



**NATIONAL CENTRE OF EXCELLENCE IN GEOLOGY**  
**UNIVERSITY OF PESHAWAR**  
Peshawar-25130, Khyber Pakhtunkhwa, Pakistan  
*Phone: +92-91-9216427; 9216429 Fax: +92-91-9218183*  
Web: <http://nceg.upesh.edu.pk/>

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Advertisement Date **Sunday, February 19, 2017**  
Last date of tender is **Wednesday March 08, 2017 upto 12:00PM**  
Opening date of tender is **Wednesday March 08 at 12:30 PM**

Price= Rs.2000/-

**(Firms downloading this file from NCEG site will have to deposit an amount of Rs.2000/- as the Tender Document fee at the time they submit their bids. Firms submitting tenders documents through post/courier should send it before the last date of opening.**

**TENDER DOCUMENTS FOR THE PURCHASE OF EQUIPMENT, BOOKS AND  
MISCELLANEOUS ITEMS  
SINGLE STAGE – TWO ENVELOP BID**

**(Note:** Please provide a soft copy of all documents in a USB/CD drive along with hard copy of the offer.

**Document Issued By:**

**NCEG Official**

**Dated: / / 2017**



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**Terms & Conditions**

**1. INVITATION TO BID**

- 1.1. The Director National Centre of Excellence in Geology invites bids for the IT, Electrical, Partitioning, and other laboratory equipment as per attached annexures.
- 1.2. Technical and Financial Bids must be submitted in separate sealed envelopes, including its due date on the face of each envelope.
- 1.3. Earnest money @ 2% of the total bid cost shall be submitted with the tender without which the quoted bid will not be considered.
- 1.4. The quoted price shall be inclusive of all duties / taxes.
- 1.5. The Director, National Centre of Excellence in Geology, reserves the right to add, delete or amend any part of the tender documents during the bidding period.

**INSTRUCTION TO BIDDERS/GENERAL CONDITIONS**

**2. Eligible Bidders/Suppliers**

**2.1.** This Invitation for Bids is open to all Bidder/Suppliers meeting the following requirements:

- 2.1.1.** Duly Registered with Federal Board of Revenue for Income Tax (Active Taxpayers) and Sales Tax.
- 2.1.2.** Manufacturer or authorized representative of the manufacturer.

**3. Qualifications of the Bidder/Suppliers**

**3.1.** The Bidder/Supplier shall provide documentary evidence that;

- 3.1.1.** The bidder/supplier has financial, technical, supplying, demonstration, fixing etc. capability necessary to perform the contract and has successful performance history in accordance to the nature of supplies in these bidding documents as described in Bill of Quantities.
- 3.1.2.** In case the bidder/supplier offering the supplies that the bidder/supplier did not manufacture or otherwise produce, the bidder/supplier has been authorized by the manufacturer or producer of such supply; and
- 3.1.3.** The Bidder/Supplier meets the qualification criteria listed under 9.2.1 b.

**SUBMISSION OF BIDS**

**4. Documents Constituting the Bid**

**4.1.** The bids submitted by the bidder, in two sealed envelopes, shall comprise the following:

**(A) Envelop -1 (Qualification documents alongwith Technical Proposal);**

To qualify the bidder and ensure Technical Responsiveness of the bid, Envelop-1 containing Qualification documents along with Technical Proposal shall be opened first. To facilitate the evaluation of the same, bidders must submit the following documents:

**(a) Qualification Documents shall comprise;**

- i. Supplier/Vender Company profile (showing Origin, Head Office, Branches, Vision, Mission, Management, Directors, Personals, and other necessary information);
- ii. Written power of attorney authorizing the signatory of the bid to act for and on behalf of the Supplier;
- iii. Certificate as bidder is Manufacturer or authorized representative of the



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manufacturer;

- iv. Experience record regarding in hand and previous contracts;
- v. Status of linkages/supplies with/to other Govt. Organizations;
- vi. Organization Chart and CV's of Personal for completion of successful supplies, fixing, demonstration, and after sales service etc.;
- vii. Affidavit as the firm is eligible to participate in the bidding and is not black listed.
- viii. Copy of registration with Federal Board of Revenue and Excise and Taxation Department.

***(b) Technical Proposal shall be furnished taking into account;***

- i. To examine whether the supplies offered by the bidder comply with the specifications (Technical Provisions) of the Bidding Documents. For this purpose, the bidders shall provide Technical Proposals in shape of Brochures, Catalogues, Printed Literatures, and other Supporting Documents etc. for comparison with the data prescribed by the Employer in Technical Features/Criteria/Specification.
- ii. Certificate for providing after sales service.

***(c) Certificate that Bid Security has been attached to the financial proposal without showing the amount of bid security.***

**(B) Envelop -II (Financial Proposal)**

- a) Dully filled-in Form of Bid along with complete set of bidding documents;
- b) Original form of Bid Security;

- 4.2.** Bids sent through courier should be delivered at least half an hour before the scheduled time of opening.
- 4.3.** After the bids / quotations are opened, no bidder shall be allowed to revise, propose or request any changes in bid, unless the committee decides to do so.
- 4.4.** The bidder or authorized representative shall sign on each page of the tender document. No corrections and overwriting are allowed.
- 4.5.** Item(s) should be quoted ANNEXURE-wise separately. Preference will be given to the firm(s) quoting maximum number of equipment ANNEXURE wise, along with installation and commissioning/Turnkey solution. However, NCEG reserves the right to opt any item from any bidder for the required items.
- 4.6.** *Bidders are requested to read carefully the terms and conditions and sign the Tender Form in token of having understood and accepted the same in all respects. All or any of the provisions of the terms and conditions may be changed/altere d/modified/deleted/added or amended by the Centre as and when deemed suitable/necessary.*
- 4.7.** While quoting tender rates, the items should be given numbers as are numbered in the Tender Document.
- 4.8.** The tender Rate shall be item wise. And rate will be on both FOR basis in Pak Rupees and C&F basis *Peshawar Air Port. / NCE in Geology premises.*



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- 4.9. Prices of optional accessories should be quoted separately.
- 4.10. *Taxes levied by the Government and freight charges, if any, shall be paid by the bidder and must be included in the quoted prices.*
- 4.11. Bidder is responsible for timely delivery of bids. This office will not be responsible for misplacement / tampering / non-attendance delay or any other incident in case the bids are not delivered at the designated place & time.
- 4.12. The bidders should be either established firm or sole distributor / authorized agent of the manufacturer having after sale service facilities, preferably, in Peshawar and/or Islamabad/Rawalpindi.
- 4.13. The payment of equipment is coupled with installation / commissioning of equipment; therefore, supplier should make sure that bid is complete in all respects including consumables etc.
- 4.14. The bidders must enclose original Performa Invoice / Quotation from their Principals or authorization certification of the Principal, failing which their offers will be ignored.
- 4.15. **Bidders should preferably have office, workshop facilities and after sales services preferably in Peshawar and/or Islamabad/Rawalpindi.**
- 4.16. Bidders must have trained engineers to provide after sales service. Copy of Training Certificate should be submitted along with their offer.

Note:

- Certificate of the Principle Vender.
- Only those suppliers will be entertained who have previously supplied similar equipment in Pakistan.
- ***Training of Two end users will be the responsibility of the bidder, in case of winning the tender.***

The price is to be quoted, essentially indicating the following:

- a. Original Country of origin.
- b. Estimated gross / net weight, dimension & volume of offered item.
- c. Delivery period.
- d. Original technical literature.
- e. List of Clients to whom the same natures of equipment are supplied in recent two years.
- f. The supplier must submit a certificate that the equipment supplied are according to international standards at time of delivery, otherwise no supply will be accepted by the client and the call deposit will be forfeited.

**5. BID VALIDITY**

All offers shall remain valid for 180 days from the date of opening of bids, until any further extension required by the client.

**6. ACCEPTANCE/REJECTION**

The Director National Centre of Excellence in Geology reserves the right to reject all bids at any time prior to the acceptance of bids. The grounds of rejection will be communicated to the bidder(s) upon request. However, Director NCEG shall not be liable to provide any justification of those grounds.



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**7. RATE ESCALATIONS**

Quoted price shall remain valid, firm, and irrevocable and fixed till the fulfillment of obligations by the supplier and will not be subject to escalation on any account.

**8. TECHNICAL LITERATURE & SAMPLES**

If applicable/required, the Bidder (s) shall submit the following;

- a. Data/Fact sheets of the equipment.
- b. Original technical literature/Evaluation Software (s)

**9. BID OPENING AND EVALUATION**

**9.1. Bid Opening**

Opening of the bids shall take place in following two stages;

**9.1.1. Envelop-I (Qualification Documents along with Technical Proposal)**

- a. Prior to open the financial bid of the bidders/suppliers, Envelop-1 (i.e., Qualification Documents along with Technical Proposals) shall be opened by the purchase committee, NCE in Geology.
- b. Qualification Documents along with Technical Proposals shall be evaluated by the committee in accordance to the specified criteria.

**9.1.2. Envelop-II (Financial Proposal)**

- a. Only the Bids (Financial Proposals) of the Qualified and Technically accepted/responsive as a result 9.2.1.a, 9.2.1.b including withdrawals, substitution and modifications made pursuant to Clause 9.1.1.a, will be opened publically by the Bid Opening Committee in the presence of Bidder/Suppliers representatives who choose to attend, at the time, date and location stipulated in the specifications. The Bidder/Suppliers representatives who are present shall sign attendance sheet evidencing their attendance.
- b. The Bidder/Supplier's name, total Bid Price, any discounts, bid modifications, substitution and withdrawals, the presence or absence of Bid Security, and such other details as the Employer/Purchaser may consider appropriate, will be announced by the Employer/Purchaser at the financial opening of bids.
- c. Employer/Purchaser shall prepare minutes of the bid opening, including the information disclosed to those present in accordance with the Sub-Clause 9.2.1.b.
- d. Financial Proposals shall be evaluated in detail by the by the Committee, constituted by NCE in Geology, for the purpose.

**9.2. Evaluation of Bids**

Purchase committee, NCE in Geology, shall evaluate the bids, in following two stages;

**9.2.1. Envelop -I (Qualification Documents along with Technical Proposal)**

- a. To determine the eligibility of the bidder for participation in the bidding, the committee will verify the bidder in accordance to the instructions specified under clause section 2. The Qualification Documents along with Technical Proposals of only eligible bidders shall be evaluated further.
- b. Qualification of the bidders shall be determined in accordance to criteria set herein below from the documents submitted by the bidders, prescribed in section 4. Bidder scoring 50% and above marks shall be declared as pass. Criteria for qualification of bidders/suppliers shall be;



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<b>Sr. #</b>	<b>Category</b>	<b>Weightage/Marks</b>
1.	Registered Office (Peshawar/Islamabad)	35
2.	Experience Record	35
3.	Personnel Capabilities	30
	<b>Total:</b>	<b>100</b>

Further detailed criteria for each category shall be as mentioned in bid data sheet;

- c. Technical Proposals of the qualified bidders shall be placed for evaluation. For this purpose, the Brochures, Catalogues, Printed Literatures, and other Supporting Documents etc. submitted by the bidders shall be compared with the data in Technical Features/Criteria/specifications as envisaged in the bidding documents. It is expected that no major deviation/stipulation shall be taken by the bidders; otherwise the proposal shall be rejected.

**9.2.2. Envelop -II (Financial Proposal);**

- a. Financial proposal of only Eligible, Qualified and Technically Responsive bidders duly opened by the bid opening committee shall be placed for evaluation by following steps mentioned herein below;

A. Preliminary Examination of Bids and Determination of Responsiveness;

- b. Prior to the detailed evaluation of bids (Financial proposals);

- i. **the Employer/purchaser will examine the Bids to determine whether;**

- Required sureties have been furnished,
- The documents have been properly signed,
- The Bid is valid till required period,
- The Bid prices are firm during currency of contract,
- Completion period offered is within specified limits,
- The bids are in order.

- ii. **A Bid will not be considered, if;**

- it is unsigned,
- its validity is less than specified, or correction for the same is not accepted by the bidders.
- it indicates that Bid prices do not include the amount of income tax or others shall be added/considered by the evaluation committee,
- it is not accompanied with bid security,
- it is received after the deadline for submission of bids,
- it is submitted through fax, telex, telegram or email,
- it indicates that prices quoted are not firm during currency of the contract whereas the bidders are required to quote fixed price(s),
- the bidder refuses to accept arithmetic correction,
- The submitted bid is conditional,
- It limits the bidder's obligation in any way under the contract.



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**10. DETAILING OF EVALUATION MARKS**

**10.1. Experience**

Credit Marks for experience shall be awarded on the basis of following qualifications:

Sr #	Description	Detailing	Weightage
1	Supplies of similar nature equipment in last 5 years.	5marks/project	15
2	Supplies of similar nature equipment currently in hand.	5marks/project	15
3	Status of linkages/supply with/to Government Organizations.	1mark/department	5
Sub-Total			35

**10.2. Personnel capabilities**

Credit Marks shall be awarded under this category using the following criteria:

Sr #	Description	Detailing	Weightage
1	Graduates in employment of the firm in relevant field. a) Number of Personnel (5mark/person) b) Experience (one mark/year)	02. 05 years	10 5
2	DAE/Certificate holders in Employment of the Firm in relevant field. a) Number (Three marks/person) b) Experience (in one mark/year)	03. 06 years	9 6
Sub-Total			30

**10.3. Registered Offices (Peshawar/Islamabad)**

Credit Marks shall be awarded on the basis of the following criteria:

Sr #	Description	Detailing	Weightage
1	Managerial/Administrative Staff	Five marks/person	15
2	Maintenance staff	Five marks/person	10
3	Maintenance facilities	Y	10
Sub-Total			35

**11. PURCHASE ORDER**

Purchase order of quoted material shall be placed on fulfillment of conditions mentioned at above.

**12. DELIVERIES**

- a. Free delivery at the following location is required, unless specified otherwise:
  - a) Director National Centre of Excellence in Geology, University of Peshawar, Peshawar, Pakistan
- b. The supplier shall replace defective material/software/hardware at his / her risk and cost. Including transportation duty, taxes etc.
- c. The material shall be in original/sealed packing to ensure delivery without any damages during transit.
- d. The supplier shall be responsible for and shall provide part of the work and services/functions and equipment related to packing, handling and general transportation requirements.
- e. If any of the software/hardware is discovered to be damaged or unacceptable at the point of embarkation or disembarkation, the supplier shall be responsible for replacement of the software/hardware free of any charges and costs to the buyer / client.



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- f. Time of Delivery of all equipment will be Maximum 90 days (FOR) and 180 days (C&F) after the date of issuance of purchase order.
- g. **The equipment should be new and the vendor/supplier will ensure originality of the procurement channel as well as equipment.**
- h. The Equipment shall be supplied in packed form and shall only be opened in the presence of the Purchase Committee/NCEG Official. Working manuals and other related literature shall accompany the equipment in original at the time of delivery.

**13. SCOPE OF SUPPLY**

- a. The bidder shall supply/deploy equipment/items, of the specifications given in the attached Annexure-II, III, IV, V, VI, VII, VIII, IX, X, XI, XII, XIII, XIV, XV.
- b. The bidder shall also be responsible for their installation, calibration, free service and the supplies at least one year from the date the equipment makes warranty functional.
- c. **All equipment should be accompanied by service manuals of the equipment/item separately in English.**
- d. In case installation at the times of supply/delivery is not possible; the vendor/supplier has to fulfill the same on the new installation date, given by Technical/Concerned Person of the NCEG.

**14. INSPECTION**

Pre-delivery inspection may be carried out at the premises of supplier (s) and / or post delivery inspection at office of Director, by the Technical Committee/NCEG official.

**15. PAYMENT**

The supplier, after delivery of goods and its acceptance/satisfactory report shall submit invoice to this office, containing relevant information i.e.

- a. Purchase order number and date
- b. Item number
- c. Quantity
- d. Price
- e. Delivery challan indicating delivery date.
- f. Sales tax return invoices.
- g. No Interim payment will be made.

**16. TAXES**

- a. **Income tax as applicable** under the prevailing Government rules will be deducted at source (except where the supplier provides an income tax exemption certificate).
- b. Quoted price shall be inclusive of all taxes, especially **GST 17%** will be applicable.
- c. Stamp duty of 1% will be deducted from the final bill.
- d. Professional tax shall be deducted as applicable.

**17. LIQUIDATED DAMAGES**

- a. If supplier fails to deliver ordered material within the stipulated period / scheduled time specified in purchase order, The Director, without prejudice to any other remedies, shall deduct from the bills or any other due payments / guarantees, as liquidated damages, a sum equivalent to 0.1% per day of the undelivered goods up to maximum 10% of the bid price & forfeit 2% earnest money.





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- b. The liquidated damages shall also be applicable for the cancelled quantity of goods.
- c. Whenever liquidated damages become payable, in the event that delivery of all goods and equipment is not made within the time period specified except on account of force majeure, the buyer shall quantify the same and shall serve notice to the supplier requiring payment thereof.
- d. If the supplier fails to remit payment within ten (10) days of receipt of such notice, the buyer shall forth-with become entitled to recover the same.

**18. SECURITY DEPOSIT/RETENTION MONEY/PERFORMANCE SECURITY**

10% Amount of bill price shall be deducted or bank guarantee provided by supplier & the same should be released after the issuance of FAC / Satisfactory report.

**19. MAINTANANCE PERIOD**

Maintenance period is one year from the date of successful installation.

**20. INSTLLATION & COMMISIONING**

- a. **Please note that system/supply should be completed in all respect in terms of hardware, software and accessories/spare parts. Any deficiency in acquisition of desired results at the time of installation and subsequent functioning will be the responsibility of the supplying firm/company, without any additional cost. All the supply should be based on National Centre of Excellence in Geology University of Peshawar.**
- b. The supplier will be responsible for installation, testing Commissioning and one year smooth running of equipment. And also arrange free of cost training for the buyer/client.

**21. CONDITIONAL BIDS**

Conditional, incomplete bid will not be accepted.

**22. BID BOND/ EARNEST MONEY**

- The bidder shall furnish, as part of his bid, earnest money equal to 2% of quoted price with their offer in the form of demand draft/ pay order in favor of Director, National Centre of Excellence in Geology, University of Peshawar, Peshawar.
- The earnest money shall be denominated in Pak rupees and shall be in the form of Demand Draft, Pay Order or Call Deposit issued by a Pakistani scheduled Bank or branch of a Foreign Bank, acceptable in favor of the National Centre of Excellence in Geology, University of Peshawar, Peshawar.
- In case of alternate prices, earnest money will be based on the maximum quoted price of the same item.
- The Demand Draft shall be returned to unsuccessful bidders.
- **The Earnest Money will be forfeited if a bidder withdraws his bid during the period of his bid validity or fails to supply the machinery / equipment ordered by the university.**



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**23. SIGNING OF BIDS**

The person signing the bid shall initial all the pages of the bid, where entries are made and attach Tender Document cost receipt in original.

**24. PURCHASER'S RIGHT TO ACCEPT OR REJECT ANY OR ALL BIDS**

The National Centre of Excellence in Geology, University of Peshawar, Peshawar (Purchase Committee) reserves the right to reduce or increase the quantity, accept or reject any bid and to stop the bidding process and reject all bids, at any time prior to award of supply order without incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidders of the ground for such actions.

**25. CONVENING**

Unsolicited advice/clarification and any personal approaches at any stage of evaluations/purchase process are strictly prohibited and may lead to disqualification.

**26. PERFORMANCE SECURITY**

- Within one week of issuance of the purchase order for C&F equipment only, the successful bidders shall furnish to National Centre of Excellence in Geology, University of Peshawar, the performance security bond as per Annexure-I, equivalent to 10% of the bid price in the form of a bank guarantee, before opening of LC.
- The performance security shall be payable to the National Centre of Excellence in Geology, University of Peshawar, as compensation for any loss resulting from the supplier's failure to complete its obligation.
- The performance security will be discharged by the National Centre of Excellence in Geology, University of Peshawar, and returned to the supplier after completion of the supplier's performance obligations under the contract.
- The security will be retained for one National Centre of Excellence in Geology, University of Peshawar, year starting from the date of successful installation and operation of the machinery / equipment.

**27. CALIBRATION OF EQUIPMENT**

- It will be the responsibility of supplier to arrange standards / consumables required for the calibration of the equipment at the time of installation.
- No TA/DA claim will be entertained by NCEG, in case of after sale services, whenever it requires within the premises.
- *In case of non-conformity with desired specification, the item shall be replaced by the supplier free of cost.*

**28. WARRANTY**

- The supplier shall furnish at least one year after sales service / warranty for successful operation of equipment(s) / item(s) from the date of installation.
- In case of Malfunctioning / defect in any equipment / item, the supplier shall replace them free of cost within 30 days; otherwise the supplier will return the entire paid amount to National Centre of Excellence in Geology, University of Peshawar immediately.



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**Note:**

*By signing this agreement, you acknowledge that you have read and understood, and agree to be bound by, the terms and conditions as outlined in the agreement and confirming that your company/organization terms and conditions stand eradicated.*

Dated: \_\_\_\_\_

Name: \_\_\_\_\_

Designation: \_\_\_\_\_

Company Name: \_\_\_\_\_

Contact No: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

\_\_\_\_\_

E-Mail: \_\_\_\_\_

Signature and official Seal: \_\_\_\_\_

**NCEG Official & Signature** \_\_\_\_\_



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**Bidders are required to provide a comprehensive solution both in terms of efficiency, utilization and economic as well.**

**Note:**

1. LC opening process will be the responsibility of the supplier with the facilitation of the NCE in Geology, insurance charges/expenses should be paid by the supplier and cover the item, machinery and equipment etc., should be provided up to the laboratories of NCE in Geology or end user destination.
2. The customs clearance of machinery and equipment etc., at any airport/seaport/dry port will be the responsibility of the supplier and their cost including the local transportation up to the lab/Centre or end user destination. The Centre will provide the exemption certificate and other documents for clearance purpose to the supplier.
3. Please note that system/supply should be completed in all respect in terms of hardware, software and accessories/spare parts. Any deficiency in acquisition of desired results at the time of installation and subsequent functioning will be the responsibility of the supplying firm/company, without any additional cost. All the supply should be based on National Centre of Excellence in Geology University of Peshawar.
4. No FTT will be entertained.
5. Please provide individual item prices (wherever possible) for item-wise comparison
6. The Equipments of which specifications are not given above, the suppliers are requested to quote all the models, which they can supply.
7. Submission of Data/Fact sheets, explaining the function and specification, of each equipment quoted is necessary.
8. The quotes should include all the accessories needed for the proper functioning of each equipment for the given task. The successful tenders will have to accept / abide by all the responsibilities regarding installation and proper functioning of the equipments and training to the end user.
9. Installation, commissioning and training of the end users on these systems will be responsibility of the supplier. The contract shall be liable to be cancellation if the supplier does not meet this condition.
10. The tender Rate shall be item wise. And rate will be on both **FOR basis in Pak Rupees and C&F basis Peshawar Air Port/NCE in Geology Premises.**
11. The bidders shall have to provide a certificate from the principle vendor a certificate that all the equipments are according to ASTM standards.
12. The cost should be inclusive of all the taxes as admissible as per rules.
13. **The specifications of the items where appropriate are given in this tender document. However, firms are encouraged to quote also the better quality items, if available in the market.**



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**ANNEXURE-I**

**PERFORMANCE BOND**

Director  
NCE in Geology  
University of Peshawar, Peshawar

Dear Sir,

RE: AGREEMENT DATE : \_\_\_\_\_ BETWEEN  
YOURSELVES & M/S \_\_\_\_\_ No. \_\_\_\_\_ In consideration  
of your having concluded a CONTRACT evidenced by purchase order No. \_\_\_\_\_ dated  
\_\_\_\_\_ with m/s. \_\_\_\_\_ (SUPPLIER) for  
\_\_\_\_\_ and in consideration of value received from the SUPPLIER, we agree  
and undertake as follows:-

- a. To make unconditional payment of \_\_\_\_\_ or unconditional payments from time to time as called upon totaling the said sum of \_\_\_\_\_ being 10% (Ten Percent) of the CONTRACT price mentioned in the said Purchase Order/ Agreement upon your written demand(s) without further recourse, question or reference to SUPPLIER the event of Supplier's default in compliance with its obligatory liabilities and responsibilities arising under and in pursuance of the warranties and guarantees committed by it in the said Purchase Order / Agreement.
- b. To accept written intimation(s) from you as sufficient evidence of the existence of a default or non-compliance as aforesaid in the part of SUPPLIER and to make payment accordingly within fifteen (15) days of receipt of the written intimations.
- c. To keep this guarantee in full force from the date of this guarantee up to two years after the date of installation and successful operation of equipment.
- d. No grant of time or other indulgence to or composition or arrangement with SUPPLIER in respect of the performance of its obligations under and in pursuance of the said Agreement / Purchase Order of any Clause thereof, with or without notice to us shall in any manner discharge or otherwise, howsoever, affect this guarantee and our liabilities and commitments hereunder.
- e. This guarantee shall also cover obligations of the SUPPLIER so far as liquidated damages is concerned, as provided in Agreement / Purchase Order any recovery on account of liquidated damages shall not reduce the value of 10% (Ten Percent) provided herein.
- f. This guarantee shall be binding on us and our successors-in-interest and shall be irrevocable.

Yours faithfully,

\_\_\_\_\_  
Bank Seal



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**Tender Form**

Equipment and items to be purchased from NCEG's and "Strengthening of NCE in Geology" project's budgets.

S.No	Name of Laboratory	Annexure/Page No
1	IT EQUIPMENTS	ANNEXURE II/14
2	UPS	ANNEXURE III/18
3	GEOCHEMISTRY LAB / ALUMINUM GLASS PARTITIONING AND FALSE CEILING	ANNEXURE IV/19
4	HARD DISK DRIVES	ANNEXURE V/20
5	GEMOLOGY LAB	ANNEXURE VI/21
6	GEOTECHNICAL ENGINEERING LAB	ANNEXURE VII/25
7	ENVIRONMENTAL & SOIL SCIENCE LAB	ANNEXURE VIII/26
8	POWER WIRES	ANNEXURE IX/27
9	MISCELLANEOUS LAB ITEM	ANNEXURE X/29
10	BARRIER AND SHEDS FOR ENTRY GATES	ANNEXURE XI/30
11	BOOKS	ANNEXURE XII/31
12	GEO-/THERMO- CHRONOLOGY LAB	ANNEXURE XIII/38
13	XRD LAB	ANNEXURE XIV/39
14	RADON MONITORING LAB	ANNEXURE XV/40
15	GIS/RS LAB	ANNEXURE XVI/41

Note: Firms are required to provide Annexure wise quotations, complete in all aspects of accessories, consumables and requirements of the labs. Further, for clarification of any specifications, please consult this office.



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**ANNEXURE II**

**IT EQUIPMENTS**

Sr. No	Item Name	Specifications/Description	Qty
1	High end Mobile Workstation Laptop	<p>High end mobile workstation class laptop comprising of following minimum specifications/characteristics is required:</p> <ul style="list-style-type: none"> <li>• Processor: Intel Xeon E3-1500M v5 Series (or higher) with 8MB Cache 14nm form factor with Intel vPro, Hyper-Threading and Virtualization (VT-x) technologies, Quadcore</li> <li>• Memory (RAM): Support for 4xmemory slots with installed 32GB (16GBx2) memory. <i>Laptop should be capable of upgrading to 64GB Memory.</i></li> <li>• Display: 15.6"/17.3" (or higher) back-lit screen/display of 4K (3840x2160) resolution with IPS technology and no-touch screen.</li> <li>• Storage: 1TB SATA 7200/5400rpm HDD base hard disk. <b><i>Laptop must be capable of supporting additional 2x1TB SSD Drive (M.25/PCIe-VNMe). Kindly mention separate perice for 1TB SSD Drive (M.25/PCI-NVMe).</i></b></li> <li>• 4GB Dedicated Graphics Card (NVIDIA/ATI RAEDON)</li> <li>• Backlit keyboard with Numeric Pad</li> <li>• Integrated Fingerprint Reader (Preferable)</li> <li>• 9.5mm Fixed DVD Recordable Drive</li> <li>• Smart Card Reader (Preferable)</li> <li>• Dual Band Wireless-AC (2x2) Adapter vPro</li> <li>• Gigabit Ethernet Controller</li> <li>• 6/8cell Li-Ion Battery Minimum</li> <li>• Laptop shoulder carrying case (include in base-quotation).</li> <li>• Laptop backpack for fields (provide price separately)</li> </ul> <p><b>Sample models from reputed Laptop manufacturers include HP ZBook, Dell Precision 17 7000 Series, Lenovo Thinkpad P70 or similar.</b></p>	1
2	High End Professional Class Series Laptop	<p>High end professional class laptop comprising of following minimum specifications/characteristics is required:</p> <ul style="list-style-type: none"> <li>• Processor: Intel Core i7 6700HQ/6800HQ/6900HQ Series processor with 6/8MB Cache Quad core</li> <li>• Memory (RAM): 16GB Installed memory with support for future upgrades to 32GB</li> <li>• Display: 15.6" screen/display of FHD (1920x1080) resolution</li> <li>• Storage: 1TB SATA 7200/5400rpm HDD</li> <li>• 2GB Dedicated Graphics Card (NVIDI/ATI RAEDON)</li> <li>• Backlit keyboard</li> <li>• DVD RW±</li> <li>• Wireless-AC Adapter (non-vPro)</li> <li>• Gigabit Ethernet Controller</li> </ul>	1



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		<ul style="list-style-type: none"> <li>• 6/8cell Li-Ion Battery Minimum</li> <li>• Laptop shoulder carrying case</li> </ul> <p><b>This machine will be intended to carry out GIS/RS based data processing. Models from reputed laptop manufacturers (HP/Dell/Lenovo/Toshiba/ASUS etc) be quoted accordingly.</b></p>	
3	General office and field use laptop	<p>General purpose laptop comprising of following minimum specifications/characteristics is required:</p> <ul style="list-style-type: none"> <li>• Processor: Intel Core i7 Series processor with min. 4/6MB Cache</li> <li>• Memory (RAM): 8GB Installed memory with support for future upgrades to 16GB</li> <li>• Display: 15.6" screen/display of HD (1366x768) resolution</li> <li>• Storage: 1TB SATA 7200/5400rpm HDD</li> <li>• Keyboard</li> <li>• DVD RW±</li> <li>• WirelessAdapter</li> <li>• Gigabit Ethernet Controller</li> <li>• 3/4/6cell Li-Ion Battery</li> <li>• Laptop shoulder carrying case</li> </ul>	1
4	Apple MacBook	<ul style="list-style-type: none"> <li>• Processor: Intel Core i7 Series processor with min. 6MB Cache</li> <li>• Memory (RAM): 8GB/16GB</li> <li>• Display: 15.4" screen/display of HD(1920x1200) resolution</li> <li>• 2GB Graphics Card</li> <li>• Storage: Min: 750/1TB 7200/5400rpm HDD</li> <li>• Full Size backlit keyboard</li> <li>• Operation System: macOS</li> <li>• Original Laptop shoulder carrying case</li> </ul>	1
5	Desktop Tower Workstation	<ul style="list-style-type: none"> <li>• Processor: Intel Xeon E5 Series processor with min. 15MB Cache, 4 Core, intel vPro technology</li> <li>• Memory (RAM): 64GB Installed memory with support for future upgrades to 128GB</li> <li>• Full Tower Casing</li> <li>• Display: 27" screen/display of resolution QHD/UHD with DP port</li> <li>• Storage: 4TB SATA 7200/5400rpm HDD</li> <li>• Minimum support 4x (STAT/SAS/NL-SAS)</li> <li>• <b>4GB Graphic Card (PCI / PCIex) with dual ports (nVidia / AMD)</b></li> <li>• Gigabit Ethernet Controller 2x</li> <li>• min. 400Watts Power Supply (92% efficient)</li> <li>• DVD RW±</li> <li>• Keyboard / Mouse</li> </ul> <p><b>This machine will be intended to carry out GIS/RS based data processing. Models, designed for GIS/RS processing, from reputed Desktop Workstation manufacturers (HP/Dell/Lenovo, etc) be quoted</b></p>	1





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		<b>accordingly.</b>	
6	Laser Printer (Heavy Duty)	<ul style="list-style-type: none"> <li>• Black &amp; White Laser Beam Printer Letter / A4</li> <li>• Printing Speed: 25 to 40 PPM</li> <li>• Print Resolution: 1200x1200, 600 dpi</li> <li>• Memory (RAM): 128MB or higher</li> <li>• Paper Input: 200+ sheets,</li> <li>• Multi-Purpose Try: 150 Sheets</li> <li>• Standard Interface: USB 2.0 High-speed technology</li> <li>• Gigabit Ethernet port</li> <li>• Paper trays Maximum 3</li> </ul>	1
7	Network Attached Storage	<ul style="list-style-type: none"> <li>• Memory: 2GB or higher</li> <li>• 2 Gigabit Ethernet ports</li> <li>• Power supply (DC in)x2</li> <li>• USB 3.0 expansion port x 2</li> <li>• USB 3.0 port with direct copy x 1 front</li> <li>• 4x3.5 hard drive bays</li> <li>• 4TB HDD SATA x 1 (included)</li> <li>• Windows support, support web browser and support multiple network protocols</li> <li>• Disk Management RAID: JBOD, Spanning, 0/1/5 10/5 + hot spare support</li> <li>• Hot swapping</li> <li>• Remote Access, backup management.</li> </ul> <p><b>Note: Separate prices for 4TB SATA HDD drives should be given.</b></p>	1
8	Laser Printer	<ul style="list-style-type: none"> <li>• Black &amp; White Laser Beam Printer Letter / A4</li> <li>• Printing Speed: 19 to 25 PPM</li> <li>• Print Resolution: 1200x1200, 600 dpi</li> <li>• Memory (RAM): 64MB or higher</li> <li>• Paper Input: 200+ sheets,</li> <li>• Multi-Purpose Try: 50 Sheets</li> <li>• Standard Interface: USB 2.0 High-speed technology</li> </ul>	1
9	Ink-Jet Color Printer (A3)	<p>Ink-Jet based A3 Color Printer with support for availability of ink bottles, print heads, and other parts. Printer must support printing of maps at A3 paper with adequate speed USB 3.0 enabled Network Printing support Local warranty of Printer and parts Provision of Printer components for about 3-5 years (HP/DELL/EPSON/PANASONIC/XEROX etc)</p>	1
10	Computer Monitor	23" Monitors with VGA and HDMI support. FHD (1920x1080) resolution	1
11	Computer Monitor	27" Monitors with VGA and HDMI support. FHD (1920x1080) resolution	1
12	A3 scanner	Large format color scanner for images and documents, Scanning area: A3 11.7-in x 16.5-in (29.7cm x 42cm), Resolution 1200x1200dpi /can be interpolated to 9600dpi, USB 2.0 connectivity for reliable, fast transfer, Supports Win 10, 8.1,7, XP, Vista; Mac OSX	1



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13	Cannon Plotter Ink Cartridge	<ul style="list-style-type: none"> <li>• Matte Black ink (700ml)</li> <li>• Black Ink (700ml)</li> <li>• Cyan Ink (700ml)</li> <li>• Magenta Ink (700ml)</li> <li>• Yellow Ink (700ml)</li> </ul>	1 each
14	HP/Canon Plotter Paper Roll	<ul style="list-style-type: none"> <li>• 42" Roll</li> <li>• 46" Roll</li> </ul>	1 each
15	Multimedia Projector with screen and Tripod Stand	<ul style="list-style-type: none"> <li>• LCD 3 Panels Technology</li> <li>• Resolution XGA (1024 x 768)</li> <li>• Brightness: 3000 Lumens</li> <li>• Contrast: 2000:1</li> <li>• Keystone correction: V <math>\pm</math>30°</li> <li>• Input: VGA / HMDI</li> <li>• Screen 6x6</li> <li>• Multimedia to Multimedia connectivity through VGA / HDMI</li> <li>• AC power cord, VGA to VGA Cable (20M), HDMI Cable (20m), remote control, carrying case, batteries for remote, multilingual CD-ROM user's manual, quick start card, and warranty card.</li> </ul>	1

**Note: All the above equipment(s)/instrument(s) should have the above specs or of better quality. Bid should be complete in all respect including all the necessary attachments, spares and accessories which can serve the purpose to its full satisfaction.**



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**ANNEXURE III**

**UPS**

Sr. No	Item Name	Specifications/Description	Qty
1	10kva Long Backup UPS	<ul style="list-style-type: none"> <li>• 10kVA online double conversion UPS Unit, pure sine wave</li> <li>• Input Voltage: Single Phase Normal 120 VAC-260VAC</li> <li>• Input Frequency: 45Hz-65Hz</li> <li>• Battery Type: Sealed non-spillage, maintenance free lead-acid batteries</li> <li>• Charging Capability: &lt;6hrs for recharging to 90% capacity</li> <li>• External Battery Cabinet for hosting batteries.</li> <li>• Rated Voltage: Single Phase, 220/230/240VAC</li> <li>• Output Voltage THD: &lt;3% linear load, &lt;5% non-linear load</li> <li>• Form Factor: Tower/Rack</li> <li>• Surge Protection: IEC/EN 61000-4-5</li> <li>• Minimum 1 hour backup for 75% load.</li> </ul> <p><b>Note:</b></p> <ol style="list-style-type: none"> <li>1. Separate price be quoted for models with 0.9PF and 0.8PF.</li> <li>2. Bidder solution must not contain options of liquid batteries.</li> <li>3. All prices must include any expenses required for the installation of the UPS and accessories.</li> </ol>	1
2	6 kva standard backup UPS	<ul style="list-style-type: none"> <li>• 6kVA online double conversion UPS Unit</li> <li>• Input Voltage: Single Phase Normal 140 VAC-260VAC</li> <li>• Input Frequency: 45Hz-65Hz</li> <li>• Battery Type: Sealed non-spillage, maintenance free lead-acid batteries</li> <li>• Rated Voltage: Single Phase, 220/230/240VAC</li> <li>• Form Factor: Tower</li> <li>• power factor 0.8</li> <li>• <b>20x7AH (12v) batteries installed inside the ups</b></li> </ul> <p><i>Separate prices be provided for UPS with and without batteries</i></p>	1
3	3KVA UPS long backup	<ul style="list-style-type: none"> <li>• 3kVA online double conversion UPS Unit, pure sine wave</li> <li>• Input Voltage: Single Phase Normal 120 VAC-260VAC</li> <li>• Input Frequency: 45Hz-65Hz</li> <li>• Battery Type: Sealed non-spillage, maintenance free lead-acid batteries</li> <li>• External Battery Cabinet for hosting batteries.</li> <li>• Rated Voltage: Single Phase, 220/230/240VAC</li> <li>• Output Voltage THD: &lt;3% linear load, &lt;5% non-linear load</li> <li>• Form Factor: Tower/Rack</li> <li>• Minimum 1 hour backup for 75% load.</li> </ul> <p><b>Note:</b></p> <ol style="list-style-type: none"> <li>1. Separate price be quoted for models with 0.8PF and 0.7PF.</li> <li>2. Bidder solution must not contain options of liquid batteries.</li> <li>3. All prices must include any expenses required for the installation of the UPS and accessories.</li> </ol>	1



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**ANNEXURE IV**

**GEOCHEMISTRY LAB**

Sr. No	Item Name	Specifications/Description	Qty
1	Multiparameter pH/mV and EC/TDS/Salinity Meter	<b>pH range:</b> -2.0 ---- 20.0 pH, <b>Accuracy:</b> ±0.002 Calibration: automatic up to five-point calibration, with standard buffers solution. <b>mV Rang:</b> ±2000 mV, <b>Accuracy:</b> ±0.2 mV. <b>Temperature range:</b> 20.0 to 120.0C, Accuracy: ±0.2C. <b>EC range:</b> 0.000 to 9.999 µS/cm, <b>Accuracy:</b> (±0.01µS/cm). <b>Calibration:</b> automatic and multi-point calibration standard. <b>TDS range:</b> 0.000 to 9.999 ppm. <b>Accuracy:</b> ±0.01 ppm. <b>Resistivity range:</b> .0 to 99.9 cm, <b>Accuracy:</b> ±2% <b>Salinity range:</b> 0.00 to 80.00 ppt. <b>Accuracy:</b> ±1%	1
2	Water Purification system	5l/h to 100 l/h and purifies RO product water down to a quality up to 0.2 uS/cm (16 to 18 MΩ-cm)	1
3	Acid purification system with collection bottle and other accessories	<b>Power Supply:</b> 155 watt resistance heater. <b>Capacity:</b> 3L to 5L <b>Acid purified:</b> HNO <sub>3</sub> , HCl and HF	1
4	Analytical Balance	<b>Capacity:</b> 100 to 200gm <b>Minimum weight:</b> 200mg <b>Weight:</b> approx. less than 10kg	1
5	Portable dry filter air sampler.	Depth 16 cm, Height 30 cm, Width 17 cm. Power Requirements 82 - 265 Volt (47 - 63 Hz). Weight 3.5-5 kg with battery <b>Additional Specifications :</b> <b>Operating principle</b> Electret filter media, built-in mass flow sensor for consistent sampling rates, <b>Air Collection rate</b> 100 or 200 LPM, <b>Inlet</b> Built-in omnidirectional aerosol inlet "super-sampling inlet", <b>Collection efficiency</b> 1.0 Mm dia: 95% 3.0 Mm dia: 86.9%, <b>Temp./humidity range</b> 5 to 70°C in non-condensing environments, <b>Power Source</b> Rechargeable, <b>Power Consumption</b> 18 hrs continuous 200 Lpm >4 days intermittent mode <b>Connectors</b> Military CCSI, <b>Mounting</b> Built-in tripod extends to 40" at inlet, <b>Filter Recovery Method</b> Wet Foam Elution, <b>Final Sample volume</b> 7 mL	1

**ALUMINUM GLASS PARTITIONING**

Sr. No	Specifications/Description	Qty
1	Aluminum-Glass Partitioning per square ft. rate is required with 1.66 mm thick aluminum and 5mm thick glass. Rate must include all installation/labour charges. Estimated running sqft could be about 2500-3000ft.	
2	False ceiling per square ft rate is required (estimated total area could be about 700-800 sqft). Cast must include all installation/labour charges.	



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**ANNEXURE V**

**HARD DISK DRIVES**

Sr. No	Item Name	Specifications/Description	Qty
1	Hard Disk Drives for WD-EX4100 NAS System	<ul style="list-style-type: none"> <li>• Capacity: 4TB</li> <li>• Interface: SATA 6GB/s</li> <li>• Form Factor: 3.5"</li> <li>• Cache: 64MB</li> </ul> <p><b>These hard disk drives are specifically required for mounting inside WD-NAS EX-4100 enclosure which will be attached directly to the network. Bidders are required to quote models for NAS support.</b></p>	4
2	Hard Disk Drives for ACTi INR-430 NVR (to provide support for excessive writes of digital media)	<ul style="list-style-type: none"> <li>• Capacity: 4TB</li> <li>• Interface: SATA 6GB/s</li> <li>• Form Factor: 3.5"</li> <li>• Cache: 64MB</li> <li>• RPM Class: IntelliPower</li> <li>• Firmware: AllFrame Technology</li> </ul> <p><b>These hard disk drives are specifically required for mounting inside ACTi INR-430. The supported hard disk drives are from: WD Data center / Enterprise HDDs (WD4000F9YZ, WD4000FYZZ, WD4002FYZZ), Toshiba NAS/Surveillance (MD03ACA400V, MD04ABA400V), Seagate Enterprise/Video Storage (ST4000NM0033, ST4000VX000)</b></p>	8



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**ANNEXURE VI**

**GEMOLOGY LAB**

S. No.	Item Name	Specifications	Quantity
1	Digital Refractometer	-At least 200 gemstones database -Refractive index range between 1.30-3.30 or above	1
2	Gemstones Faceting Unit	With Polishing laps (Cu, Tin, leather) and 180, 300, 600, 1200 mesh size laps.	1
3	UV lamp LW/SW	Optional Multispec Short wave and Long Wave UV lamp -With Contrast control spectacles block ultraviolet radiations -Viewing closed cabinet -High intensity -No flickering	2
4	Monochromatic Light for Refractometer	-AC/DC -Yellow light	10
5	Diamond Sure	Be able to differentiate Natural Diamonds from Synthetics and its stimulants -Capable of testing loose or mounted diamonds from 0.1-10ct size - IEC main supply lead -Compact, protection and handy carry case - Spare fiber optic cable -Cotton gloves/Tools -1 year parts/service warranty	1
6	Diamond View	-Able to distinguish between types of natural diamonds, synthetic diamonds and its types e.g. HPHT and CVD. -Capable to look at the surface fluorescence by illuminating with strong S-W-UV light. -Standard magnification range for diamonds ranging from 0.05-10ct range. -All size vacuum holders used for loose and mounted diamonds -Main power adapter cable with plug -USB A-B cable -IEEE fine wire 6 pin cable -Software CD (Window7 complaint) -Calibration samples( Calcite and ball bearing) -Quick start Guide -User manual guide -1 year parts service/warranty	1
7	Diamond Plus	-Capable to test HPHT Natural Diamonds, few synthetic and irradiated diamonds -Loose stones testing ability from 0.05-10ct -Compact, protective and handy carry case -IEC main supply lead -2 sample holders -3 sample holder pins -Pair of tweezers -1 Year parts/service warranty	1
8	Heavy liquids	Use for separation of minerals/Gemstones S.G range from 2.65 to 4.4	3 sets
9	Color Grading Disc	Flat White, Non-reflecting, acrylic disk	5
10	Diamond Dock	Box with Day light condition optimized by fluorescent light with customized day light conditions. Providing optimal lighting for different colored diamond grading. Approximately 29x14x19" dimension Different diamonds	1
11	Master stones set for Diamond color grading	Typical master set with at least 5 GIA-graded diamonds/C.Z or any other equal diamond color grading set from D to Z color range.	1
12	LED TV 55" QHD/UHD	<ul style="list-style-type: none"> <li>• Widescreen LED Display</li> <li>• UHD 4k 3840x2160 Resolution</li> </ul>	1



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		<ul style="list-style-type: none"> <li>• 4x HDMI inputs port</li> <li>• 3x USB Ports</li> <li>• 1 RF in (Antenna/Cable)</li> <li>• 1 Ethernet Controller</li> <li>• PC input port</li> <li>• Wall Mounting Stand</li> <li>• Minimum 1 year Warranty</li> </ul>	
13	Trinacoular Microscope	<ul style="list-style-type: none"> <li>-Video CCD Camera adapter</li> <li>-Still Camera adaptor and all essential accessories.</li> <li>-Digital 12V system eliminates spike and flicker irregularities which reduces eye fatigue</li> <li>- Stereo Zoom Magnification from 10x to 64x</li> <li>- Satisfying the requirements for colored gems and Diamonds examinations.</li> <li>- Darkfield and brightfield illumination using LCD intensity read-out for recall of the previous intensity setting</li> <li>-Iris diaphragm for spot examination</li> <li>-Over head lamp fixed on stage</li> <li>-Wider stage mount promotes optimum wrist positioning and hand comfort and includes custom stone holder</li> <li>-At least three ports for mounting optional overhead lamp</li> <li>-Exclusive stationary power cord for 345 degree base rotation; 100V-240V global electrical compatibility</li> <li>-Transmitted yellow Cold light source for gemstone examinations.</li> </ul>	2
14	Presentation Scope/Simple Microscope	<ul style="list-style-type: none"> <li>-Magnification: 10x-30x</li> <li>-Adjustable dark field illumination</li> <li>-Iris diaphragm for illumination and control</li> <li>-Overhead spot illumination</li> <li>-Custom stone holder</li> <li>-Intense yellow transmitted light for gemstone examinations</li> <li>-Rubber eyeguards</li> <li>-Universal 100V-240V for global electrical compatibility</li> </ul>	10
15	Stereo Microscope	<ul style="list-style-type: none"> <li>Digital 12V system eliminates spike and flicker irregularities which reduces eye fatigue</li> <li>-Stereo Zoom Magnification from 10x to 64x</li> <li>-Satisfying the requirements for colored gems and Diamonds examinations.</li> <li>- Darkfield and brightfield illumination using LCD intensity read-out for recall of the previous intensity setting.</li> <li>-Wider stage mount promotes optimum wrist positioning and hand comfort and includes custom stone holder</li> <li>- Iris diaphragm for spot examination</li> <li>-Over head lamp fixed on stage</li> <li>-TWO ports for mounting optional overhead lamp</li> <li>- Exclusive stationary power cord for 345 degree base rotation; 100V-240V global electrical compatibility</li> <li>- 0.7–4.5x zoom objective</li> <li>-Transmitted light, Yellow Cold light source with light conductor, Dark-field</li> </ul>	2
16	Large diffraction spectroscopy	<ul style="list-style-type: none"> <li>- Fixed slit and focus - With stand - Steel body</li> </ul>	2
17	Specific gravity balance	<ul style="list-style-type: none"> <li>-Digital</li> <li>-S.G finding range 0.1-150ct or above</li> <li>-Satisfy the requirements for gemstones S.G test</li> </ul>	2



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18	Portable Polariscopes	- At least 4x4 inches Dimension -With Conoscope -With additional lamp -100V-240V global electrical compatibility	10
19	Hardness pencils	- Hardness Range 1-10 -Sharp pointed -Including hardness testers material e.g. 3.5, 4.5, 5.5 and above -Streak plate	3
20	Portable Gems testing instruments Kit	-10x loupe, tweezers, stone cloth, spectroscope, dichroscope, Chelsea Colour Filter, folding polariscopes, flexi light, flat light and conoscope rod.	10
21	Contrast Control Spectacles	For the protection of UV rays effect during observation.	5
22	Ultrasonic cleaner	-Medium size	1
23	Day Light Lamp	-Twisted adjustable head -Minimum 13 Watt flicker free rod -Folding Task lamp -Rechargeable,	12
24	Geological Hammer	Long Hand	5
25	Brunton / Silva Compass	Brunton / Silva Compass	2+2
26	Nylon Sieve	10 $\mu$ m	1
27	Nylon Sieve	20 $\mu$ m	1

<b>Research Grade "Raman Spectroscope"</b>	<b>QTY</b>
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<p><b>Spectrometer:</b> Stigmatic single pass spectrograph with the following specification: Extremely high efficiency 250 mm or above focal length spectrograph (&gt;30% throughput in spectrograph)., Laser spot size continuously variable from 1 to 300 <math>\mu</math>m (objective and excitation wavelength dependent) with fully optimized beam path., Visible lens set motorized and kinematically mounted for optimized spectral resolution. Unique continually adjustable ‘easy confocal’ facility using motorised slit with automated signal optimization, Encoder feedback controlled grating stage with dual grating interchangeable magnetic kinematic mount., Quality ‘extended scanning’ facility for measurement of high resolution spectra with wider wavelength range than could be accommodated on a single CCD view, without any ‘stitching’ of spectra together. Spectral resolution continuously variable via CCD binning control., Motorized neutral density filters offering 16 or more different power levels from 0.00005 to 100%.</p> <p><b>Automation:</b> Fully automated and self validating Raman module as part of the Raman microscope assembly with associated spectrometer hardware., Features include; Real time automated LiveTrack dynamic focusing for both Raman data acquisition and white light video viewing modes., Auto aligns and optimization of input laser power., Auto switch and auto align of laser through pinhole of beam expander unit., Self validation using built-in internal reference sample., Built-in self calibration and intensity correction using neon and white light sources., Motorized switching between laser and white light sample images using integral video.</p> <p><b>Microscope:</b> Specially adapted Research Grade microscope allowing confocal measurements with 2.0 <math>\mu</math>m depth resolution (using a 100<math>\times</math> objective). Including: Reflected light illumination. 5<math>\times</math>, 20<math>\times</math>, 50 and 100<math>\times</math> objectives., Long working distance microscope objective; LWD x50 0.5 NA WD 8.2 mm, Binocular head with eyepieces and a high resolution color video camera.</p> <p><b>Detector:</b> CCD deep depletion NIR enhanced 1024x256 pixels or above. Complete set in all aspect</p> <p><b>Software:</b> Instrument control and data acquisition software, fully integrated data analysis and presentation software with image capture software for white light image display and capture.</p> <p><b>Packing:</b> Packing all system components.</p> <p><b>Optical table for system:</b> 1.2 x 1.5 x 0.11 m or best optical table with integrated legs</p> <p><b>Optical table system interface kit</b></p> <p><b>Optical table laser interface kit x3</b></p> <p><b>Optical table kinematic mount; for multi-line argon ion laser</b></p> <p><b>Optical table triple rear arm and interface kit</b></p> <p><b>Operating optimized computer:</b> Intel Core i3, 4 Gb RAM, DVD-RW, 500 Gb HDD, Windows 7 Professional (64 bit), 50” TFT Color Monitor</p> <p>Image Capture for viewing and saving on screen white light images</p> <p><b>Class 1 enclosure:</b> Laser interlocked microscope enclosure to provide Class 1 operation.</p> <p><b>633 nm laser kit including:</b> Beam expander optics 633 nm edge filter for photoluminescence measurements to 1.1 <math>\mu</math>m and Raman from 100 cm<sup>-1</sup> to 1.1 <math>\mu</math>m, 633 nm HeNe laser, 17 mW/above complete with laser line filter</p> <p><b>830 nm laser kit; including:</b> Beam expander optics, 1200 l/mm grating assembly, 830 nm edge filter on kinematic mount to 100 cm<sup>-1</sup>, 830 nm HPNIR diode laser 300 mW complete with laser line filter</p> <p><b>514 nm laser kit; including</b> Beam expander optics, 1200 l/mm grating assembly, 514 nm edge filter 514 nm Argon ion laser, 50mW or above. (Complete set)</p> <p><b>Complete in all aspects for gem-minerals analysis.</b></p> <p><b>Warranty:</b> All parts warranty for at least 12 months.</p>	1
<p><b>Note: All the above equipment(s)/instrument(s) should have the above specs or of better quality. Bid should be complete in all respect including all the necessary attachments, spares and accessories which can serve the purpose to its full satisfaction.</b></p>	

Renovation of Gemology Lab



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S#	Description	QTY
1	S/F/E of wooden cabinet/Table having a frame of Stain less steel pipe of approved section over which a lapping of approved shade 3/4" laminated sheets of approved make and shade as specified and directed by engineer in charge complete in all respect.	140 sft
2	P/F/S of lather ride chair of approved make and shade as per NCEG standards having the arrangement of revolving and up/down complete in all respect.	30 No
3	P/F/I of false ceiling of plaster of Paris <b>tile</b> (10 mm thick) fixing in imported TEE and L as specified and i/c of <b>hanger</b> complete in all respect.	1050sft
4	P/S/F of sink (lavatory) along with fixing of approved and makes shade as specified in size ( standard size ( 30"x24") along i/c mixer valve complete of Asia /faisal and fitting etc. Complete in all respect.	01 No
5	S/F/vertical venation blinds of approved make and shade.	120 sft
6	S/F of 3 phase SDB phase having 1x100 Amp TP and 15x5-10 Amp S/P, light indicator, SS, VSS, complete in all respect.	01 No
7	S/F/E/T/L of Phillips ceiling light complete in all respect LED slim panel light LED PL 36 Watt, as directed by engineer in charge	12 no
8	S/F/T/C of split AC 2.0 Ton hot and cool along with outdoor unit and pipes up 30' length as specified of approved make and shade	01 No
9	S/F of 1.6 mm thick Aluminum of approved make and shade and size 4"x1.5"x1.6mm, i/c of glass 5mm thick complete in all respect.	405 sft
10	S/F/T/C of 1.5 Ton AC of approved make and shade as along with outdoor unit and pipes up to 30' length as specified by the engineer in charge	02 No



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**ANNEXURE VII**

**GEO-TECHNICAL ENGINEERING LAB**

Sr. No	Item Name	Specifications/Description	Qty
1	Water distillation unit for lab	4liters/hr	1
2	Soil water characteristic cell	15 bar maximum suction 71 mm maximum specimen diameter 50 mm maximum specimen height	1
3	Universal automatic compactor	For CBR, Standard & Modified Proctor test With noise reduction cabinet	1
4	Specimen flatness gauge	With dial gage support for measuring flatness of specimens up to 200 mm in height. Includes electronic digital dial gage 0.01 mm (0.0005") resolution	1
5	LVDT calibration	<ul style="list-style-type: none"> <li>• Digital display readout</li> <li>• Spring loaded linear displacement (non rotational)</li> <li>• 25 mm (1 inch) travel range</li> <li>• 0.001mm (0.000050 inch) resolution</li> <li>• Measure absolute or relative displacements</li> <li>• Accept LVDTs with 3/8", 3/4", and 7/8" body</li> <li>• diameter</li> </ul>	1
6	Riffle boxes	<ul style="list-style-type: none"> <li>• 7mm slot width, 30mm, 50mm, 64mm</li> </ul>	1
7	Organic content	Organic impurities test bottles ASTM C40 Colour standard glass scales ASTM C40	1
8	Laboratory coring machine and bits	Laboratory coring machine, 2 speed, complete with water inlet, Diamond core bit for diameter; 21.46, 30.10, 8.10,42.04,54.74 and 63,5mm	1
9	Water bath BS1337-2	Digitally controlled water bath temperature range ambient to +60C°. 230V, 50-60Hz, 1ph, Cover with cooling coil, Adjustable try	1
10	Plate bearing test apparatus (Electronic)	500 kN capacity hydraulic jack, spherical seat, hand pump and pressure gauge, complete with carrying case. Datum bar, dial gauges and load plates to make a complete plate bearing test apparatus.	1
11	Lightweight deflectometer for Dynamic deformation modulus of soil ASTM E2835-11	Complete with loading mechanism, load plate (300X20mm), Electronic settlement measuring instrument	1
12	Sample cart (heavy duty)	Base size in range of 610X910X860m Steel with rubber wheels	1
13	Relative density of cohesion less soil	Mold set (0.5) cubic feet, Relative density gauge set, Vibrating table (vibration frequency3600 rpm.)amplitude range 0.05 to 2.6 mm, Vibrating type electromagnetic Separate amplitude control panel, 12.5 and 25mm dia, pouring devices	1
14	Rock classification hammer	Impact energy of 0,74 Joule (Nm). Ideal to test small sized, sensitive and thin walled materials. Suitable to test also rock core samples.	1
15	Schmidt hammer	Impact energy 2.207Nm, Measurement range 10 to 70 N/mm2, complete with carrying case, grinding stone and instruction manual	1



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**ANNEXURE VIII**

**ENVIRONMENTAL & SOIL SCIENCES LAB**

<b>Sr. No</b>	<b>Item Name</b>	<b>Specifications/Description</b>	<b>Qty</b>
1	Constant climate chamber with light module	Peltier technology for stable and precise long term tests. Temp range-25oC below ambient to +70o Working temp range-- +15oC to +40oC, Humidity without light rh 10-90%. Humidity range with light rh 10-85%, Light Module cold white 65000-70000 kelvin+warm light 2700-3000 kelvin. LED light strips arranged on the side walls of the interior 14 illumination strength programmable controlled dimming from 0-100% of warm light strips arranged on inside walls of the interior all necessary accessories.	1
2	Centrifuge	Bench Top Centrifuge of 18000 RPM and automatic with replaceable rotar of various sizes and with all necessary accessories	1
3	De Humidifier	Moisture removal capacity:22 L/Day Voltage:220V-50Hz Rated input current : 1.8A Rated Input power:350 W Drainage: Tank or Soft pipe Net wt: 13.5kg Gross wt: 15kg Refrigerant:R134a Compressor: rotary compressor Defrost:automatic defrosting Humidity control:automatic humidity control RH40-90%adjustable	1

**Note: All the above equipment(s)/instrument(s) should have the above specs or of better quality. Bid should be complete in all respect including all the necessary attachments, spares and accessories which can serve the purpose to its full satisfaction.**



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**ANNEXURE IX**

**POWER WIRES**

Sr. No	Item	Specifications	Length
1	150MM <sup>2</sup> four core cable	PVC \ PVC 4 core Pure Copper, per meter rate required	90m
2	95MM <sup>2</sup> four core cable	PVC \ PVC 4 core Pure Copper, per meter rate required	100m
3	50MM <sup>2</sup> four core cable	PVC \ PVC 4 core Pure Copper, per meter rate required	70m
4	25MM <sup>2</sup> four core cable	PVC \ PVC 4 core Pure Copper, per meter rate required	125m
5	16MM <sup>2</sup> four core cable	PVC \ PVC 4 core Pure Copper, per meter rate required	30m
6	10MM <sup>2</sup> single core cable	PVC \ PVC 1 core Pure Copper, per meter rate required	500m
7	06MM <sup>2</sup> single core cable	PVC \ PVC 1 core Pure Copper, per meter rate required	300m
8	Telephone wire multi pair	20 pair telephone wire	200m
9	PVC Pipe	PVC conduit 20 mm (2") dia	200m
		PVC conduit 25mm (3") dia	90m
		PVC conduit 25mm (4") dia	100m
10	MAIN MDP STAND FLOOR Panel Board Water proof	MDP Providing, Installation, testing and Commissioning of recessed mounted front access type distribution boards make of 14 SWG M.S sheet duly painted with two coats of anti-rusting paint. The board shall have hinges and proper lock arrangement and manufactured , using all sorts of circuit breakers from Siemens or M.G France or any other approved make and proper brass glands for incoming cables and comprising of the following: including bus bar system, protection system (thermal & magnetic relay, neon phase indicator CT, ampere meter, volt meter ,safety fuses AS PER DRAWING <b>INCOMING</b> 300Amp TP MCCB RC-25KA x1 Voltmeter selector switch x1 Ampere selector switch x1 CT x3 Digital Voltmeter x1 Digital Ampere x1 2AMP FUSES x6 RBY LAMPSx3 COPPER BAS BAR as required PHASE FAILURE AND PHASE REVERSAL RELAYx1 <b>OUT GOINGS</b> 100Amp TP MCCB RC-15KAx3	1



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11	DISTRABUTION BOARD	<b>INCOMING</b> 400Amp TP MCCB RC-25KA x1 Voltmeter selector switch x1 Ampere selector switch x1 CT x3 Digital Voltmeter x1 Digital Ampere x1 2AMP FUSES x6 RBY LAMPSx3 COPPER BAS BAR as required PHASE FAILURE AND PHASE REVERSAL RELAYx1 <b>OUT GOINGS</b> 250Amp TP MCCB RC-15KAx3	1
12	Normal DISTRABUTION BOARD	<b>INCOMING</b> 400Amp TP MCCB RC-25KA x1 Voltmeter selector switch x1 Ampere selector switch x1 CT x3 Digital Voltmeter x1 Digital Ampere x1 2AMP FUSES x6 RBY LAMPSx3 COPPER BAS BAR as required PHASE FAILURE AND PHASE REVERSAL RELAYx1 3 No. 32 Amp TP MCCB RC-15KA 10 No. 16AMP TP MCCB RC-15KA 6No 20AMP TP MCCB RC-15KA	6
13	ATS	Supply & Installation of heavy Duty automatic switch system form wapda to wapda and wapda to generator.	2
<i>Installation &amp; Laying charges be specified separately on per running meter basis. Work will be awarded to bidder, who provides installation &amp; Laying charges.</i>			



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**ANNEXURE X**

**MISCELLANEOUS LAB ITEMS & OTHERS**

Sr.No	Item	Specification	Qty
1.	Laboratory Oven	Multi-functional Digital PID-microprocessor Controller, High-Definition TFT-Color Displays, Temperature range 5°C above ambient up to +300°C, Single DISPLAY Natural convection, Adjustment of per-heated fresh air admixture by air flap control in 10% steps for each segment individually, Self-diagnostics for fault analysis Digital timer adjustable from 1 minute to 99 days, 23 hours, Multiple Over Temperature Protection with audible and visual alarm, Interior Stainless Steel & Textured, Stainless Steel Casing, Operated on 220volts, Large above 740 litre Capacity, with stainless steel trays	1
2	Digital Camera (DSLR) with full accessories	Minimum 18MP CMOS Sensor Digital DSLR Camera with flash, 18-135mm lens included in price, ISO 6400-12800, 9 AF Points, High speed continuous shooting up to 5.0 fps, 2pcs 32GB Class 10 Memory Cards, built-in GPS, High Speed Card Reader, Extra Replacement Battery Charger, Extra High Capacity Replacement Battery, Camera backpack	1
3	Mobile GIS	Integrated 3.75G cellular data, text, and voice capability, 8 MP camera with geotagging and dual LED flash, Wi-Fi. Multi-touch 4.3 inch WVGA sunlight-readable Gorilla® glass display, Integrated speaker and microphone, Processor - 1 GHz, 512 MB RAM and 16 GB built-in storage, Battery - 3.7 V, 3.3 Ah, 12.2 Wh, Long-life, rechargeable Li-ion polymer battery, MicroSD card slot (supports up to 32 GB), Windows Embedded Handheld 6.5 or Android 2.3.4 "Gingerbread" in English, High-sensitivity GPS receiver and antenna, with all accessories and software	1
4	Instrument for Mobile GIS	Instrument for collection GIS data in the field enables with Camera, GPS, Wireless communication, Compass, accelerometer with all the accessories	1
5	Handheld GPS	Garmin handheld eTrax 10 GPS	10+3
6	Geyser	Heavy Duty Geyser, 55 Gallons, Gas Operated.	16
7	Cooking Rang	5 Gas Burners, Grass Weight 48Kg with inside Lamp, Thermostat with knob for gill, Front mercury tempered glass, Double Door, Body Full iron Controlled sheet, Rotisserie, Hot Case	16
8	Entry Doors & MS Grill	Iron Latticed Door MS Grill For Windows	16x3=48
9	Groundwater Level, Temperature and Conductivity (LTC) logger (3-in-one)	Level Sensor: with 10 meter range, 0.1% (FS) accuracy and autotemperature compensation Temperature Sensor: should have a range of 10-40°C at 0.1°C resolution and an accuracy of ±0.1°C Conductivity Sensor: with a range of 0-80,000 µs/cm, having 2% accuracy, 500 µs/cm to 50,000 µs/cm calibrated range, resolution 1µs, temperature compensation 0-40°C and specific conductance at 25°C. Battery: must last for at least five years at 5 minute sampling rate. Operating Temperature: should be in the -20°C to 80°C Clock Accuracy: ± 1 minute/year from 0 to 40°C Data points reading: more than 15000 Communication: Must be able to communicate to USB and RS232 interface Sampling mode: Linear, (5 sec to 99 hrs), Real Time View, Future Start Barometric Compensation: preferably in-built (automatic)	4
10	Differential GPS	Differential GPS with required hardware's and software's	1

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**ANNEXURE XI**

**BARRIERS AND SHEDS FOR ENTRY GATES**

S. No.	Item	Specifications	Quantity
1	Gate Barriers	Gate Barriers are required to control the movement of vehicles from getting in/out of NCEG premises. The Barriers must comprise of 5" iron pipes of 2mm thickness. One side of barrier will be fixed on ground and the other side will be movable at different angles from 0° to 90°.	2
2	Gate Barriers	Gate Barrier is required to control the movement of vehicles from getting in/out of NCEG premises. The Barriers must comprise of 5" iron pipes of 2mm thickness. This barrier will comprise of movable segments to provide space for vehicle movement as and when required	1
3	Shed required for Entry Gates	<ul style="list-style-type: none"> <li>• Four (4") dia round poles 16 guage up righted 10 feet in height above than floor level and about one feet and six inches (1'-6") deep in the concrete welded with six (6") square plate at the top and bottom and this plates at the bottom should tiedly fixed with four sides angle flat iron ( 2" wide and 1/4" thick) plates. All the pipe structure which is deep in the floor should be protected with concrete.</li> <li>• Square pipe (4"x2") 18 guage should be welded at the top frame at all the four side of the main pole.</li> <li>• Square pipe (3"x1") 18 guage should be welded at five feet interval on to the main square pipe.</li> <li>• The CGI sheet 26 guage or as required will be properly clamped with the screws and welded with the top frame. (Complete as per picture enclose).</li> </ul> 	





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**ANNEXURE XII**

**BOOKS**

1. Introduction to Environmental Geology (5th Edition) latest by Edward A. Keller (Author).
3. Earth's Climate: Past and Future 3rd Edition by William F. Ruddiman (Author) Earth Materials: Introduction to Mineralogy and Petrology Pap/Psc Edition by Cornelis Klein.
4. Structural Analysis and Synthesis: A Laboratory Course in Structural Geology 3rd Edition by Stephen M. Rowland (Author), Ernest M. Duebendorfer (Author), Ilsa M. Schiefelbein (Author)
5. Geotours Workbook: A Guide for Exploring Geology & Creating Projects Using Google Earth 1st Edition by M. Scott Wilkerson (Author), M. Beth Wilkerson (Author), Stephen Marshak (Author).
6. Elements of Petroleum Geology, 3rd Edition by Richard C. Selley (Author), Stephen A. Sonnenberg
7. Geochemistry 1st Edition by William M. White (Author).
8. Looking into the Earth: An Introduction to Geological Geophysics 1st Edition by Alan E. Mussett (Author), M. Aftab Khan (Author), Sue Button (Illustrator).
9. Dictionary of Geological Terms: Third Edition (Rocks, Minerals and Gemstones) 3rd ed. Edition by Robert L Bates (Editor), Julia A Jackson (Editor).
10. The Practical Geologist: The Introductory Guide to the Basics of Geology and to Collecting and Identifying Rocks Paperback – August 15, 1992 by Dougal Dixon (Author).
11. Laboratory Manual for Introductory Geology (Second Edition) 2nd Edition by Allan Ludman Stephen Marshak
12. Minerals: Their Constitution and Origin 1st Edition by Hans-Rudolf Wenk (Author), Andrei Bulakh
13. Petroleum Geoscience: From Sedimentary Environments to Rock Physics 2nd ed. 2015 Edition by Knut Bjorlykke (Editor).
14. Reviews in Mineralogy and Geochemistry. Volume 58: Low-Temperature Thermochronology: Techniques, Interpretations, and Applications. (Editors = Peter W. Reiners & Todd A. Ehlers, editors). Year = 2005
15. Geomorphology: The Mechanics and Chemistry of Landscapes (Robert S. Anderson, Suzanne P. Anderson). 2012
16. The SAGE Handbook of Geomorphology. (Editors= Kenneth J Gregory and Andrew S Goudie). 2011
17. Thermochronological Methods: From Palaeotemperature Constraints to Landscape Evolution Models. (Editors= Frank Lisker, Barbara Ventura and U. A. Glasmacher). 2009  
Geological Society (London) special publication No. 324.
18. Rivers in the Landscape: Science and Management. (Ellen Wohl). 2014
19. Global Geomorphology. (Michael A. Summerfield). 2014
20. Statistics for Fission Track Analysis. (Rex F. Galbraith). 2005
21. Detrital thermochronology – Provenance analysis, exhumation, and landscape evolution of mountain belts. (Editors= Matthias Bernet and Cornelia Spiegel). 2004 Geological Society of America special Paper 378.
22. Treatise on Geomorphology. Volume 5: Tectonic Geomorphology. editor: Dr Lewis A. Owen (2013).



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23. Landscape Evolution: Denudation, Climate and Tectonics Over Different Time and Space Scales. Editors = Kerry Gallagher, Stuart J. Jones and John Wainwright. Geological Society (London) special publication 296. 2008
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47. Geological and Mudlogging in Drilling Control. – a catalogue of typical cases Editions Technip 1982.
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49. Linking Diagenesis to Sequence Stratigraphy by Sadoon Morad, Marcelo Ketzer and Luis F. de Ros (Eds). ISBN 9781118485392. 2012
50. Shale Reservoirs: Giant Resources for the 21st Century by Breyer, J.A (Ed.). AAPG Memoir 97. ISBN 978-0-89181-379-8.
51. Tectonics and Sedimentation: Implications for Petroleum systems by Dengliang Gao (Ed.). AAPG Memoir 100, ISBN 0891813811. 2013
52. Electron Microscopy of Sahle Hydrocarbon Reservoirs by Wayne K. Camp, Elizabeth Diaz and Barry Wawak (Eds). AAPG Memoir 102. ISBN 0891813835. 2013
53. Geological Perspectives of Global Climate Change by Lee C. Gerhard, William, E. Harrison and Bernold M. Hanson. AAPG. ISBN 0891810544. 2001
54. Sequence Stratigraphy, Paleoclimate, and Tectonics of Coal-Bearing Strata by Jack C. Pashin and Robert A. Gastaldo. AAPG. ISBN 978-58861-505-3. 2004
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**ANNEXURE XIII**

**GEO-/THERMO- CHRONOLOGY LAB**

<b>S. No.</b>	<b>Item Name</b>	<b>Specifications</b>	<b>Quantity</b>
1.	Thermal Ionization Mass Spectrometer	<ul style="list-style-type: none"> <li>• Complete system for high-precision isotope ratio measurements of geological samples including</li> <li>• all accessories</li> <li>• software and compatible computer system</li> <li>• Maximum Sample input</li> <li>• Compatibility with wide range of detectors (i.e. electron multipliers and Faraday)</li> <li>• Fully networkable to be controlled remotely</li> </ul>	1
2.	(U-Th-[Sm])/He dating system for low temperature thermochronology	<ul style="list-style-type: none"> <li>• Complete dating system including</li> <li>• Laser with related software for heating samples upto 1300 °C.</li> <li>• Gas cleaning line.</li> <li>• Camera with related software for laser chamber.</li> <li>• Mass spectrometer for 4He measurement.</li> <li>• Liquid Nitrogen Plant.</li> </ul>	1
3.	Laser Ablation system.	<ul style="list-style-type: none"> <li>• Laser Ablation system capable of being coupled with “Perkin Elmer NexION 350 X” ICPMS. Laser ablation systems (including complete accessories) with the following laser specifications would be considered</li> <li>• Solid state 213 nm laser</li> <li>• Excite 193 nm laser</li> </ul>	1
<p><b>Note: All the above equipment(s)/instrument(s) should have the above specs or of better quality. Bid should be complete in all respect including all the necessary attachments, spares and accessories which can serve the purpose to its full satisfaction.</b></p>			





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**ANNEXURE XIV**

**XRD LAB**

<b>S. No.</b>	<b>Item Name</b>	<b>Specifications</b>	<b>Quantity</b>
1.	X-Ray Diffractometer	<ul style="list-style-type: none"> <li>• Complete XRD system with all accessories fulfilling the following minimum requirement</li> <li>• XRD range = <math>180^\circ 2\theta</math></li> <li>• X-Ray tube power = 2 Kw supporting all current and future X-ray tubes</li> <li>• Data storage = maximum capacity</li> <li>• Auto search-match software along with database and compatible computer system</li> <li>• Requirements</li> <li>• Phase Identification</li> <li>• Quantitative Analysis</li> <li>• Crystal structure determination</li> <li>• PDF analysis (total scattering)</li> <li>• Small Angle X-Ray Scattering (SAXS)</li> <li>• X-Ray Reflectometry (XRR)</li> <li>• Reciprocal Space Mapping (RSM)</li> <li>• Residual Stress</li> <li>• Texture (pole figures)</li> </ul>	<ul style="list-style-type: none"> <li>• 1</li> </ul>
<p><b>Note: All the above equipment(s)/instrument(s) should have the above specs or of better quality. Bid should be complete in all respect including all the necessary attachments, spares and accessories which can serve the purpose to its full satisfaction.</b></p>			



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**ANNEXURE XV**

**RADON MONITORING LAB**

<b>S. No.</b>	<b>Item Name</b>	<b>Specifications</b>	<b>Quantity</b>
1.	RADON GAS DETECTOR	<p>The equipment must have the following specifications</p> <ul style="list-style-type: none"> <li>• LCD screen capable to display 1-day and 7-day averages of Radon Concentration, updated hourly.</li> <li>• Equipped with sensors for temperature, humidity, atmospheric pressure and tilt.</li> <li>• Ability to turn the display off during measurement</li> <li>• Stores up to 10 years of data at 1-hour resolution</li> <li>• Capable of uploading data to PC.</li> <li>• Software for analysis and reporting. The software must the ability to generate custom graphics, custom professional reports and convert all data into a CSV file.</li> <li>• Work/time exposure calculation to show what parts of the day levels are high</li> <li>• Capable of running on Battery</li> <li>• Operation Environment:               <ul style="list-style-type: none"> <li>○ Temperature Sensor: capable of operation between 4 C° and 40 C°.</li> <li>○ Relative Humidity: 5-95 % RH.</li> <li>○ Measurement Range: 0 Bq/m<sup>3</sup> to 9999 Bq/m<sup>3</sup>.</li> </ul> </li> <li>• Precision (at 100 Bq/m<sup>3</sup>)               <ul style="list-style-type: none"> <li>○ Short Term (7days): 20 % after one week</li> <li>○ Long Term : 10 % after one month</li> <li>○ Accuracy: &lt; 5 % ± 5Bq/m<sup>3</sup></li> </ul> </li> <li>• Internal Memory: capable of storing data for 10 years</li> </ul>	10

**Note: All the above equipment(s)/instrument(s) should have the above specs or of better quality. Bid should be complete in all respect including all the necessary attachments, spares and accessories which can serve the purpose to its full satisfaction.**



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**ANNEXURE XVI**

GIS/RS LAB

S. No.	Item Name	Specifications	Quantity
1.	TERRESTRIAL LASER SCANNER	<ul style="list-style-type: none"> <li>• Ultra long range up to 6000 m</li> <li>• Laser Class 3B</li> <li>• Wide field of view, 60° x 360°</li> <li>• High speed data acquisition up to 222,000 meas./sec</li> <li>• High accuracy, high precision ranging based on echo digitization and online waveform processing</li> <li>• Multiple target capability - unlimited number of targets</li> <li>• Multiple time around processing</li> <li>• Optional waveform data output</li> <li>• Built-in calibrated digital camera</li> <li>• On-board inclination sensors</li> <li>• Integrated L1 GPS receiver with antenna</li> <li>• Integrated compass</li> <li>• Built-in SSD data storage media</li> <li>• Compact and rugged design</li> <li>• Advanced camera options</li> </ul>	1