المركز الوطني للبحوث الزراعية
National Agricultural Research Center

## نموذج استدراج اسعار

الرقم المتسلسل لطلب الشراء:.....٤٠٥/٢٠٢٤..... التاريخ : .....

### مديرية اللوازم والعطاءات

| الرقم | قائمة اللوازم | المطلوب | | المواصفات | السعر الافرادي | السعر الإجمالي |
|---|---|---|---|---|---|---|
| | | الوحدة | الكمية | | | |
| .1 | Autoclave | Sys. | 1 | Attached | | |
| .2 | Multiparameter ION analyzer | Sys. | 1 | Attached | | |
| .3 | Industrial Stainless-steel Pulverizer | Uni. | 1 | Attached | | |
| .4 | DNA Plant/Seed Extraction Kit | Kit | 1 | Attached | | |
| .5 | Plant Pro Kit | kit | 1 | Attached | | |
| .6 | DNA Tissue/Insect Extraction Kit | Kit | 1 | Attached | | |
| .7 | DNA Tissue/Insect Extraction Kit | Kit | 1 | Attached | | |
| .8 | Halogen moisture analyzer | Sys, | 1 | Attached | | |
| .9 | Microbiome DNA Enrichment Kit | Kit | 1 | Attached | | |
| .10 | Master Mix | Kit | 3 | Attached | | |
| .11 | Master Mix | Kit | 3 | Attached | | |
| .12 | Filter Tips | PK | 10 | Attached | | |
| 13 | Gloves | PK | 10 | Attached | | |
| 14 | Polypropylene Floating Microtube Racks | Rack | 4 | Attached | | |
| 15 | Benchtop Cooler | Cooler | 1 | Attached | | |
| 16 | Portable/mobile compressor refrigerator | ICE BOX | 1 | Attached | | |
| 17 | ICE BOX | ICE BOX | 1 | Attached | | |
| 18 | Mortar and pestle | Uni. | 20 | Attached | | |

المجموع :- النهائي رقما ( ) كتابة ( ).

اسم و توقيع المورد: ... .....

ختم المورد :.....

التاريخ:..... .

Scanned with CamScanner

**1 - Vertical laboratory autoclave**

| Parameter | Required specification |
|---|---|
| **Type** | Vertical laboratory autoclave / automatic vertical sterilizer |
| **Chamber capacity** | ≥50 L |
| **Chamber material** | High-grade stainless steel |
| **Sterilization temperature** | Programmable, **121–134°C** |
| **Operating pressure** | Appropriate pressure automatically controlled according to selected sterilization temperature/cycle |
| **Controller** | Microprocessor-controlled programmable digital system |
| **Display** | **Color touchscreen** |
| **Programs** | Dedicated and customizable programs for **liquids/media, solids, glassware, wrapped instruments, pipette tips and laboratory waste** |
| **Liquid/media cycle** | Dedicated cycle with controlled heating, sterilization and cooling |
| **Waste cycle** | Program suitable for microbiological/biological laboratory waste |
| **Drying** | **Integrated drying/vacuum-drying function**, where applicable |
| **Cooling** | **Rapid/forced cooling system** with appropriate temperature and pressure control |
| **Lid/door sealing** | Automatic **compressed-air/pneumatic sealing** preferred |
| **Safety** | Door/lid interlock; door cannot open while chamber is pressurized or at unsafe temperature |
| **Protection** | Independent over-temperature and over-pressure protection |
| **Process monitoring** | Continuous monitoring of temperature and pressure |
| **Data recording** | USB/Ethernet or equivalent electronic data logging; printer preferably included |
| **Heat recovery** | **Heat-recovery/energy-saving system preferred** |
| **Water** | Compatible with treated/demineralized/distilled water as specified by manufacturer |
| **Accessories** | Stainless-steel baskets/racks; liquid containers; drain system; loading accessories |
| **Validation** | Manufacturer documentation supporting **IQ/OQ/PQ or equivalent validation** |
| **Calibration** | Factory calibration certificate for temperature and pressure sensors |
| **Service** | Installation, commissioning, operator training and preventive maintenance |
| **Warranty** | **Minimum 5 years**, including parts and labor, excluding consumables |
| **Electrical** | 220–240 V, 50 Hz, suitable for Jordanian electrical supply |
| **Standards** | CE and applicable international laboratory sterilizer/autoclave safety standards |

(1-8)

Scanned with CamScanner

**2 - Multiparameter ion analyzer**

| Feature | Specification |
|---|---|
| Instrument type | Multiparameter ion analyzer |
| Measurement principle | Ion-selective electrode (ISE) potentiometry |
| Ion capacity | **7 ions simultaneously** |
| pH | Included |
| Maximum parameters | **10** |
| Typical ions | $NH_4^+$, $NO_3^-$, $K^+$, $Ca^{2+}$, $Mg^{2+}$, $Na^+$ and $Cl^-$ |
| Additional parameters | pH; conductivity and hardness depending on configuration |
| Measurement time | Approximately **60 seconds** |
| Measurement range | Approximately **1 to >10,000 mg/L**, depending on ion |
| Minimum sample volume | Approximately **10 mL** |
| Units | mg/L, ppm or mmol/L |
| Calibration | Multi-point calibration; customizable standards |
| Measurement method | Potentiometric |
| Probe | Multi-ion probe accommodating up to 7 ISE sensors |
| Data processing | Computer software |
| Data export | Results can be exported to Excel/CSV |
| Power | USB-powered, 5 V |
| Operating temperature | **4–50°C** |
| Portability | Portable system with carrying case |
| Applications | Irrigation water, fertilizers, soil extracts, plant sap, hydroponics, wastewater, groundwater and environmental samples |

**3 - Industrial Stainless-steel Pulverizer**

200 g high-speed laboratory pulverizer: stainless-steel grinding chamber, around 25-28,000 rpm, designed for laboratory sample preparation.

(2-8)

Scanned with CamScanner

**4 - DNA Plant/Seed Kit**

| Feature | Specification |
|---|---|
| Product | Plant/seed genomic DNA extraction kit |
| Format | Spin-column |
| Kit size | 50 preparations |
| Sample input | ≤150 mg |
| Sample types | Leaves, stems, buds, flowers, fruits, seeds, etc. |
| Lysis | Mechanical bead beating + chemical lysis |
| Beads | High-density bead-based disruption |
| DNA type | Total DNA, including genomic and potentially organellar/pathogen DNA |
| Binding capacity | 25 µg |
| Minimum elution volume | 50 µL |
| Typical DNA size | ~25–35 kb; capable of recovering DNA ≥40 kb |
| Purity | A260/A280 ≥1.8 |
| Inhibitor removal | Removes polysaccharides, polyphenols/tannins and other PCR inhibitors |
| Downstream applications | PCR, qPCR, NGS, genotyping, arrays |
| Storage of extracted DNA | ≤–20°C |

**5 - Plant Pro Extraction Kit**

| Feature | Specification |
|---|---|
| Application | Genomic DNA extraction from plant tissues and seeds |
| Sample input | 100 mg |
| Extraction format | Spin-column |
| Disruption | Bead beating / mechanical + chemical lysis |
| Bead size | 3.8-4 mm ballcone |
| DNA binding capacity | 50 µg |
| Typical yield | 30 µg from 50 mg starting material |
| Elution volume | 50–100 µL |
| Purification | Silica membrane |
| Inhibitor removal | Designed to remove polysaccharides, polyphenolics and other plant PCR inhibitors |
| Difficult samples | Leaves, roots, stems, seeds, grapevine and other tough/woody material |
| Pathogen DNA | Suitable for DNA from plant-associated bacterial, fungal and viral pathogens |
| Downstream use | PCR, qPCR, RFLP, NGS and other molecular applications |
| Organic extraction | Not required |
| Phenolic separation | Optional step for highly polyphenolic samples |
| Processing time | 45-60 min for 24 samples |
| Kit size | 50 preparations |

(3-8)

Scanned with CamScanner

6 - **DNA Tissue/Insect Extraction Kit**

| Feature | Required specification |
|---|---|
| Product type | Genomic DNA extraction kit for insect and animal tissue |
| Sample type | Insects, arthropods and small animal tissue |
| Sample input | **10 mg** tissue/sample |
| Extraction method | Mechanical and chemical tissue disruption |
| Purification | Silica membrane spin-column or equivalent |
| DNA type | Genomic DNA, including mitochondrial DNA |
| DNA binding capacity | **≥ 5 µg** |
| Elution volume | **≥10 µL**, with low-volume elution capability preferred |
| DNA quality | High-quality DNA suitable for molecular analysis |
| Sample condition | Fresh, frozen or preserved specimens |
| Downstream applications | PCR, qPCR, DNA barcoding, genotyping and sequencing |
| Processing | Rapid extraction with minimal hands-on steps |
| Equipment required | Standard microcentrifuge and pipettes |
| Hazardous chemicals | free of phenol and chloroform |
| Kit size | **50 extractions** |
| Accessories | All required extraction buffers, columns, tubes and reagents included |

7 - **DNA Tissue/Insect Extraction Kit**

| Feature | Required specification |
|---|---|
| Product type | Genomic DNA extraction kit for insect and animal tissue |
| Sample type | Insects, arthropods and animal tissue |
| Sample input | **50 mg** tissue/sample |
| Extraction method | Mechanical and chemical tissue disruption |
| Purification | Silica membrane spin-column or equivalent |
| DNA type | High-quality genomic and mitochondrial DNA |
| DNA binding capacity | **≥ 25 µg** |
| Elution volume | **≥35 µL**, with flexible elution capability |
| DNA quality | High-molecular-weight DNA suitable for molecular analysis |
| Sample condition | Fresh, frozen or preserved specimens |
| Downstream applications | PCR, qPCR, DNA barcoding, population genetics and sequencing |
| Processing | Rapid extraction with minimal hands-on steps |
| Equipment required | Standard microcentrifuge and pipettes |
| Hazardous chemicals | Preferably free of phenol and chloroform |
| Kit size | **50 extractions** |
| Accessories | All required extraction buffers, columns, tubes and reagents included |

**8 - Halogen moisture analyzer**
Readability: 0.001 g
Maximum weighing capacity: 120–200 g.
Moisture readability: ≥ 0.01%

(4-8)

Scanned with CamScanner

**9 - Microbial DNA enrichment**

| Feature | Specification |
|---|---|
| Application | Microbial DNA enrichment / host-DNA depletion |
| Principle | Selective capture of CpG-methylated DNA |
| Input DNA | 1 µg per reaction |
| Recommended DNA size | ≥15 kb |
| Kit sizes | 6 - 30 reactions |
| Downstream applications | NGS, qPCR, conventional PCR |
| Magnetic beads | Protein A |
| Target removed | Methylated eukaryotic/host DNA |
| Microbial DNA | Retained in supernatant |
| Storage | Components at −20°C and 4°C. |
| Magnetic rack | Required but not included |

**10 – (5× Colored hot-start master mix)**

| Specification | Requirement |
|---|---|
| Product Type | PCR amplification master mix, **5×, hot-start, ready-to-load.** |
| Kit Size | **250- 200 reactions per kit**, based on 20-25 µL reaction volume |
| Amplicon Size | Suitable for amplification of DNA fragments **up to 5 kb** |
| Reaction Format | Conventional endpoint PCR |
| Fidelity | Enhanced fidelity compared with conventional Taq; preferably up to ≥5-fold higher fidelity |
| Enzyme | Hot-start, thermostable DNA polymerase with proofreading polymerase activity. |
| $MgCl_2$ | **1x PCR solution 3.5, mM MgCl2Included** |
| Template Compatibility | Suitable for genomic DNA templates |
| Primer Compatibility | Compatible with standard oligonucleotide primers |
| Application | Phytoplasma detection, **16S rRNA gene (16S rDNA)** amplification/sequencing, ISSR, SSR, genotyping and other PCR-based analyses. |
| Storage Conditions | Store according to manufacturer's instructions, typically at −20°C |
| Purity | Free from DNase, RNase, and PCR inhibitors |
| Documentation | Certificate of analysis and product datasheet must be provided |

(5-8)

Scanned with CamScanner

**11 – (2X GOTAG Master Mix)**

| Specification | Requirement |
|---|---|
| Product Type | PCR amplification master mix, **2×, ready-to-load.** |
| Kit Size | **100 reactions per kit**, based on 20-25 µL reaction volume |
| Reaction Format | Suitable for conventional PCR applications |
| Enzyme | **GoTaq** _ DNA Polymerase, |
| Buffer | Optimized PCR reaction buffer included |
| $MgCl_2$ | 1.5 mM final $MgCl_2$ included |
| Amplicon Size | 3–5kb DNA fragments. |
| Template Compatibility | Suitable for genomic DNA templates |
| Primer Compatibility | Compatible with standard oligonucleotide primers |
| exonuclease activity | Included |
| Application | Suitable for molecular biology applications, including 16Sr, ISSR, SSR, and related PCR-based marker analysis |
| Reaction Volume | Compatible with standard 20–50 µL PCR reaction volumes |
| Storage Conditions | Store according to manufacturer's instructions, typically at −20°C |
| Purity | Free from DNase, RNase, and PCR inhibitors |
| Documentation | Certificate of analysis and product datasheet must be provided |

**12 - Filter Tips**

| Feature | Required specification |
|---|---|
| Type | Aerosol-barrier / filter pipette tips |
| Material | High-quality virgin polypropylene |
| Filter | Hydrophobic aerosol barrier/filter |
| Sterility | Sterile |
| DNase/RNase | Certified DNase- and RNase-free |
| DNA contamination | DNA-free |
| PCR inhibitors | PCR-inhibitor-free |
| Endotoxins | Endotoxin-free preferred |
| Tip surface | Low-retention / hydrophobic inner surface |
| Compatibility | Universal fit with standard laboratory micropipettes |
| Accuracy | Suitable for molecular biology and PCR/qPCR |
| Packaging | Racked, preferably hinged-lid racks |
| Graduations | Preferred |
| Single-use | Yes |
| Autoclavability | Not required for pre-sterilized tips |
| Traceability | Lot number and certificate of conformity required |
| SIZE | **10 boxes of:**<br>**10 µL** — PCR/qPCR reagent preparation<br>**20 µL** — small-volume molecular work<br>**200 µL** — PCR setup, DNA extraction and routine pipetting<br>**1000 µL** — DNA extraction buffers and larger-volume transfers |

**13 – Gloves**

Disposable Nitrile gloves, black or blue, (3) small, (4) large and (5) X-large, not made with natural rubber lates, single use, powder free, for molecular biology lab and general use.

(6-8)

Scanned with CamScanner

**14 - Floating microtube rack**

| Feature | Required specification |
|---|---|
| Product type | **Floating microtube rack with supporting stands/legs, 2 sequare and 2 circular shape.** |
| Material | Laboratory-grade polypropylene (PP) |
| Capacity | Minimum 16 microtube positions |
| Tube compatibility | 1.0, 1.5 and 2.0 mL microcentrifuge tubes |
| Supporting structure | **integrated stands/legs** |
| Floating function | Rack must float stably in water or ice baths when loaded |
| Stand function | Four stands shall provide stable support when the rack is placed on a laboratory bench |
| Handle | Integrated handle for easy removal from water/ice |
| Tube identification | Numbered/marked tube positions preferred |
| Temperature range | Approximately −70°C to +100°C |
| Construction | Durable molded polypropylene |
| Application | PCR, DNA/RNA extraction, molecular biology and sample incubation/cooling |

**15 - Benchtop Cooler**

| Feature | Specification |
|---|---|
| Temperature | −20°C |
| Capacity | 20 tubes |
| Configuration | 4 × 5 |
| Tube capacity | 0.2–0.5 mL tubes |
| 1.5 mL compatibility | Yes, using the supplied inserts |
| Material | Impact-resistant polycarbonate |
| Lid | Clear, keyed lid with printed grid |
| Dimensions | 22-24 × 16-17 × 13-15 mm |
| Temperature retention | Below −15°C for 1H. |
| Stackable | Yes |
| Cooling | Passive; pre-cooled/frozen before use |

(7-8)

Scanned with CamScanner

**16 - Portable/mobile compressor refrigerator**

| Feature | Required specification |
|---|---|
| Type | Portable/mobile compressor refrigerator |
| Capacity | 40–50 L |
| Temperature range | 2–8°C minimum; adjustable |
| Cooling system | DC compressor |
| Power | 12/24 V DC + 220–240 V AC adapter |
| Power consumption | ≤60 W preferred |
| Temperature display | Digital |
| Temperature control | Electronic/microprocessor |
| Battery protection | Required for vehicle operation |
| Internal basket | Removable |
| Insulation | High-density PU foam |
| Construction | Rigid, impact-resistant |
| Mobility | Wheels + telescopic handle preferred |
| Temperature monitoring | Built-in thermometer; external data logger preferred |
| Refrigerant | Environmentally compliant refrigerant |
| Applications | Plant samples, insect samples, biological specimens, reagents |
| Vehicle use | Required |
| AC operation | Required for laboratory/office use |

**17 - ICE BOX**

| Feature | Requirement |
|---|---|
| Capacity | **50 L** |
| Type | Insulated biological/sample transport box |
| Temperature | **+2 to +8°C** |
| Cold retention | **≥48 h** |
| Insulation | High-density PU + high-performance insulation |
| Cooling | Reusable PCM/ice packs |
| Interior | Removable tray/dividers |
| Temperature monitoring | **Digital thermometer/data logger** |
| Construction | Rigid, impact-resistant, waterproof |
| Lid | Tight-fitting insulated lid |
| Handles | Heavy-duty |
| Cleaning | Smooth, disinfectable interior |
| Applications | Plant samples, insect samples, biological specimens, molecular samples |

**18 - Mortar and pestle**

high-quality porcelain/ceramic, rated for cryogenic use, Autoclavable.
Chemically resistant.
Glazed exterior, unglazed/rough grinding interior
Heavy-duty pestle with a rounded grinding end
Suitable for grinding different tissue in liquid nitrogen
Easy to clean and decontaminate
SIZE: (10) 50– (10)100 mL for individual samples.

(8-8)

Scanned with CamScanner

المركز الوطني للبحوث الزراعية
National Agricultural Research Center

# نموذج استدراج اسعار

الرقم المتسلسل لطلب الشراء:..... التاريخ : .....

## مديرية اللوازم والعطاءات

| الرقم | قائمة اللوازم | المطلوب | | المواصفات | السعر الافرادي | السعر الاجمالي |
|---|---|---|---|---|---|---|
| | | الوحدة | الكمية | | | |
| 1 | Thermocycler | Sys. | 1 | Attached | | |
| 2 | Lab. Incubator | Sys. | 1 | Attached | | |
| 3 | Glass-Door Laboratory Refrigerator | Sys. | 1 | Attached | | |
| 4 | Gel documentation System | Sys. | 1 | Attached | | |
| 5 | NanoDrop | Sys. | | Attached | | |
| 6 | Ultra-Low Temperature Laboratory Freezer (Deep Freezer) | Sys. | 1 | Attached | | |
| 7 | Biological Safety Cabinet - Class II | Sys. | 1 | Attached | | |
| 8 | Non-touch ultrasonic homogenizer | Sys. | 1 | Attached | | |
| 9 | Analytical balance | Sys. | 2 | Attached | | |

-

المجموع :- النهائي رقما ( ) كتابة ( ).

اسم و توقيع المورد: ... .....

ختم المورد :.....

التاريخ:..... .

Scanned with CamScanner

# مواصفات الفنية للاجهزة

## 1. Thermal Cycler

| Specification | Requirement for procurement |
|---|---|
| Type | Conventional PCR, 96 x 0.2 ml tubes, 0.2 ml tube strips, or 1 x 96-well plate |
| Temperature range | 0–100°C or 4- 100°C |
| Gradient | 30-100 °C |
| Maximum block ramp rate | 4 -6 °C/sec. |
| Sample ramp rate | 2.0 - 2.5°C/sec. |
| Temperature uniformity | ±0.5°C well-to-well within 30 sec of arrival at target temperature. |
| Temperature accuracy: | ±0.3- 0.5°C of programmed target |
| Temperature differential range | 1–25°C |
| Dimensions (H x W x D) | 25-26 x 45-48 x 22-24 cm |
| PCR volume range | 10–100 µL. |
| Data connectivity | Yes: USB + Wi-Fi + Ethernet: |
| Compatible with | standard 0.2 mL PCR tubes and/or 96-well PCR plates. |
| Display | VGA colored touch screen or color TFT touchscreen. |
| Power | 100–240 V, 50–60 Hz. Max. 700 W |
| Warranty | 5 years |

(1-8)

Scanned with CamScanner

**2. Lab. incubator and mini- Growth Chamber**

| Specification | Requirement for procurement |
|---|---|
| Type | Programmable Environmental Growth Chamber (Incubator) for Insect Incubation and Rearing |
| Purposes | Environmental chamber suitable for incubation, growth, and rearing of insects and other biological samples. |
| Chamber capacity | ≥120 L. |
| Programmable | temperature, relative humidity, and lighting control. |
| Temperature range | −10°C to +60°C or wider. |
| Temperature range during controlled-humidity operation | +10°C to +60°C. |
| Relative humidity control range_RH) | 20–95% RH or wider. |
| Temperature resolution: | 0.1°C or better. |
| Relative humidity resolution | 1% RH or better |
| Integrated humidity- generation/control system | YES |
| Programmable day/night cycles. | YES |
| Programmable temperature/humidity/light Cycles | YES |
| low-heat interior illumination. | LED or equivalent |
| Programmable lighting timer | Covering a 24-hour cycle. |
| Programmable timer with continuous/hold operation | YES |
| Capability to store multiple environmental programs/profiles | YES |
| corrosion-resistant internal chamber | Stainless-steel or equivalent |
| Internal observation | Glass door |
| Shelves | At least two adjustable shelves. |
| Digital control and display system. | YES |
| Safety alarms for abnormal temperature and/or humidity conditions. Supplied complete with all accessories necessary for operation | YES |
| Power supply compatible with | 220–240 V, 50 Hz. |
| Warranty | 5 years |

(2-8)

Scanned with CamScanner

### 3. Laboratory Refrigerator

| Specification | Requirement for procurement |
|---|---|
| Type | Glass-Door Laboratory Refrigerator |
| Purposes | Laboratory refrigerator suitable for storage of biological samples, reagents, media, and other temperature- sensitive laboratory materials. |
| Grade | Molecular Biology |
| Operating temperature range | +2°C to +8°C. |
| Nominal operating setpoint | +4°C. |
| Storage capacity | ≥600 L. |
| air circulation | Forced-air circulation cooling system to ensure uniform temperature distribution |
| Microprocessor | Microprocessor-controlled temperature management system. |
| Digital temperature display | YES |
| Temperature adjustment resolution | 0.1°C or better. |
| Rapid temperature recovery | following door opening |
| Audible and visual alarm system for | High temperature, Low temperature, Power failure, Temperature sensor failure, Door-open condition. |
| Glass door | Allowing visual inspection of stored materials without opening the refrigerator. |
| Lockable door | to prevent unauthorized access |
| shelves | Multiple adjustable shelves suitable for laboratory sample storage |
| Interior illumination | LED or equivalent low-heat interior illumination |
| wheels | Caster wheels with leveling/stabilizing feet. |
| Interior designed for | Easy cleaning and laboratory use |
| Refrigeration system suitable | For continuous laboratory operation |
| Supplied complete with | All shelves and accessories required for normal operation |
| Power supply compatible with | 220–240 V, 50 Hz |
| Warranty | 5 years |

(3-8)

Scanned with CamScanner

**4. Gel documentation System**

| Specification | Requirement for procurement |
|---|---|
| Type | DNA/Protein Gel Documentation and Imaging System |
| Purposes | Digital gel documentation and imaging system suitable for imaging and documentation of DNA, RNA, and protein electrophoresis gels. |
| Suitable for | Commonly used fluorescent, UV-responsive, and/or visible stains. |
| **Camera** | **High-resolution digital CMOS or equivalent camera.** |
| Camera resolution | ≥ 6megapixels. |
| Imaging area suitable for | Imaging area suitable for standard laboratory electrophoresis gels, (≥14 × 20 cm). |
| UV illumination capability | yes |
| Visible/white-light illumination capability | yes |
| Fluorescence imaging capability | yes |
| Appropriate emission filters compatible with commonly used DNA and protein gel stains | .yes |
| **image** | Integrated touchscreen or equivalent user-friendly operating interface.<br>Integrated image acquisition and analysis software.<br>Automatic and manual exposure control.<br>Capability for image capture, annotation, storage, analysis, and export.<br>Automated or software-assisted selection of appropriate illumination/excitation settings.<br>Pre-calibrated and/or automated imaging modes suitable for routine DNA and protein gel applications.<br>High dynamic range suitable for quantitative gel imaging.<br>Image export in standard formats including TIFF and JPEG.<br>Capability for transferring images/data to an external computer or storage device. |
| Operating temperature | suitable for standard laboratory environments |
| Supplied with all | trays, filters, cables, software licenses, and accessories necessary for normal operation |
| Warranty | 5 years |

(4-8)

Scanned with CamScanner

**5. NanoDrop**

| Specification | Requirement for procurement |
|---|---|
| Type | Microvolume UV-Visible Spectrophotometer |
| Microvolume UV-Visible spectrophotometer | Suitable for quantitative and qualitative analysis of DNA, RNA, proteins, and other biological samples |
| Minimum sample volume: | ≤1–2 µL. |
| Wavelength range covering | at least 190–850 nm. |
| Measurement modes suitable for | DNA, RNA, and protein quantification |
| Automatic calculation of | A260/A280 and A260/A230 purity ratios |
| Wide dynamic concentration range suitable for | low- and high-concentration nucleic-acid samples without routine dilution. |
| dsDNA measurement range extending from | 1 ng/µL to ≥20,000 ng/µL or wider. |
| Protein measurement capability | covering a wide concentration range |
| . Having | High-sensitivity optical detector suitable for microvolume measurements<br>Integrated touchscreen or equivalent user interface. |
| Measurement time | ≤10 seconds per sample under standard operating conditions. |
| Measurement repeatability | : ≤3% CV or better |
| Photometric accuracy | ±3% or better under specified calibration conditions. |
| included | Integrated software for data acquisition, analysis, storage, and export.<br>Software capability for identification and/or correction of common sample contaminants.<br>Automatic nucleic-acid concentration and purity calculations.<br>Integrated dilution/concentration calculation tools suitable for downstream molecular biology applications.<br>Internal storage capable of storing a large number of measurements.<br>Data exports through USB, network connection, or equivalent method.<br>Durable microvolume sample measurement pedestal suitable for aqueous biological samples.<br>Integrated cuvette measurement.<br>Supplied complete with required software, cables, accessories, and calibration/verification materials necessary for normal operation. |
| Warranty | 5 years |

Scanned with CamScanner

**6. Deep Freezer**

| Specification | Requirement for procurement |
|---|---|
| Type | Ultra-Low (deep) Temperature Laboratory Freezer.<br>Ultra-low temperature laboratory freezer suitable for long-term storage of biological samples, DNA/RNA materials, microorganisms, tissues, and other temperature-sensitive research materials. |
| Capable of maintaining a nominal storage temperature | between −80°C and −86°C.<br>• Storage capacity: ≥500 L.<br>• Microprocessor-controlled temperature management system. |
| Adjustable temperature | setting range covering at least −40°C to −86°C |
| Included | • Digital LCD, LED, or equivalent temperature display.<br>• High-accuracy temperature monitoring sensor suitable for ultra-low-temperature operation.<br>• High-efficiency refrigeration system capable of maintaining the specified temperature continuously.<br>• High-performance thermal insulation designed for ultra-low-temperature laboratory storage.<br>• Durable, corrosion-resistant exterior construction.<br>• Durable, easy-to-clean interior suitable for long-term sample storage.<br>• Insulated external door with secure locking mechanism.<br>• Multiple insulated internal compartments/doors to reduce cold-air loss during sample access.<br>• Minimum three adjustable or removable storage shelves.<br>• Shelf load capacity: ≥45 kg per shelf.<br>• Heavy-duty casters with leveling/stabilizing feet.<br>• At least one access port for external temperature-monitoring probes or validation equipment. |
| Audible and visual alarm system for: | High temperature.<br>Low temperature.<br>Power failure.<br>Sensor malfunction.<br>Door-open condition |
| Alarm and temperature-monitoring functions | Shall remain active during abnormal operating conditions |
| Noise level suitable for | Laboratory operation, preferably ≤55 dB(A). |
| Included | • Automatic recovery/restart following power interruption.<br>• Battery-backed alarm or equivalent emergency alarm capability<br>• Supplied complete with shelves, access keys, manuals, and all accessories required for normal operation. |
| Power supply compatible with | 220–240 V, 50 Hz. |
| Warranty | 5 years |

(6-9)

Scanned with CamScanner

**7. Biological Safety Cabinet**

| Specification | Requirement for procurement |
|---|---|
| **Style** | **Class II** |
| Width: | . 1.2–1.3 m |
| Working width | 1.2–1.3 m |
| Voltage | 230 V, 50/60 Hz |
| Interior, working surface, side and front | Stainless Steel |
| HEPA | H14, 99.995% at MPPS |
| Airflow | Smart Flow Plus |
| Blowers | Dual blower + pressure sensor system |
| included | SmartPort |
| Display | Touchscreen |
| Sash | 7-8 inch opening |
| Included | UV |
| Stand | Adjustable-height stand |
| Energy saving | Night Standby mode |
| Noise | 60- 63 dBA |
| Warranty | 5 years |

(7-8)

Scanned with CamScanner

**8 - Non-touch ultrasonic homogenizer**

1. Frequency 20-40KHz (±0.5KHz).
2. Power 1500-1800W.
3. Power Adjust 1% - 99%.
4. Timing 1 - 999min.
5. Capacity 5 µL to 500 mL per batch.
6. Temp. Display.
7. Holder 0.5ml 12 wells, 2ml 12 wells, 0.2ml 12 wells, support 5ml - 50ml.
8. Power Supply 220V±0.5 50Hz.
9. Multiple tube rack options can accommodate sample volumes using a variety of standard sample tubes.
10. The Cup Tip design ensures a contact-free homogenization process for small-scale samples.
11. The system displays real-time process parameters (time, amplitude, and delivered energy/power).
12. Provide pulse mode with user-adjustable ON/OFF times.
13. Touchscreen control panel, digital type, programmable.

**9 - Analytical balance**

1. Maximum Capacity 220 g
2. Readability 1 mg
3. Repeatability 1 mg
4. Linearity ± 2 mg
5. Pan Size (120 mm x 120 mm) minimum for rectangular and 90-100 mm Ø. For round shape
6. Internal Calibration Automatic
7. Draft shield include a draft shield
8. Working Environment (10°C – 30°C, 80%RH, non-condensing)
9. Communication USB device; USB host x 2; RS232
10. Display minimum 5" LED OR LCD screen
11. Pan Construction Stainless Steel
12. Stabilization Time minimum 5s
13. Compliance ISO/IEC 17025.
14. Warranty min 1 year.

Scanned with CamScanner