticides, & Pesticides |
| | | | | 11 | Mineral Water |
| | | | | 12 | Seeds & Grains |
| | | | | 13 | Soil and Plant Analysis |
| | | | | 14 | Fuels: (Gaseous, Liquid, Solid) |
| | | | | 15 | Petroleum Products |
| | | | | 16 | Coal |
| | | | | 17 | Lubricants |
| | | | | 18 | Oil & Soap |
| | | | | 19 | Drugs |
| | | | | 20 | Ferrous Metals |
| | | | | 21 | Non Ferrous Metals |
| | | | | 22 | Plastics & Polymers |
| | | | | 23 | Rubber & rubber products |

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|--|--|--|--|-----------|--|
| | | | | 24 | Leather |
| | | | | 25 | Paint |
| | | | | 26 | Textile |
| | | | | 27 | Carpet & Floor Covering |
| | | | | 28 | Pharmaceutics |
| | | | | 29 | Paper |
| | | | | 30 | Cigarettes & Tobacco |
| | | | | 31 | Wood |
| | | | | 32 | Glass |
| | | | | 33 | Ceramics |
| | | | | 34 | Leather |
| | | | | 35 | Coating |
| | | | | 36 | Electrical Cables & Insulations |
| | | | | 37 | Car Spare parts |
| | | | | 38 | Home Appliances |
| | | | | 39 | Fire Protection Equipment |
| | | | | 40 | Telecommunication Equipment (TV & Radio) |
| | | | | 41 | Air Conditioners |
| | | | | 42 | Lighting |
| | | | | 43 | Foam & Packing Materials |

Proficiency Testing Participation

Acceptance number and period with References
Medical Labs:

| Major Discipline | | Sub- Discipline | | No. of PT | Renewal Period | Reference |
|------------------|-------------------|-----------------|---|------------------------------|---------------------------------------|----------------------|
| Code | Name | Code | Name | | | |
| A | General chemistry | 1. | Routine Chemistry (Analytes in general use in cardiac, liver function, ...etc) | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 2. | Blood gases and electrolytes | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| B | Special chemistry | 1. | Special chemistry (Hormones, Vitamin assays, Iron studies. Drug assay, Protein electrophoresis, etc) | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 2. | Clinical toxicology and toxic metals | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 3. | Miscellaneous tests | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| C | Hematology | 1. | General Hematology | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 2. | Special Hematology (Coagulation studies, platelet function, hemoglobin electrophoresis, bone marrow examination, film examination for haemoparasites.etc) | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 3. | Immunohematology | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 4. | Flow cytometry | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 5. | Miscellaneous tests | Continuous programs | According to the PT | PT provider's |

| Major Discipline | | Sub- Discipline | | No. of PT | Renewal Period | Reference |
|------------------|---|-----------------|---|------------------------------|---------------------------------------|----------------------|
| Code | Name | Code | Name | | | |
| | | | | (Cycles) | provider's scheme | scheme |
| D | Diagnostic Immunology | 1. | General Immunology (Immunoglobulin and complement assay, autoantibodies assay, cellular function, tumor markers, serology (syphilis,...), immunofixation electrophoresis, etc.) | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 2. | Immunophenotyping | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 3. | Tissue typing | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 4. | Miscellaneous tests | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| E | Anatomic Pathology /Histopathology | 1. | Anatomic Pathology Processing (routine histopathology of biopsy material ,etc) | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 2. | Intraoperative Consultation | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 3. | Autopsy Pathology | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 4. | Molecular Anatomic Pathology | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 5. | Miscellaneous tests | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| F | Anatomic Pathology /Cytopathology | 1. | Effusion cytology | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |

| Major Discipline | | Sub- Discipline | | No. of PT | Renewal Period | Reference |
|------------------|---|-----------------|---|------------------------------|---------------------------------------|----------------------|
| Code | Name | Code | Name | | | |
| | gy | | | | scheme | |
| | | 2. | Gynecologic Cytopathology (other than cervical) | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 3. | Non-Gynecologic Cytopathology | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 4. | Fine needle aspiration cytology | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 5. | Miscellaneous tests | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| G | Anatomic Pathology/ Immunohistochemistry | 1. | Immunohistochemistry | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| H | Microbiology | 1. | Bacteriology | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 2. | Mycology | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 3. | Mycobacteriology | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 4. | Virology | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 5. | Parasitology | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 6. | Molecular Microbiology | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |

| Major Discipline | | Sub- Discipline | | No. of PT | Renewal Period | Reference |
|------------------|--|-----------------|--------------------------------------|------------------------------|---------------------------------------|----------------------|
| Code | Name | Code | Name | | | |
| | | | | | scheme | |
| | | 7. | Miscellaneous tests | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| I | Serology | 1. | Serology for infectious diseases | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 2. | Miscellaneous tests | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| J | Clinical Cytogenetics and Molecular Pathology /Biochemical genetics | 1. | Metabolite analysis | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 2. | Enzymology | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 3. | Newborn screening | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 4. | Long-term storage of tissue cultures | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 5. | Tissue culture and long-term storage | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 6. | Miscellaneous tests | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| K | Clinical Cytogenetics and Molecular Pathology /Cytogenetics | 1. | Blood | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 2. | Bone marrow | Continuous programs (Cycles) | According to the PT provider's | PT provider's scheme |

| Major Discipline | | Sub- Discipline | | No. of PT | Renewal Period | Reference |
|------------------|---|-----------------|--|------------------------------|---------------------------------------|----------------------|
| Code | Name | Code | Name | | | |
| | | | | | scheme | |
| | | 3. | Amniotic fluid | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 4. | Chorionic villus tissue | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 5. | Other tissues - non malignant | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 6. | Other tissues – malignant | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 7. | Conventional Cytogenetics | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 8. | Fluorescent In-Situ Hybridisation | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 9. | Molecular karyotyping by microarray analysis | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 10. | Miscellaneous tests | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| L | Clinical Cytogenetics and Molecular Pathology /Molecular Pathology | 1. | DNA sequencing | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 2. | Prenatal genetic testing | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 3. | Pre-implantation genetic testing | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |

| Major Discipline | | Sub- Discipline | | No. of PT | Renewal Period | Reference |
|------------------|--|-----------------|---|------------------------------|---------------------------------------|----------------------|
| Code | Name | Code | Name | | | |
| | | | | | scheme | |
| | | 4. | Genetic testing for constitutional gene variants (diagnostic and carrier testing) | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 5. | Predictive genetic testing | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 6. | Pharmacogenetic testing (results influence drug prescribing decisions) | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 7. | Genetic testing for mosaic gene variants (cancer and somatic mosaicism) | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 8. | Screening for an unknown mutation | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 9. | Assay for a defined mutation or polymorphism | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 10. | Assaying heterozygous loci | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 11. | Calculated estimate of risk of inheritance of an unknown mutation (Bayesian and linkage calculations) | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 12. | Miscellaneous tests | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| M | Blood Bank and Transfusion Medicine | 1. | Tests for blood transmitted diseases | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 2. | Hematopoietic Progenitor Cell Services | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |

| Major Discipline | | Sub- Discipline | | No. of PT | Renewal Period | Reference |
|------------------|-----------------------------|-----------------|---|------------------------------|---------------------------------------|----------------------|
| Code | Name | Code | Name | | | |
| | | | | | scheme | |
| | | 3. | Immunohematology((ABO group&Rh type),Antibody Detection (transfusion),Antibody Detection (Non transfusion),Antibody Identification,Compatibility testing)) | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 4. | Miscellaneous tests | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| N | Others | 1. | Assisted reproduction procedures tests | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 2. | Point-of-Care Testing | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 3. | Urinalysis | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 4. | Semen analysis | Continuous programs (Cycles) | According to the PT provider's scheme | PT provider's scheme |
| | | 5. | Miscellaneous | | | |
| | Other please Specify | | | | | |