OFFICE OF THE PRINCIPAL MODEL I.T.I. KONI - BILASPUR DISTT. - BILASPUR, CHHATTISGARH

Phone No. 07752-260217, E-mail - mitibsp@rediffmail.com

Website : mitikoni.ac.in

Tender No. – BSP/WB/VTIP/----------/DEC 2013, Dated 12/12/2013

NOTICE INVITING TENDER

Principal, Model ITI Bilaspur, Chhattisgarh invites sealed tender from eligible bidders (Manufacturers, or their authorized dealer) for procurement of various Packages of Tools, Equipments & Machinery for Center of Excellence related to **"Instrumentation Sector"** under World Bank assisted Vocational Training Improvement Project (VTIP) in Shopping Mode.

The tender form (complete set of bidding documents along with the packages including details of Items with quantity for purchase) is available on the website **www.cg.gov.in**, **www.mitikoni.ac.in** from 13/12/2013. A complete set of bidding documents may be downloaded free of cost by any interested eligible bidder

The sealed tender should reach the Office of the Principal, Model ITI Bilaspur, Chhattisgarh on or before **13/01/2014** by 13.00 hours and will be opened on the same day at 14.00 hours. Any bid received after the deadline for submission of bids as prescribed above will be rejected and returned to the Bidder. The undersigned has all the rights pertaining to the tender.

Principal,
M. I.T.I. Bilaspur

OFFICE OF THE PRINCIPAL MODEL I.T.I. BILASPUR
DISTT. - BILASPUR, CHHATTISGARH

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World Bank Assisted Vocational Training Improvement Project

TERMS & CONDITIONS OF THE TENDER

Tender documents/Qualification requirements should be submitted in **Main envelope** as given below:

1. On the top of Main envelop mention Tender No., Due Date, all package nos. & names for which Bid are submitted.
2. Following documents should be kept inside the envelope :
    1. Covering letter for submission of Bid which should indicate -
        - Index for all the submitted documents for the tender
        - All particulars of Bidders viz address, phone No., e-mail, name of the authorized person(s), TIN/ TAN/ Service Tax No. etc. for correspondence.
        - Package Nos. & name for which Bid is submitted.
    2. Completely filled Form - "A" with signature & seal of authorized person which includes Earnest Money/ Bid security details - @ 3% of total tendered value.**Tender received without form "A" duly signed (As token of acceptance of tender conditions by the tenderer) will not be accepted.**
    3. Demand Draft/ Bank Guarantee (as given in the proforma Annexure-III) for earnest money/ bid security.
    4. All the pages of **Terms & Conditions of Tender** duly signed & stamped by the tenderer in token of his acceptance of tender conditions along with other documents.
    5. Valid certificates related to TIN / TAN / Service Tax No. etc. issued by competent Govt. authority pertaining to tender.
    6. Undertaking for "After Sales Services" on letter head of bidder.
    7. **Affidavit in prescribed format as given in Annexure-V on non judicial stamp paper of Rs. 50/- certified by Notary.**
    8. Manufacturer's Company Profile showing its product range, turn over, web-address and certifications like ISO/ ISI etc. along with the documentary proof of such certificates if company/ products bear such certificate.
    9. All relevant particulars, illustrative catalogue/ broachers etc. which should indicate the products technical specifications for all packages which is submitted in the bid.
    10. Filled Manufacturer's Authorization Form as given in SECTION XII (Annexure-VI) for all the quoted items.
    11. Package wise Commercial Bid in prescribed format (i.e. Annexure-I) should be submitted (separately for each package) in individual envelope along with the soft copy in CD (MS-Excel).
    12. On the top of each envelope of Commercial bid, bidder should clearly mention Tender No., Due Date, Package No. and Package Name with seal & sign of bidder.
3. Complete tender document must be duly singed, stamped, paged & indexed by the bidder. **Unsigned or unpaged bids shall be straightway rejected.**
4. The bid would be evaluated separately for each item.
5. Either a manufacturer or their authorized dealer can bid for a package(s). For each of the quoted items, appropriate documentary evidence for being a Manufacturer or their authorized

dealer (Manufacturer's Authorization Form given in SECTION XII as Annexure-VI) must be submitted necessarily. In absence of above the bid will be treated non-responsive & likely may be rejected.

6. If bided items are manufactured out of India then manufacturer's authorized distributor/agency for India may specially authorize a dealer who may participate in this tender. The relevant certificates in proof of such Authorizations and Manufacturing must be submitted.

7. The bid should be accompanied by Earnest Money/ bid security of @ 3% of total tendered value (for all packages) as part of the bid, in the form of Bank Draft/ Bank Guarantee of Scheduled Bank. Bank Draft should be in favour of Principal, MITI Bilaspur payable at Bilaspur, Chhattisgarh. If the bidder deposits earnest money/ bid security in the form of Bank Guarantee, he/she shall furnish the same to the Principal, MITI Bilaspur for 3% of total tendered value through a bank guarantee by a Scheduled bank in the prescribed proforma as Annexure-III. Earnest Money submitted in any other form will not be accepted and the tender will be rejected. Unsuccessful bidder's earnest money will be discharged/ returned as promptly as possible.

8. The bidder should submit the Manufacturer's Make/ Brand name being use for marketing and registration no. of Commercial Tax Department.

9. Prices shall be quoted in Indian Rupees only. All quoted rates should be for **new and unused** items unless and otherwise specified so.

10. The Technical specification of the Items given in the packages are as per the requirements of the curriculum of the related sectors/trades. Bidder may give equivalent / superior specification as manufactured along with the Technical details / catalogue / brochure etc.

11. Complete Tender Documents will be opened on the prescribed date and time in the presence of Bidders / representatives who choose to attend. The Bidders / representatives who are present shall sign a register evidencing their attendance.

12. The rates quoted by the bidder must be inclusive of all the charges (like – transportation, installation charges, delivery charges, inspection charges, training charges, charges for services, excise duty, customs duty etc.) except VAT. The VAT should be mentioned separately.

13. The tender matter including prices should be typed neatly; corrections/ overtyping in prices will not be accepted. However if correction/ overtyping is there, it should be attested by the tenderer with signature, date and their seal. Hand written and xerox tender will not be accepted.

14. The rates quoted by the bidder shall be fixed for the duration of the contract and shall not be subject to adjustment on any account.

15. Bids shall remain valid for 45 days after the deadline for submission of bids prescribed by the Purchaser. A bid valid for a shorter period shall be rejected by the Purchaser as non-responsive.

16. Tenderer should give all relevant particulars about every item, such as maker's name Country of Manufacture and Specifications and Price etc., "Specifications as given in catalogue" quoted in tender by the tenderer will not be accepted. Full specification must be written in tender positively and should also be supported by technical literature (Catalogue/ Broachers). Purchase Committee's approval/ decision will be final and binding.

17. Vague expression such as "complete with standard accessories" or "as per your specification" will not be accepted. The tenderers must specifically indicate all specification of the items and should mention clearly what item will be supplied under "accessories" with the Equipment/ Machinery in price schedule enclosed as Annexure-I. Any ambiguity or vagueness in tender for item concerned will be liable for rejection.

18. Makers stickers pasted on equipments/tools will not be accepted.

19. Catalogues/ brochures must be clear, specific and should reflect all the essential specifications of the products/ items, otherwise it will not be considered for comparison. It should be clearly indexed to reflect which item is related to which Catalogues/ brochures.

20. Supplies for any particular item in each package of the bid should be from one manufacturer only. Bids from agents offering supplies from different manufacturers, for the same item of the package in the bid, will be treated as rejected.

21. Contracts will be awarded only for those items which have minimum 3 valid rates.

22. The bids will be examined to determine whether they are complete, whether any computational errors have been made, whether required sureties have been furnished, whether the documents have been properly signed, and whether the bids are in order.

23. The decision of the Tender Committee will be final in the scrutiny of successful bidders.

24. The tenderer will have to submit samples on demand before the technical team at the purchaser end, in the prescribed time limit. In case the samples are not produced in the prescribed time it shall be open to the undersigned to forfeit Earnest Money Deposited by the tenderers. If the samples sent by the party are approved the same will be adjusted in regular supply and in the case of rejection, they will be returned back to the party at his cost.

25. Since this procurement is financed by a World Bank loan/ credit, bidders/ suppliers/ contractors are required to permit the bank to inspect their accounts and records and other documents related to the bid submission and contract performance and to have them audited by auditors appointed by the Bank.

26. The fact that the tenderer has signed the form “A” will mean that the tenderer has completely accepted Terms & Conditions of the tender and that the tenderer agrees to abide by these Terms & Conditions of the tender. No deviation from Terms & Conditions of the tender will be accepted under any circumstances. The Terms & Conditions of the tender and clause usually printed on the parties tenders or bills will not be binding on this department.

27. The contents of the form “A” should not be changed or amended otherwise will not be acceptable by this office.

28. The Principal, MITI Bilaspur, Chhattisgarh reserves the right at the time of Contract award to increase or decrease the quantity of goods originally specified in the Packages without any change in unit price or other terms and conditions.

29. **Contracts for procurement of packages will be awarded as per the priority and availability of budget.** Suppliers has to deliver and complete the task of installation strictly as per the specification of ordered items within stipulated time otherwise above contract may be treated as canceled without any prior notice.

30. **Before executing the awarded contract** the Supplier shall furnish Performance Security to the The Principal, MITI Bilaspur, Chhattisgarh for an **amount of 5%** of the contract value through a Bank Guarantee by a Scheduled bank, in the prescribed proforma as Annexure-IV, valid upto 60 days after the date of completion of performance obligations including warranty obligations. If the desired Performance Security is not deposited by the tenderer in the specific period, the Earnest Money already deposited with the tender shall be forfeited. In the event of any correction of defects or replacement of defective material during the warranty period, the warranty for the corrected/ replaced material shall be extended to a further period of 12 months and the Performance Bank Guarantee for proportionate value shall be extended 60 days over and above the extended warranty period. In the event of any contract amendment, the Supplier shall, within 21 days of receipt of such amendment, furnish the amendment to the Performance Security, rendering the same valid for the duration of the Contract, as amended for 60 days after the completion of performance obligations including warranty obligations.

31. If the Supplier fails to deliver any or all of the Goods or to perform the services within the stipulated delivery period(s) specified in the Contract, the Principal, MITI Bilaspur, Chhattisgarh shall, without prejudice to its other remedies under the Contract, forfeit the Bid Security and the order is liable to cancel.

32. If the supplier/ dealer fails to supply the items as per the specifications, items will not be received by the consignee and supplier/ dealer has to return it back on his/ her own cost. The supplier / dealer may supply the items of higher specifications (due to manufacturing obligations) if accepted by consignee after examination and testing.

33. The one time extension in the delivery period may be granted at the discretion of the undersigned. The liquidated damage at a rate of 2% per month subject to a ceiling of 10% of the contract price of the full cost of the tool/equipment/machine is liable to be charged for the extension of the delivery period. Once the maximum is reached, the Purchaser may consider termination of the Contract. Equipment received after the delivery period or dispatched after the delivery period mentioned in the order will also be subjected to this liquidated damage. Power to extend delivery period would remain reserved with Principal, MITI Bilaspur, Chhattisgarh.

34. Loading/ Unloading charges shall be borne by the supplier.

35. The undersigned may get, the items supplied by the successful tenderer, inspected on receipt of the same by such person or persons he deems fit and to reject such of these items as in his opinion do not come up to the specification. The decision of the under signed will be final in such cases. The rejected items will be returned on the tenderer's cost.

36. Warrantee/Guarantee should be for a period of 1 year minimum after delivery for the goods and its accessories. An undertaking shall be given by the bidder for "After Sales Services" (in case of authorized supplier/ dealer it should be given by the Manufacturer).

37. All the equipments shall be suitably protected, coated, covered or boxed and crated to prevent damage or deterioration during transit/ handling and storage at site till the time of installation/ commissioning. While packing all the materials, the limitations from the point of view of availability of railway wagon sizes, in India should be taken into account. The contractor shall be responsible for any loss or damage during transportation, handling and storage due to improper packing.

38. If any Machines/Equipments require training for users, then supplier/ dealer has to arrange such training program at the destinations free of cost. Installation and working trial is to be given at site at the expenses of supplier.

39. 100% payment will be released after the safe receipt of goods, as per the specifications given in purchase order & and after ensuring successful installation, commissioning and performance of supplied items etc.

40. It must be noted that normally all correspondence and transactions will be made only with the parties whose tenders have been accepted and not with anybody else.

41. The undersigned reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time without assigning any reason prior to contract award, without thereby incurring any liability to the affected bidder or bidders.

42. At any time prior to the deadline for submission of bids, the Purchaser may modify the bidding documents by amendment. All prospective bidders who have purchased the bidding documents will be notified of the amendment by uploading in the website **www.cg.gov.in** or by E-mail or by fax and will be binding on them.

43. If any document given by the bidder is found fake/manipulated, then the entire EMD deposited by the bidder in the tender will be forfeited without assigning any reason and such bidder will not be entitled for future biddings.

44. Notwithstanding the above, the Purchaser reserves the right to accept or reject any quotations and to cancel the bidding process and reject all quotations at any time prior to the award of contract.

The decision of the “Tender Committee” will be final & binding to all the bidders. Any dispute arising out of this tender or supply of any other matter will fall under the civil jurisdiction of Chhattisgarh High Court only.

Principal,
Model I.T.I. Koni - Bilaspur
Distt. Bialspur (C.G.)

ANNEXURE-I

Note:- Give Bid Price Item-wise in the following Proforma only. Any deviation will not be accepted.

PRICE SCHEDULE

Package No. ....., Package Name. .....

Name of Bidder .....……

(Amount in Rs)

Item Serial No.	Item Code	Specifications of items, which bidder offers	Name of accessories with specifications (if any)	Make/ Brand of Item	Manufacturer's Name	Catalogue / Brochure Page No. (as indexed by you)	Quantity of Item as per tender With unit	Cost per unit (Inclusive of all Charges) except VAT	VAT	Total value item wise (col. 9 + col. 10)	Total Value in Rs. (col. 8 x col. 11)
1	2	3	4	5	6	7	8	9	10	11	12
Total package Value (in words)											

Note:-

a. The bidding prices shall be for F.O.R. Destination.

b. Rates should be inclusive of all charges (such as charges for Inspection/ Demonstration/ Installation/ Commissioning/ Transportation/ Excise / Custom / Services charges etc. except VAT. VAT should be mentioned separately.

c. Conditional rates will not be accepted.

d. Comparison will be done item wise on the basis of total value as mentioned in column 11.

e. Rates will be finalized for purchase on the basis of individual items having 03 valid rates.

f. Specifications of the items which bidder offers as per the catalogue/ brochure/ Technical details etc. will be considered for comparison and selection. Incomplete details will not be considered for comparison.

g. Price Schedule given in other form will not be accepted and bid will be rejected.

ANNEXURE- II

FORM - A

(To be signed and returned along with the tender)

I/We (Full Name) …….....

Address …….....

…….....

have read the Terms and Conditions of the tender for the supply of various stores as per your tender notice for supply of Package of _____ for INDUSTRIAL TRAINING INSTITUTES ..... of Chhattisgarh under World Bank assisted VTIP Scheme in Shopping Mode due on _____ and I/we fully accept the Terms and Conditions of the Bid supplied to me / us with the Bidding Documents.

I/We also undertake to permit the World Bank to inspect our accounts and records and other documents related to the bid submission and contract performance and to have them audited by auditors appointed by the Bank.

It is further noted that if any manipulation is found at any stage, the tender/ Contract / Supply order shall be rejected and the Principal, MITI Bilspur, Chhattisgarh may take any action against me/us, as she/he deems appropriate.

Details of Earnest Money/bid security in the form of DD/BG (@ 03% of the total tendered value for the package(s) for which bid is submitted) :

(a) DD/BG no. ----------

(b) Value Rs. ----------

(c) Name of Bank ----------

Date: …....

Signature
(Name & full Address of the firm)

ANNEXURE- III

EARNEST MONEY / BID SECURITY FORM

To. The Principal, Industrial Training Institute
.....,
Distt.- ....., Chhattisgarh

WHEREAS ..... (Name of Supplier) hereinafter called "the Bidder" has undertaken, in pursuance of Tender No. ..... dated ..... 20..... to bid in the said tender.

AND WHEREAS it has been stipulated by you in the said Tender notification that the Supplier shall furnish you with a Bank Guarantee by a Scheduled bank for the sum specified therein as Earnest Money/ Bid Security for compliance with the Bidders obligations in accordance with the Tender terms and conditions.

AND WHEREAS we have agreed to give the Bidder a Guarantee:
THEREFORE WE hereby affirm that we are Guarantors and responsible to you, on behalf of the Bidder, up to a total of ..... (Amount of the Guarantee in Words and Figures) and we undertake to pay you, upon your first written demand declaring the Bidder to be in default under the Terms and Conditions and without cavil or argument, any sum or sums within the limit of ..... (Amount of Guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This guarantee is valid until the .....day of.....20.....

Signature and Seal of Guarantors
.....
.....
.....
Date.....20.....……
Address:.....
.....
.....

.....
(Signature of the Bank)

Note : The bank guarantee (submitted by Indian Bidder) should be executed on stamp paper in accordance with stamp Act. The stamp paper should be in the name of executing bank.

ANNEXURE- IV

PERFORMANCE SECURITY FORM

To. The Principal, Industrial Training Institute
.....,
Distt.- ....., Chhattisgarh

WHEREAS ..... (Name of Supplier) hereinafter called "the Supplier" has undertaken , in pursuance of Contract (Notification of Award) No. ..... dated ..... 20..... to supply..... (Description of Goods and Services) hereinafter called "the Contract".

AND WHEREAS it has been stipulated by you in the said Contract that the Supplier shall furnish you with a Bank Guarantee by a Scheduled bank for the sum specified therein as security for compliance with the Supplier's performance obligations in accordance with the Contract.

AND WHEREAS we have agreed to give the Supplier a Guarantee:
THEREFORE WE hereby affirm that we are Guarantors and responsible to you, on behalf of the Supplier, up to a total of ..... (Amount of the Guarantee in Words and Figures) and we undertake to pay you, upon your first written demand declaring the Supplier to be in default under the Contract and without cavil or argument, any sum or sums within the limit of ..... (Amount of Guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.
This guarantee is valid until the .....day of.....20.....

Signature and Seal of Guarantors
.....
.....
.....
Date.....20.....……
Address:.....
.....
.....

Note : The Bank Guarantee [submitted by Indian Supplier] should be executed on stamp paper in accordance with stamp paper act. The stamp paper should be in the name of executing bank.

ANNEXURE- V

On Non Judicial Stamp Paper of Rs. 50/-

निविदाकर्ता द्वारा Bid के साथ दिये जाने वाला
शपथ–पत्र

निविदाकर्ता फर्म मेसर्स ..... की ओर से मुझे/हमें अधिकृत किया गया है और मैं/हम निम्नलिखित कथन शपथपूर्वक कहता हूँ/कहते हैं कि :–

1. मैंने/हमने निविदा की सारी शर्तें ध्यानपूर्वक पढ़ी हैं और उनसे सहमत हैं तथा उन्हें मानने के लिये वचनबद्ध हैं।
2. मेरे/हमारे द्वारा संलग्न किये गये सभी दस्तावेज सही है और उनमें किसी प्रकार की कांट–छांट नहीं किया गया है एवं गलत जानकारी नहीं दी गई है।
3. मेरे/हमारे द्वारा कामर्शियल बिड में सामग्रियों के लिये जो स्पेशिफिकेशन दिया गया है और उनके सपोर्ट में जो भी संबंधित दस्तावेज, कैटलॉग/ब्रोशर्स आदि संलग्न किये गये हैं उनमें लिखा विवरण निर्माता द्वारा जारी किया गया है एवं मूल रूप में हैं और उनमें कोई फेरबदल या कांट–छांट नहीं किया गया है।
4. मेरे/हमारे द्वारा निर्माता से मुझे/हमें जारी आथॉराइजेशन प्रमाण पत्र जो कि बिड के साथ संलग्न किये गये हैं वे सही एवं मूल रूप में हैं और उनमें कोई फेरबदल नहीं किया गया है।
5. मैं/हम दिये गये क्रयादेशानुसार सामग्रियों को निर्धारित समय सीमा में स्पेशिफिकेशन के अनुसार सप्लाई करने के लिये बाध्य हैं। देर होने या सामग्रियों के स्पेशिफिकेशन में अन्तर होने पर मुझे/हमें दिये गये क्रयादेश को निरस्त किया जा सकता है एवं शासन को होने वाले नुकसान की भरपाई मेरे/हमारे द्वारा की जायेगी।
6. मेरे/हमारे द्वारा दी गई जानकारी असत्य पाये जाने पर मुझे/हमें एवं हमारी फर्म को निविदा में भाग लेने से वंचित किया जा सकता है।

दिनांक .....

हस्ताक्षर : .....

नाम : .....

धारित पद : .....

फर्म का नाम : .....
(सील सहित)

ANNEXURE- VI

SECTION XII

MANUFACTURERS' AUTHORIZATION FORM*

No. _____ Dated

To

Principal / Head of the Institution
Government MITIs
Under Directorate of Employment & Training
Chhattisgarh

Dear Sir:

Tender no _____ Dated _____

We _____ who are established and reputable manufacturers of *(name and description of goods offered)* having factories at _____ (*address of factory)* do hereby authorize M/s _____ *(Name and address of Agent)* to submit a bid, and sign the contract with you for the goods manufactured by us against the above IFB.

No company or firm or individual other than M/s _____ are authorized to bid, and conclude the contract for the above goods manufactured by us, against this specific Tender. *(This para should be deleted in simple items where manufacturers sell the product through different stockists.)*

Yours faithfully,

(Name)

(Name of manufacturers)

Note: This letter of authority should be on the letterhead of the manufacturer and should be signed by a person competent and having the power of attorney to legally bind the manufacturer. It should be included by the Bidder in its bid.

* Modify this format suitably in case where manufacturer's warranty and guarantee are not applicable for the items for which bids are invited.

Schedule of Requirements

PACKAGE NO. - 01
PACKAGE NAME :- MOVING COIL PYROMETER

S.N.	Details of Specification	Bilaspur (B) IM	Bilaspur (A) IMA	Total
1	**Moving Coil Pyrometer** callibtared from 600 to 1400 degree centigrate Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories & supporting CD's	2		**2**

Schedule of Requirements

PACKAGE NO. - 02

PACKAGE NAME :- OPTICAL PYROMETER

S.N.	Details of Specification	Bilaspur (B)	Bilaspur (A)	Total
		IM	IMA	
1	**Optical pyrometer** Measurement Range : 800 °C to 1500 °C Spectral sensitivity : 0.65µm Measurement Accuracy : ± 1% FS Power Supply : Re-chargeable 8x1.2V, AA Accessories : Battery Charger, Carrying Case Measuring distance : > 600 mm Object to be measured : > 2 mm dia Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories & supporting CD's		5	**5**

Schedule of Requirements

PACKAGE NO. - 03

PACKAGE NAME :- RADIATION PYROMETER

S.N.	Details of Specification	Bilaspur (B)	Bilaspur (A)	Total
		IM	IMA	
1	**Radiation pyrometer** **Technical Specification:** - **Range** : 0 to 1000 Deg C (Scaleable) **Optical Resolution** : 10:1 **Response Time** : 20 mSec **Ambient Temp** : 120 Deg C (sensing head and cable) **Output** : Scaleable 4-20mA, 0-20mA, 0-10V, 0-5V, J, K, R or S thermocouple, 0-5V head ambient output. **Power** : 8-32 V DC **Ambient Temp** : 65 Deg C The sensing head with 1 mtr cable and mounting nut for the head. **Accessories** : 1. Adjestable Bracket for adjusting sensing head for aiming sensor 2. Air Purge jacket for keeping Lens Clan from dust, 3. TEMPERATURE INDICATOR CUM CONTROLLER 48x96 or Panel Meter with Universal inputs from any 0-5V, 4-20 mA Thermocouple Type J, K, device. The controller Provides Power to above sensor, The Monitor Retransmits 4-20mA, Built in 2 set points and Relays Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories & supporting CD's	2	2	**4**

PACKAGE NO. - 04

PACKAGE NAME :- HUMIDITY SENSORS, THERMAL RELAYS & DIGITAL TEMPERATURE INDICATOR

S.N.	Details of Specification	Bilaspur (B)	Bilaspur (A)	Total
		IM	IMA	
1	**Humidity sensor** **Operating Voltage** : DC 13,5 to 35V **Sensing element, temperature** : DC 4…20 mA **Measuring range, temperature** : 0 to 50 °C - 35 to 35 °C -40 to 70 °C **Measurement range humidity** : 0 to 100 % r.h. Measurement accuracy Humidity at 0 to 100 % r.h. and 23 °C ±2 % r.h. **Temperature, at 15...35 °C** : ±0.6 K **Temperature, at 40...70 °C** : ±0.8 K **Time constant : Humidity** : <20 s **Temperature in with 2 m/s moved air** : <3.5 min **Immersion length** : 90...206 mm **Connection** : Electrical Screw terminals **Type of fixing** : Flange **Signal output temperature** : DC 4 to 20 mA **Signal output humidity** : DC 4 to 20 mA **Display** : LCD **Degree of protection** : IP65 Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories & supporting CD's	2	5	**7**
2	**Thermal Relays** - Manual Reset - Sealable Flats - Prewiring Kit - Thermal Block For Seprate Mounting	8		**8**

3	**Digital Temperature Indicator with controller** - **No. of Channels - 8** **Input Sensors** **:** 8x RTD Pt-100 **System** : Three wire **Display** : Dual Channel Number and it's corresponding Temperature. **Indication** : 4-digit seven-segment display (Temperature) 1-digit seven-segment display (Channel No.) **Display Height** : 1/2". **Display Range** : -999 to + 9999. **Calibration std** : As per DIN 43760. Accuracy : ±0.25%. Control output : Four Relay change-over contacts. (freely assignable to all eight channels). Contact Rating : 10 Ampere @ 230 V AC. Control Logic : High-Low (configurable). Settings : By Membrance Switch-pad. Features : Settings for scale Calibration, Decimal, Relay Set-points, Hysteresis, Control Logic, Channel Skip, Hold, Scan Rate. Power Supply : 90 to 270 V AC, 50 Hz. Dimensions : 96X96X120 mm (WxHxD). Cutout : 92 x 92 mm. Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories & supporting CD's	2		**2**

Model Industrial Training Institute Koni - Bilaspur (C.G.)

Schedule of Requirements

PACKAGE NO. - 05

PACKAGE NAME :- LIQUID OR GAS FILLED IN STEEL THERMOMETER, RTDS(RESISTANCE TEMPERATURE DETECTORS)

S.N.	Details of Specification	Bilaspur (B) IM	Bilaspur (A) IMA	Total
1	**Liquid or Gas filled in steel thermometer** **Description**: optional. Bulb is 1-B Liquid-filled systems with case compensation for ambient temperatures. Also with direct drive bourdon coil. 5-B Mercury filled systems for ranges over 500°F. External calibration screw on back of case. Accuracy is within one scale division. Stem Lengths: Standard Lengths from o Analog Technology Type: Liquid or Gas Actuated (Vapor-Tension or Bellows) Instruction manual & Operation manual - English with manufacturer test certificate	2	4	**6**
2	**Liquid or Gas filled thermostat (Digital)** Temperature Measurement Range Forehead/Ear Mode: 34 0C~ 42.2 0C (93.2 0F ~ 108 0F), Scan Mode: -22 0C~80 0C (-7.6 0F~ 176 0F) Operating Temperature Range 10 0C~40 0C (50 0F~ 104 0F) Storage Temperature Range -20 0C~50 0C (-4 0F~ 122 0F) Battery One Lithium cell battery (CR2032 x 1 pc.) Forehead Mode: Accuracy + 0.2 0C (0.4 0F) during 36 0C~39 0C (96.8 0F~102 0F), + 0.3 0C (0.5 0F) for other range. Ear Mode: Accuracy + 0.2 0C (0.4 0F) during 35.5 0C~42 0C (95.9 0F~107.6 0F), +0.3 0C (0.5 0F) for other range. Scanning Mode: Accuracy + 0.3 0C (0.5 0F) during 22 0C~42.2 0C (71.6 0F~108 0F), others+ 4% or + 2 0C (4 0F) whichever is greater. Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories & supporting CD's		4	**4**

3	**RTDs(Resistance Temperature Detectors)** Temperature Range - Sheath Temp. Range Code Temp. Range Material A 260°C (500°F) 316 SS B 925°C (1700°F) Inconel 600 C 480°C (900°F) 316 SS D 650°C (1200°F) Inconel 600 Consult factory for temperature ranges that exceed the above limits. Temperature Range - Element Temp. Range Code Min. Temp. Max. Temp A -50°C (-58°F) 260°C 500°F) B -200°C (-328°F) 925°C (1700°F) C -100°C (-148°F) 480°C (900°F) D -200°C (-328°F) 650°C (1200°F) Consult factory for temperature ranges that exceed the above limits. Instruction manual & Operation manual - English with manufacturer test certificate		5	**5**
4	**Thermocouples for J type Measurement** Alloy of +ve wire - Iron (100% Fe) Alloy of -ve wire - Constantan (55% Cu - 45% Ni) Temperature Range - 0 to 750 Deg C 32 to 1380 Deg F		6	**6**
5	**Thermocouples for K ype Measurement** Alloy of +ve wire - Chromel (90% Ni - 10% Cr) Alloy of -ve wire - Alumel (96% Ni - 2% Mn - 2% Al) Temperature Range - 500 to 1250 Deg C -330 to 2280 Deg F		6	**6**
6	**Thermocouples for R type Measurement** Alloy of +ve wire - Platinum 13% Rhodium (87% Pt - 13% Rh) Alloy of -ve wire - Platinum(100% Pt) Temperature Range - 0 to 1450 Deg C 32 to 2640 Deg F		6	**6**
7	**Thermocouples for S type Measurement** Alloy of +ve wire - Platinum 10% Rhodium(90% Pt - 10% Rh) Alloy of -ve wire - Platinum (100% Pt) Temperature Range - 0 to 1450 Deg C 32 to 2640 Deg F		6	**6**
8	**Thermocouples for B type Measurement** Alloy of +ve wire - Platinum 30% Rhodium(70% Pt - 30% Rh) Alloy of -ve wire - Platinum 6% Rhodium(94% Pt - 6% Rh) Temperature Range - 0 to 1700 Deg C 32 to 3100 Deg F		6	**6**

9	**Thermometers 0-100 deg c Alchohal Type** Measuring Range - 0–100 :1% Length in mm. - 450 reference temperature 15°C and 20°C. Instruction manual & Operation manual - English with manufacturer test certificate		5	**5**
10	**Vapour filled in steel thermometer** Thermometer Dial Sizes - 63, 80, 100, 160 mm All Stainless Steel Wetted Parts Ranges -40 to 100°F through 32° to 1100°F **Thermometer Type:** Dial Thermometer **Technology Type:** Liquid or Gas Actuated (Vapor-Tension or Bellows) **Scale:** Fahrenheit **Analog Technology Type:** Liquid or Gas Actuated (Vapor-Tension or Bellows) Instruction manual & Operation manual - English with manufacturer test certificate		4	**4**
11	**Bimetal type thermometer (Digital)** **Ranges:** -20°C to 60°C **Accuracy:** ±2% F.S.D. Instruction manual & Operation manual - English with manufacturer test certificate		4	**4**

Schedule of Requirements

PACKAGE NO. 6

PACKAGE NAME :- MOTORISED PLANNER AND GROOVING MACHINE

S.N.	Details of Specification	Bilaspur (B)	Bilaspur (A)	Total
		IM	IMA	
1	**Motorised planner and grooving machine** with 4' steel bed adjustable with all attachment and accessories (For carpentary workshop) **Specification :** **Planning surface width** : 13" **Max thickness of wood** : 7" **Length thickness Table** : 26" **Length if surface Table** : 48" **Circular Saw Table Size** : 12"x24" **Up and Down Movement of Circular Saw Table** : 3" **Rabating Capacity** : 1/2" **No of blades** : 3 **Power required 1440RPM** : 3HP **Cutter Block** : 4000RPM **Circular Saw Dia** : 12" Instruction manual & Operation manual - English with manufacturer test certificate	2		**2**

Schedule of Requirements

PACKAGE NO. - 07

PACKAGE NAME :-I/P CONVERTER & P/I CONVERTER

S.N.	Details of Specification	Bilaspur (B)	Bilaspur (A)	Total
		IM	IMA	
1	**I/P Converter & P/I Converter** **Accuracy**: 0.5% FS. Supply Sensitivity: 0.025% span per % supply pressure change. **Zero Adjustment:** 5% FS. Span Adjustment: 20% FS Operating Temp: -20 to 70°C (-5 to 160°F). Compensated Temp: -10 to 60°C (15 to 140°F). Thermal Effects: <0.1%/°C over operating range. Input Resistance: <300 Ω. Media: Oil-free, clean, dry air filtered to 25 µm. Recommended Supply Pressure: 25 to 30 psig (filtered air) Max Supply Pressure: 80 psig (for IP210-X120: 135 psi) Min Supply Pressure: 10 psi above maximum output pressure Air Consumption (Leakage): 0.03 scfm Flow Rate: 10 scfm ≤60 psi; 0.06 <60 psi Response Time: <30 psi: less than 0.5 s (10 to 90% step) ≥30 psi: 2 s Failure Mode: Upon electrical failure, the signal pressure falls to bleed pressure Pressure Port: ¼ FNPT Electrical Connection: with screw terminals included Housing: IP65 rated, epoxy-painted zinc die castings Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories & supporting CD's		2 no. each	2 no. each

PACKAGE NO. - 08
VARIOUS TYPES OF PRESSURE GAUGE

S.N.	Details of Specification	Bilaspur (B) IM	Bilaspur (A) IMA	Total
1	**Bourdon type pressure gauges** of various ranges 0-28kg/ square cm Dial Size : 100 mm Ranges 0-28kg/ square cm Standard Accuracy ±1% of F.S.D Sensing Element Bourdon Tube Bourdon Tube Material Stainless Steel (AISI 316 SS) Connection 1/2" BSP (M) Joint Between Bourdon Tube Connection- Argon Arc welded Movement Stainless Steel (AISI 304 SS) Socket SS 316 Entry Bottom Blow out Disc will be provided Pointer Micro Zero adjustable Window Glass Toughened Case & Bezel AISI 304 SS/ Alumininum Over range 130% of FSD Instruction manual & Operation manual - English with manufacturer test certificate	1	1	**2**
2	**Bourdon type pressure gauges** of various ranges 0-40kg/ square cm Dial Size : 100 mm (4") Ranges 0-28kg/square cm Standard Accuracy ±1% of F.S.D Sensing Element Bourdon Tube Bourdon Tube Material Stainless Steel (AISI 316 SS) Connection 1/2" BSP (M) Joint Between Bourdon Tube Connection- Argon Arc welded Movement Stainless Steel (AISI 304 SS) Socket SS 316 Entry Bottom Blow out Disc will be provided Pointer Micro Zero adjustable Window Glass Toughened Case & Bezel AISI 304 SS/ Alumininum Over range 130% of FSD Instruction manual & Operation manual - English with manufacturer test certificate	1	1	**2**

3	**Bourdon type pressure gauges** of various ranges 0-70kg/ square cm Dial Size : 100 mm (4") Ranges 0-28kg/ square cm Standard Accuracy ±1% of F.S.D Sensing Element Bourdon Tube Bourdon Tube Material Stainless Steel (AISI 316 SS) Connection 1/2" BSP (M) Joint Between Bourdon Tube Connection- Argon Arc welded Movement Stainless Steel (AISI 304 SS) Socket SS 316 Entry Bottom Blow out Disc will be provided Pointer Micro Zero adjustable Window Glass Toughened Case & Bezel AISI 304 SS/ Alumininum Over range 130% of FSD Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories	1	1	**2**
4	**Bourdon type pressure gauges** of various ranges 0-100kg/ square cm Dial Size : 100 mm (4") Ranges 0-28kg/ square cm Standard Accuracy ±1% of F.S.D Sensing Element Bourdon Tube Bourdon Tube Material Stainless Steel (AISI 316 SS) Connection 1/2" BSP (M) Joint Between Bourdon Tube Connection- Argon Arc welded Movement Stainless Steel (AISI 304 SS) Socket SS 316 Entry Bottom Blow out Disc will be provided Pointer Micro Zero adjustable Window Glass Toughened Case & Bezel AISI 304 SS/ Alumininum Over range 130% of FSD Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories	1	1	**2**

5	**Bourdon type pressure gauges** of various ranges 0-150kg / square cm Dial Size : 100 mm (4") Ranges 0-28kg/ square cm Standard Accuracy ±1% of F.S.D Sensing Element Bourdon Tube Bourdon Tube Material Stainless Steel (AISI 316 SS) Connection 1/2" BSP (M) Joint Between Bourdon Tube Connection- Argon Arc welded Movement Stainless Steel (AISI 304 SS) Socket SS 316 Entry Bottom Blow out Disc will be provided Pointer Micro Zero adjustable Window Glass Toughened Case & Bezel AISI 304 SS/ Alumininum Over range 130% of FSD Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories	0	2	**2**
6	**Diaphragm type pressure measurement system** **Type** **:** Smart Range : 0.04 to 4 bar **Max. Perm. Test Pressure** : 10 bar **Power Supply** : 10.5 to 45 V DC **Working temperature** : 85 Deg C max **Output** : 4-20mA, HART, 2-Wire system **Stability** : 0.25% every 5 years **Accuracy** : 0.075% of span **Rangebility** : 100:1 **Zero -Span adjustment** : locally from Transmitter and with the help of Communicator as well Damping time: adjustable...0 to 100 sec **Overload Limit** : better than 1.5x of max span Built in Digital indicator with LCD Displays and selectable engineering utits at site without Hart communicator Diagnosis : self Diagnosis type With : built-in drain and vent plug	4		**4**

	Flange material : SS316 **Protection : IP65** **Measuring cell : filling sillicon oil, normal cleaning** **Wetted parts material : Stainless steel** **Process connection : Female Thread 1/2-14 NPT** **Housing : Dia cast Aluminium** **Electrical connection : Cable gland 1/2 -14 NPT** **Without Explosion Protection** **With Visible Digital indicator** **With Stainless Steel Mounting Bracket 2"** Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories & supporting CD's			
7	**Capsule type pressure measurement system.** Span : 0 to 6 bar g Max. Overload limit : 15 bar g Power Supply : 7 to 33 V DC Working temperature : 100 Deg C max Output : 4-20 mA, two wire system Accuracy : 0.25% of full scale value Protection : IP65 Process Connection : 1/2" - 14 NPT female Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories & supporting CD's	4		**4**
8	**Pressure regulator with filter** Regulator Capacity 0-150Kg Material Brass Body for multipurpose use Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories	4		**4**

Model Industrial Training Institute Koni - Bilaspur (C.G.)

Schedule of Requirements

PACKAGE NO. - 09

PACKAGE NAME :- ELECTROMAGNETIC FLOW METERS

S.N.	Details of Specification	Bilaspur (B)	Bilaspur (A)	Total
		IM	IMA	

1	**Electromagnetic flow meter** **1. Flow Sensor** **Meter Size :** 1" **Ambient Temperature** : Sensor -20 o +70 °C With Compact transmitter -20 …+60 °C (-4 …+140 °F) **Design** : Housing and flanges Carbon steel ASTM A 105, with corrosion resistant two-component epoxy coating (min. 150 !m) Corrosivity category C4, according to ISO 12944-2 **Measuring pipe** : Stainless steel AISI 304/1.4301 **Electrode** : Hastelloy C **Grounding electrode** : Hastelloy C **Terminal box** : Fiber glass reinforced polyamide **2. Flow Transmitter :** **Measuring Principle** : Electromagnetic with pulsed constant field **Empty pipe** : Stainless steel AISI 304/1.4301 **Excitation Frequency** : Depent on sensor size **Electrode input impedance** : >1x1014 **Digital Input** : 11 to 30 V DC, Ri = 4.4 K **Signal range** : 0 to 20 mA or 4 to 20 mA **Load** : <800 **Time constant** : 0.1 to 30 s, adjustable **Frequency** : 0...10 kHz, 50% duty cycle (uni/bidirectional) **Pulse (active)** : 24 V DC, 30 mA, 1 K! Ri! 10 K, short-circuit protected (power supplied from Flowmeter) **Pulse (passive)** : 3...30 V DC, max. 110 mA, 200 ! Ri! 10 K (powered from connected equipment) **Time constant** : 0.1 ...30 s, adjustable **Time constant** : Changeover relay, same as current output **Load** : 42 V AC/2 A, 24 V DC/1 A **Galvanic isolation** : All inputs and outputs are Galvanically isolated **Accuracy** : 0.4 % ±1 mm/s **Operation** : Display version: -20 ...+60 °C (-4...+140 °F) **Blind version** : -20 ...+60 °C (-4...+140 °F) **Totalizer** : Two eight-digit counters for forward, net or reverse flow **With** : SENSER PROM TECHNOLOGY **Display** : Background illumination with alphanumeric text, 3x20 characters to indicate flow rate, totalized values, settings and faults; Reverse flow indicated by negative sign Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories & supporting CD's	2	2	4

Model Industrial Training Institute Koni - Bilaspur (C.G.)

Schedule of Requirements

PACKAGE NO. - 10

PACKAGE NAME :- POSITIVE DISPLACEMENT FLOW METER

S.N.	Details of Specification	Bilaspur (B)	Bilaspur (A)	Total
		IM	IMA	

1	**Quantity flow meters/Positive displacement flow meters** with Remote Display for water Application **Flow meter size :** DN 06 (1/4") **Calibrated Flow Range** : 03-60 LPH **Service** : Water **Accuracy** : Better than ±0.5% of reading **Maximum Operating Temperature** : 150 °C **Maximum Operating Pressure** : 15 Kg/cm2 **Built in Filter** : SS Wire Mesh, 149 Micron, Reusable type **Material of Construction** : Body - SS 316 Seals - Teflon Piston - PEEK **End Connection** : 1/4" ANSI 150 Flange **Output** : Pulse (Frequency) **Transmitter Enclosure** : Weatherproof Remote Flow Indicator/ Totalizer **Type** : 6 digit Red LED Seven Segment : Totaliser - 6 Digit 99999.9 Liters Rate - 4 Digit999.9 LPM **Input** : Pulse from flow meter **Output** : 4-20 mA, Proportional to Rate of Flow **Operating Temperature** : 60 °C Maximum **Reset Option** : Resettable/ Non- Resettable option Programmable **Mounting** : Panel Mounted **Panel Cutout** : 68x68 mm **Power Supply** : 230 V AC, 50 Hz, Single Phase Instruction manual & O+B248peration manual - English with manufacturer test certificate with standered accessories & supporting CD's		2	2

Model Industrial Training Institute Koni - Bilaspur (C.G.)

Schedule of Requirements

PACKAGE NO. - 11

PACKAGE NAME :- TURBINE FLOW METERS

S.N.	Details of Specification	Bilaspur (B)	Bilaspur (A)	Total
		IM	IMA	

1	**Turbine flow meter** Meter Performance:- • Sizes - 2" o Linearity: ± 0.25% o Repeatability: ± 0.02% **Specifications:-** • Type: 2-wire reluctance • Resistance: 600 - 900 Ohms • Inductance: 250 mH max • Output: Sinusoidal 40mV p-p minimum @minimum flow with preamplifier load • Optional: 2 pick-off coils Instruction manual & O+B248peration manual - English with manufacturer test certificate with standered accessories & supporting CD's		2	2

Model Industrial Training Institute Koni - Bilaspur (C.G.)

Schedule of Requirements

PACKAGE NO. - 12

PACKAGE NAME :- ULTRASONIC FLOW METER

S.N.	Details of Specification	Bilaspur (B)	Bilaspur (A)	Total
		IM	IMA	

1	**Ultrasonic flow meter** **Single Channel version with wide beam technology** **Flow Range** : ±12 m/s (± 40 ft/s), bi-directional **Flow sensitivity** : 0.00003 m/s (0.001 ft/s) flow rate independent **Totalizer hold** : Optically isolated diode **Input Voltage** : 100 to 240 V AC **Totalizer Reset** : Optically isolated diode **Output Current** : 4 to 20 mA (Isolated) **Externally powered** : 10 to 30 V DC **Relay** : Programmable Form C 250 mA 30 V DC 3 V DC max **Pulse rate** : optically isolated transistor 10 mA, 30 V DC max **Accuracy** : ± 1.0%...2.0% of flow. **Batch repeatability** : ± 0.15 % **Zero Drift** : 0.1 % of rate; 0.0003 m/s (0.001 ft/s) **Data refresh rate** : 5 Hz **Operating temperature :** -10 to + 50 °C (14 to +122°F) **Storage Temperature :** -20 to _60 °C (-4 to +140 °F) **With** : Automatic zero dribt correction (Zeromatic Path) **Dimensions (WxHxD)** : 175x235x92 mm **Enclosure material** : Polycarabonate Certificates and approvals **Unclassfield locations** : UL, **Classified locations** : CE, C-TICK, W/Display, Keypad, 2x totalizer i/p, 1x4_20mA, 1xspst relay, 1x I/O configurations pulse **Sensor** : Transducer : with track mount pipe sizes from 20mm to 120mm Recommended outer diameter range : 0.75 inch (19mm) to 5 inch (127 mm) **Temperature** : -40F to 250F (-40C to 121 C) **Sensor Cable** : PVC Jacket, Length - 6 meters (50 Feet) Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories & supporting CD's	1	1	2

Model Industrial Training Institute Koni - Bilaspur (C.G.)

Schedule of Requirements

PACKAGE NO. - 13

PACKAGE NAME :- VORTEX FLOW METER

S.N.	Details of Specification	Bilaspur (B)	Bilaspur (A)	Total
		IM	IMA	

1	**Vortex flow meter** **Output** : 4-20 MA with HART **Foundation Fieldbus Interface** **Pulse Scalable** **Welted Parts** - Stainless Steel - 316/316L **Connection** : Flanged ANSI 150 **Line Size** : 1/2" **Supply** : 17 to 30 V DC with HART **Local Display** : Provided Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories & supporting CD's	2		2

Model Industrial Training Institute Koni - Bilaspur (C.G.)

Schedule of Requirements

PACKAGE NO. - 14

PACKAGE NAME :- ROTAMETER

S.N.	Details of Specification	Bilaspur (B)	Bilaspur (A)	Total
		IM	IMA	

1	**Rotameter** The standard mounting id 1/4" BSP rear **Range :** 0.6 to 160 LPH of water of ambient tem. 10 to 5000 NLPH of air at NTP Accuracy ± 2 FSD **Built in needle valve** **DP regulator** **Body Material : Acrylic type** Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories	2	2	4

Model Industrial Training Institute Koni - Bilaspur (C.G.)

Schedule of Requirements

PACKAGE NO. - 15

PACKAGE NAME :- QUANTITY FLOW METER

S.N.	Details of Specification	Bilaspur (B)	Bilaspur (A)	Total

		IM	IMA	
1	**Quantity flow meter** **Battery Operated Electromagnetic Flow meter** **Technical specification:** **Line Size** : 2" **Max Media Temp** : 70 Deg C **Enclousure** : SS top housing (AISI 316) and coated brass bottom. **Pressure** : 0.01 to 40 Bar for line size <= 600 mm 0.01 to 16 bar for line size > 600 mm **Min Conductivity of medium** : 5 micro Siemens/cm **Electrode** : Hastelloy **Lining** : EPDM Lining **Communication** : data acquisition through Infrared Adapter cable and in Flow tool Software. **Data logging** : Daily, weekly or monthly logging **Accuracy** : ± 0.2% of rate ± 2 mm/s **Conductivity Clean water** : >20 µs/cm **Ambient Temperaure** : -20 to + 60 °C **Media Temperature** : 0 to 70 °C (-40 to + 158 °F) **Certificates and approvals** **Calibration (standard)** : 2x25 % and 2 x 90% **Excitation frequency** : 1/15 Hz Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories & supporting CD's	2	2	4

Model Industrial Training Institute Koni - Bilaspur (C.G.)

Schedule of Requirements

PACKAGE NO. - 16

PACKAGE NAME :- FLOW INDICATION/ TOTALIZERS (U BASED)

S.N.	Details of Specification	Bilaspur (B)	Bilaspur (A)	Total
		IM	IMA	

1	**Flow indication / totalizers (u based)** 4 digit flow rate indicator * 6 digit flow totalizer * Inputs: 0 - 20 mA, 0 - 10 V, ± 50mV, 0 - 10 KHz * Four setpoints assignable to either flow rate or totalizer * Programmable flow rate, setpoints and relay modes, etc. Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories & supporting CD's		2	2

Model Industrial Training Institute Koni - Bilaspur (C.G.)

Schedule of Requirements

PACKAGE NO. - 17

PACKAGE NAME :- AF POWER OUT PUT METER , DISTORTION FACTOR METER & PULSE GENERATOR

S.N.	Details of Specification	Bilaspur (B)	Bilaspur (A)	Total

		IM	IMA	
1	**AF Power Out put meter** -Specification * Wattage Range : Upto 100W * Impedance : 50 ohm - 1 k. 10k ohms (discrete 15 steps) * Load/Impedance : Internal / External * Rating : For Internal Loads, 5% precision resistors are provided with continuous rating at half the peak load and intermittent rating at peak loads. * Frequency Range : 20 Hz to 20KHz ±1 dB (refered to 1KHz) * Power Accuracy : For Input ½ FSD to FSD to ½ FSD : 6% of reading when measurement at 1KHz at Normal ambient temperature (15º C to 35ºC). * Impedance Accuracy: ±3% at 1KHz ±5% from 20 Hz to 20KHz * General Power : 230V + 10% 50Hz AC Supply Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories	4		4
2	**Distortion factor meter** Specification * Frequency Range : 20 Hz to 20 KHz in 4 ranges * Accuracy : ± 3% * Distortion : 0.1% to 100% in 7 ranges of 1-3-10 sequence Impedance : 1M ohm in parallel with 25 PF Voltmeter Characteristics Range * Range : 3 m volt to 300 V PSD in 7 range * Accuracy : + 2% Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories	4		4
3	**Digital Frequency counters** Indication Eight digit LED display The above frequency can be continuously varied from zero to full value and is continuously monitored by Digital Panel meter. Input frequency Range Reads up to 2.4GHz with and as low as 0.01 Hz Input impedance 1.0 Mega ohms Accuracy Time Base Error X Frequency + 1 digit Input Sensitivity 30m Vrms up to 40MHz 50m Vrms for frequency between 40MHz and 2.4GHz Maximum Input Signal 3 volts peak to peak in channel A 30 volts peak to peak in channel B Gate Period 100 msec to 10 sec Power Required 220 V / 50 Hz + - 10 % Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories		5	5
4	**Logic Probes**-Specification * Input signal frequency : 50MHz. * Minimum detectable pulse width : 10nSec. * Operating voltage : 4V - 18V DC * TTL and CMOS circuit checking capability. * Operating manual and other accessories as required. Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories		11	11

5	**Pulse Generator** 0.1Hz to 10MHz frequency range Independent control of pulse frequency, width and delay 50ns minimum pulse width Squarewave, double pulse & delayed pulse modes Free-run, gated and triggered modes 50 Ohm output: 0.1V to 10V amplitude TTL/CMOS and Sync outputs Low-cost Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories		5	5

Model Industrial Training Institute Koni - Bilaspur (C.G.)

Schedule of Requirements

PACKAGE NO. - 18

PACKAGE NAME :- PLASTIC INJECTION MOULDING MACHINE

S.N.	Details of Specification	Bilaspur (B)	Bilaspur (A)	Total
		IM	IMA	
	Small Plastic Injection Molding Machine Vertical hydraulic clamping system. Suitable for insertion molding. Available with program controller Applied for general plastic like PVC Applicable for injection of power cord plug, electric plugs, electronic parts, auto parts, silk flowers & insertion molding. Description Type /Unit Screw Diameter mm 22 -25 Injection Capacity g 40 -48 Injection Pressure kg/cm2 1650-1480 Screw Speed r.p.m. 10-150 Injection Rate cm/sec 30-35			

1	platen Size mm 440/280 Between Two Tie Bar mm 265 Max. Opening Daylight mm 260/220 Min. Mold Thickness mm 80/40 Opening Stroke mm 180 Ejectors Stroke mm 35 Max. Pump Pressure kg/cm2 110 Pump Motor HP/KW 3/2.5 Heater Capacity KW 2.4 Total Wattage KW 4.6 Oil Tank Capacity L 80 Machine Weight kg 900 Machine Size (LxWxH) cm 120x90x 230 Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories	1		1

Model Industrial Training Institute Koni - Bilaspur (C.G.)

Schedule of Requirements

PACKAGE NO. - 19

PACKAGE NAME :- THERMAL DISPERSION GAS AND LIQUID FLOW METERS

S.N.	Details of Specification	Bilaspur (B)	Bilaspur (A)	Total
		IM	IMA	

	Thermal dispersion gas and liquid flow meters **Technical Specification :** **Service :** measurement of gas flow Clamp on Ultrasonic Flow Meter **Flow range :** ±30 m/s (± 100 ft/s), bidirectional **Minimum pressure** : 7 to 10 bar (100 to 145 psi), typical (gas composition and application dependent) plastic pipes support operation at atmospheric pressure) **Accuracy** : 0.5% to 1 % of actual volume reading (higher accuracy is pipe condition and flow profile dependent) Integral 33 button keypad **Degree of protection** : IP65 **Gas temperature** : -40 to + 60 °C (-40 to +140 °F) (for higher temperatures consult factory) **Display** : 128 x 240 pixel LCD with backlight Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories & supporting CD's			
1	**Technical Specification** **Service :** Measurement of Liquid Flow Clamp on Ultrasonic Flow Meter **No. of Channel :** Single Channel **Type** : Ultrasonic Flow Meter, Clamp on type with wide beam technology **Mounting** : Clamp on for temprory installation **Flow Range** : +/-40 f/s /+**/**-12 m/s **Rangeability** : 200:01 **Accuracy** : + 0.5% of Full Scale for velocities greater than 1 ft/sec (0.3 m/sec) 0.0015...0.006 m/sec for Velocities less than 0.3/sec or 1 ft/sec, **Repeatability** : 0.15% of flow **Ambient Temperature** : 60 deg C Max **Function** : Transmit & Indicate **Type** : Micro Processor Based Flow Transmitter **Power Supply** : Battery Operated **Display** : LCD Display with Backlight **with** : Automatic zero dribt correction (zeromatic path) **Parameters Displayed : Volumetric Flow, Totalized Flow, Flow Velocity**		2	2

	Keypads : keypads buttons with tactile feedback **Field bus compliance output : RS232** **Battery Type and operating hours : NiMH Batterry with a minimum operating time of 7 hours** **Hazardous Area Classification : Not available** **Enclosure Class : IP 67** **Enclosure Material : Polyster Fiberglass** **Test Facilities Graph Screen : Signal Graph Screen mode** **Transducers : with mounting frame and hardware up to 17" (432mm).** **Outer diameter range : 2 inch (51 mm) to 12 inch (305 mm),** **Temperature : -40 F to 250 F (-40C to 121 C)** Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories & supporting CD's			

Model Industrial Training Institute Koni - Bilaspur (C.G.)

Schedule of Requirements

PACKAGE -20
MOTHER BOARD & SMPS TRAINER KIT

S.N.	Details of Specification	Bilaspur (B)	Bilaspur (A)	Total
		IM	IMA	
1	**Mother Board** with integrated sound and display with processor INTEL i3 and RAM 2GB	2		2
2	**SMPS trainer kit** 1. Based on IC 494 as PWM. 2. Input Voltage : 170V to 260V AC. 50Hz. 3. Output Voltage : +5V, -5V, +12V, -12V, Power good signal voltage/as required in computers. 4. Wattage (I/P) : 150 Watt (approx.) 5. IC 494 used as PWM on socket. 6. Six pairs of Output Lead are provided. 7. Trainer assembled on enlarged PCB. 8. Fan cooling facility provided. - Good Quality, reliable terminal/sockets are provided at appropriate places on panel for connections/ observation of waveforms. Instruction manual & Operation manual - English with manufacturer test certificate with standered accessories		5	5