



# SHRI MATA VAISHNO DEVI INSTITUTE OF MEDICAL EXCELLENCE

(An Institute established by Shri Mata Vaishno Devi Shrine Board, Katra)

**Kakryal -182320**

## Tender Document

**For**

**“SITC of 40 KVA 3 Phase UPS System in Shri Mata Vaishno Devi Institute of Medical Excellence – Kakryal, Katra”**

### Important Information

1. NIT No & Date : No. SMVDIME/IT/214/198-201, Dated: 26.04..2012
2. Site of work : Shri Mata Vaishno Devi Institute of Medical Excellence, Kakryal (Katra)
3. Owners : Shri Mata Vaishno Devi Shrine Board
4. Estimated Cost of work : ₹ 6.00 Lacs (Approx.)
5. Earnest Money Deposit : ₹ 0.12 Lacs
6. Class of Contractor : As specified in NIT
7. Time of Completion : 2 Calendar Months
8. Date of sale of tender documents : From: **27.04.2012 to 09.05.2012**  
On all working days during 10 AM to 5 PM
9. Last date of submission/ receipt of tenders : **10<sup>th</sup> May, 2012 upto 2 pm**
10. Cost of tender document : ₹ 500/- (Non-refundable)
11. Date of issue of tender document : .....
12. Name of contractor/Agency to whom issued : .....
11. Demand Draft details : DD No....., dt.....Amt ₹ .....
- Drawee bank & branch.....

**Signature of Issuing Authority**

TENDER DOCUMENT IS NOT TRANSFERABLE

Address: - Shri Mata Vaishno Devi Institute of Medical Excellence located in Administrative Block of SMVD University, Kakryal, Katra – Pin 182320

Phone: 01991 – 285634 (Extn. 2802 & 2804)

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**SHRI MATA VAISHNO DEVI INSTITUTE OF MEDICAL EXCELLENCE**  
(An Institute established by Shri Mata Vaishno Devi Shrine Board, Katra)

**Notice Inviting Tender**

Sealed tenders on prescribed format affixed with revenue stamps worth ₹ 5.00 and accompanied with EMD in the shape of CDR/FDR of ₹ 0.12 lacs pledged to the Chief Accounts Officer, SMVDIME are hereby invited for and on behalf of the Chairman Shri Mata Vaishno Devi Shrine Board **from the registered and reputed suppliers/ manufacturers/ agencies having experience in relevant field for the Supply, Installation, Testing and Commissioning of 40 KVA three phase UPS System in SMVDIME, Kakryal** as per specifications and terms and conditions mentioned in the tender document.

2. The tender documents containing detailed terms and conditions can be obtained from the office of SMVD Institute of Medical Excellence, located at Administrative Block, Shri Mata Vaishno University, Kakryal, Katra (J&K) against non-refundable payment of **₹ 500 (Rupees five hundred only)** in the form of demand draft of any scheduled bank drawn in favour of Chief Accounts Officer, SMVD Institute of Medical Excellence, Kakryal payable at Kakryal, Katra on all working days from **10:00 hrs. to 1700 hrs w.e.f. 27.04.2012 upto 09.05.2012** or the same can be downloaded from the website: [www.maavaishnodevi.org](http://www.maavaishnodevi.org) of SMVD Shrine Board. The cost of tender document in the shape of DD must accompany the downloaded Tender document.
3. Each tenderer will be issued a complete set of Tender document containing one copy of Volume-I comprising Detailed NIT, Instructions for Tenderer, Form of Tender with Appendix, Form of Agreement, General & Special Conditions of Contract, other forms and annexures (as listed in the document) and one copy of Volume-II containing Technical Specifications, Schedule/ Bill of Quantities and List of Approved Makes for equipment and material.
4. The Earnest Money Deposit in the shape of CDR/FDR valid for a period of 12 Months drawn on any schedule/nationalized bank pledged in favour of Chief Accounts Officer, SMVD Institute of Medical Excellence, Kakryal, payable at Kakryal amounting to **₹ 0.12 lacs (Rupees twelve thousand only)** should accompany the tender offer. The tender/s not accompanied with the Earnest Money deposit shall be rejected. The EMD of successful tenderer shall be retained till completion of the work. The earnest money deposit of unsuccessful Tenderers will be released after the Notice/Letter of award of work is issued in favour of successful Tenderer.
5. The successful / approved tenderer shall have to complete the job / work of SIT & C of required UPS systems within a period of two months from the date of issuance of NOA.
6. The Tenderer shall submit the Tender under two bid system i.e. in two separate envelopes. The envelope containing Technical Bid shall be marked as "A" and the envelope containing Financial/Price Bid shall be marked as "B". The contents of these two envelopes shall be as under:-
  - (a) **1<sup>st</sup> Envelope to be marked as "A" should contain the following information regarding Technical Bid:-**
    - i) Name of the Firm/Company along with attested copy of Article of Association or a Partnership deed if any and registration Card/Certificate alongwith proof of experience in relevant field.
    - ii) Copy of Sale tax registration certificate issued by the concerned department regarding TIN Number and proof of filing the latest return with Sales Tax Department.

- iii) Earnest Money Deposit in the form of C.D.R/ FDR pledged in favour of the Chief Accounts Officer, SMVD Institute of Medical Excellence, Kakryal, Katra.
- iv) Tender Document containing general conditions of Contract and other annexures each page of which shall be duly signed by the tenderer.
- v) Copy of Permanent Account Number (PAN) issued by the Income Tax Department.
- vi) Plan/ Drawings duly signed on each page.
- vii) Power of Attorney, if any.
- viii) Demand draft towards the cost of tender document if the tender document is downloaded from the website of SMVD Shrine Board.

**(b) 2<sup>nd</sup> Envelope to be marked as “B” (Financial Bid) should contain the priced bid i.e., detail of item wise rates quoted by the tenderer.**

7. The two sealed envelopes marked as ‘A’ & ‘B’ shall be further put in a single big envelope and superscripted as **“Supply, Installation, Testing and Commissioning of UPS Systems in SMVDIME”** The Name of the firm/contractor submitting the tender should be clearly and boldly written on the top of the envelope. The Sealed tender addressed to the Medical Superintendent, SMVD Institute of Medical Excellence, Kakryal, Katra-182320 (J&K) should reach in the office of SMVD Institute of Medical Excellence, located at Administrative Block, Shri Mata Vaishno Devi University (SMVDU), Kakryal- Katra **by or before 10.05.2012 - 02.00 PM / 1400 Hrs.** The tenders complete in all respect can be sent through speed post/ registered AD/ Reputed Courier Service or be put in the sealed tender box available in SMVDIME, Kakryal so as to reach in this office by or before due date and time. In case last date for submission of tenders is declared as holiday the last date of submission of tender will be the following working day. The tenders received after the scheduled date and time shall not be entertained.

8. The Tenders received shall be opened in the office of SMVD Institute of Medical Excellence, Kakryal, Katra (J&K), by the Committee constituted for this purpose, in the following manner: -

- a) The Tenders shall be opened on the same day at 1500 Hrs in presence of the tenderers or their authorized representative who may choose to be present or on any other date convenient to the SMVDIME which shall be intimated to the tenderers. Envelope No. 1 marked ‘A’ (Technical Bid) will be opened first on the same day.
- b) After opening of the envelope No. 1 and assessing the submittals as per required conditions, the Tenderers, declared eligible by the committee, shall be informed separately for participation in the opening of Financial Bids i.e., Envelope No. 2 marked ‘B’ (Financial Bid). The Financial Bids of only those Tenderers, who qualify as per the eligibility criteria, shall be opened.
- c) The Financial Bids of the Tenderers who could not qualify will not be opened in any case.

9. The Tender/s received **late** on account of any reason/s whatsoever shall not be entertained.

10. The tenderer shall not be entitled to revoke or withdraw their tenders or vary or modify any of the condition originally contained in the Tender during the validity period of tender. In case of a tenderer revoking or withdrawing his tender or varying any term in regard thereof, the earnest money deposit of such tenderer shall be forfeited to SMVD Institute of Medical Excellence, Kakryal.

11. SMVD Institute of Medical Excellence, Kakryal reserves the right to reject or accept any tender in part or full without assigning any reason whatsoever at any stage.

12. The owner i.e. SMVD Institute of Medical Excellence, Kakryal reserves the right to negotiate the quoted rates, terms and conditions with the lowest tenderer or any of the other tenderer/s to ascertain the suitability of the acceptable offer.

13. The Validity of the tender shall be 120 days from the last date of submission of tenders or such extended time as may be decided by SMVDIME unless otherwise noticed.

14. All disputes arising out in any way connected with this contract shall be deemed to have arisen at Kakryal, Katra and only courts in Katra/ Reasi shall have jurisdiction to determine the same.

15. All the above conditions of NIT and the correspondence relevant to the NIT / tender document shall form part of the contract.

For and on behalf of

**SHRI MATA VAISHNO DEVI INSTITUTE OF MEDICAL EXCELLENCE**

Sd/-

**Medical Superintendent**

## Instructions for Tenderers

## Annexure-II

1. Before tendering, the Tenderers in their own interest are advised to visit site to acquaint about the condition of site, its surroundings, terrain, climate, availability of labour, power, water, communication facilities etc. The owner/SMVDIME shall bear no responsibility for lack of knowledge on their part about the site and other conditions or any information relating thereto. The consequences of the lack of knowledge, as aforesaid, on the part of the Tenderers shall be at the risk and cost of concerned tenderer.
2. The Institute shall not be responsible and shall not pay for expenses which may be incurred or losses to person or property suffered by any Tenderer in connection with visits to and examination of the site and in the preparation of his tender for submission.
3. The Tenderers shall before tendering carefully examine the Tender Documents including the information and Instructions to Tenderers, Conditions of Contract, Special Conditions of Contract, General Particulars & Requirements to Specification, Detailed Specification, Drawings and other matters referred to therein, the Schedules and the Bill of Quantities, and if there should be or appear to be any ambiguity in or discrepancy between any of these documents or between figured and measured dimensions and other aspects upon the Drawings, he shall immediately refer the matter to the SMVDIME/ Engineer incharge for clarification, if required.
4. Time is the essence of the contract and the works shall be completed within the time schedule as indicated in the NIT and Appendix to the form of Tender i.e., Schedule of fiscal Aspects. Any tenderer who disagrees with the time schedule of construction and stipulates a longer period is liable to be rejected.
5.
  - (i) The tenderer shall complete the annexed, Forms of Tender, Schedules and Bill of Quantities and information called for therein, and shall sign and stamp with his/ her/ company's seal each page of the tender document.
  - (ii) The Tender shall contain full address, Telephone Nos., Fax No. and e-mail address if any for correspondence and notices/addendums required to be served to the Tenderer in connection with the tender.
6. The Tender Form and the documents attached to it shall not be detached from one to the other, and no alteration or mutilation (other than filling in all the blank spaces) shall be made in any of the documents attached hereto.
7. Quoted Rates shall include cost on account of all materials, labour, tools, equipment, consumables, scaffolding, platform, safety devices, all carriages (whether mechanical or head load) required for completion of the work. The rates shall include Electricity and Water Charges, WCT, TDS Insurance Premium, PF/CPF, Statutory Taxes etc. and the fee to be paid by the Contractor to the proof consultant for checking and certification of the soundness of design. Withholding of statutory taxes shall be made by deduction from bills at the rates applicable from time to time. The quoted rates shall be entered in ink both in figures and words without overwriting and in the event of any discrepancy between the two, rates entered in words shall only be considered. Cuttings, over writings must be avoided if absolutely unavoidable should be initialed and stamped.
8. All documents of the tender are to be read in conjunction with each other and the tenderer shall take this aspect into consideration while quoting the rates.
9. The Tender must accompany the following information and documents:

- a) A detailed construction programme in the form of a CPM/PERT network chart showing the Tenderer's proposed sequence of operations together with the estimated times for each activity, including construction/manufacture, delivery, erection and commissioning to ensure adherence to the overall completion period, as indicated in the document
  - b) Full details of any special methodology or technique the Contractor proposes to use for the construction or for any other purpose.
  - c) The Tenderer's proposals for supervising the work including the CVs of the various grades of technical supervisory personnel/other staff proposed to be deployed for each month of the construction period.
  - d) Schedules of labour requirements showing the total estimated labour force, for each month of construction period.
  - e) Proposal for major construction facilities to be erected on the site including workshops, offices, storage areas and testing laboratories.
  - f) List of proposed sub-contractors/associates, if any, along with their credentials in respect to the trades of works.
  - g) Information in respect of following aspects.  
 Details of business & technical organization.  
 Financial resources.  
 Past experience in performing work similar in nature and magnitude including mention of the status of completion of project/arbitration etc.
  - h) True copy of TIN i.e., Sales Tax Registration Certificates and license under Labour Regulations issued by the competent authorities in favour of the Contractor.
  - i) The Tenderer shall attach to his tender a copy of authenticated documents containing the constitution of the consortium company or firm by which the Tender is submitted so as to indicate by what persons and in what manner a contract may be entered by the consortium, company or firm and what persons would be directly responsible for the due performance of the Contract and can give valid receipt on behalf of the consortium, company of firm.
  - j) Copy of PAN issued by the Income Tax Department.
10. No Tender shall be considered for acceptance which is not accompanied by the required Earnest Money Deposit (EMD) in the form of CDR/FDR from a nationalized bank pledged in favour of Chief Accounts Officer, Shri Mata Vaishno Devi Institute of Medical Excellence, Kakryal Katra (J&K) and valid for the prescribed period. The Earnest Money Deposit will be returned to the unsuccessful tenderers within four months from the schedule date/ extended date of receipt of tenders or at such earlier/later time depending upon acceptance of the tender by the Owner. In the case of the successful Tenderer, the Earnest Money Deposit shall be retained till completion of the work.
  11. Tenderers, who have purchased the Tender Documents but not submitted the Tender, must return all the documents and drawings by the date of submission of the Tenderer.
  12. The successful tenderer shall not be entitled to any compensation for any loss suffered by him on account of delays, in commencing or executing the work, whatever the cause of delays may be, including delays arising out of modifications to the work entrusted to him or in any sub-contract connected therewith or delays in awarding contracts for other trades of the project or in commencement of completion of such works or in procuring Government controlled or other building materials or in obtaining water and power connections for construction purposes or for any claim in respect thereof. The Owner does not accept liability for any sum towards loss of overheads and profits of the contractor besides the tender amount, subject to such variations as are provided for herein.
  13. The Tenderer (whether or not he submits a tender) shall treat the details of the documents as secret and confidential till financial bid is opened & declared;
  14. The Owner reserves the right to adjust arithmetical or other errors in any Tender in the way, which he considers suitable. Any adjustments so made by the Owner shall be stated to the Tenderer if the Owner shall make an offer to accept the tender.

15. The Owner does not bind himself to accept the lowest or any Tender and has the right to refuse or accept any Tender without assigning any reason. The Owner also has the right to re-issue the Tender without Tenderers having right to object to such re-issue. The owner/SMVDIME reserves the right to negotiate the quoted rates, terms and conditions with the lowest tenderer or any of the other tenderers to ascertain the suitability of the acceptable offer and no claim or objection on this account will be entertained.
16. The successful tenderer shall be liable to pay the turnover tax or such other taxes on the work under the contract as and when levied by the State/central Government Authorities and the Owner shall not entertain any such claims, whatsoever in this respect.
17. Conditional tenders will not be accepted and will summarily be rejected.
18. It is an item rate contract. The quantities indicated in Bill of Quantities against various items are approximate and are merely general information without undertaking as to the correctness thereof and without any obligation relative thereto upon the owner.
19. The successful tenderer shall keep liaison with the Owner till finalization of Letter of Award within validity period. No excuse whatsoever will be entertained for not having received the allotment letter /letter of award through post or otherwise.
20. After the Letter of award is communicated to the successful Tenderer, the contract shall be deemed to be complete and binding upon such Tenderer/contractor. The formal written deed of agreement incorporating all the terms and conditions of the contract including those mentioned in NIT Tender documents and letter of award shall be drawn by the successful contractor with SMVDIME within 20 days after the issuance of Letter of Award.
21. Any further information can be obtained from the office of SMVD Institute of Medical Excellence, Kakryal Katra (J&K).



## Form of Tender

To

**The Medical Superintendent,**  
SMVD Institute of Medical Excellence  
Kakryal (Katra), District Reasi (J&K) - 182320

**Sub: Supply, Installation, Testing and Commissioning of 40 KVA UPS Systems in SMVDIME.**

Sir,

1. Having visited the site and examined the Notice Inviting Tender and the complete Tender Documents including the Drawings, Conditions of Contract, Schedules & Bill of Quantities, appendix to Form of Tender for the construction of the above named works, we offer to construct, complete and maintain the whole of the said works in conformity with the said Tender Document for the sum stated in Bill of Quantities of this Tender document or such other sum as may be ascertained in accordance with the said conditions annexed herewith.
2. I/We undertake to commence, complete and deliver the whole of the works comprised in the contract within stipulated Time reckoning the date of commencement on the 15th day of the issue of acceptance of our Tender.
3. I/We have independently considered the liquidated damages mentioned in the Tender Documents and agree to the same that it represents a fair estimate of the loss likely to be suffered by you in the event of the works not being completed in time.
4. A sum of ₹ \_\_\_\_\_ Lacs (Rupees \_\_\_\_\_ lacs only ) has been deposited as Earnest Money Deposit in the shape of a Call Deposit Receipt / FDR bearing No. \_\_\_\_\_ dated \_\_\_\_\_ and pledged in favour of Chief Accounts Officer, SMVD Institute of Medical Excellence, Kakryal in conformity to the relevant article of the Notice Inviting Tender is enclosed with Tender.
5. If our Tender is accepted, Third Party insurance policy shall be obtained by us from any Insurance Company and all costs including premium.
6. I/We further agree that our tender offer shall remain valid for a period of 120 days or such extended time, as you may decide and our tender may be accepted before the expiry of that period. During this period, we shall remain fully bound by our tender offer.
7. I/We expressly agree that unless and until a formal Agreement is prepared and executed this tender together with your written Acceptance thereof shall constitute a binding Contract between us and nothing shall prevent you from enforcing the contract upon us.
8. I/We understand that in case we are submitting the tender as a consortium and if our tender is accepted all the parties of the consortium shall be jointly and severally responsible for the due performance of the Contract.

9. I/We understand that you are not bound to accept the lowest or any Tender you may receive or in case the response to NIT is considered to be not reasonably competitive by you, you are fully at liberty to invite more tenderers for submitting their offer, before opening of our financial bid to which I/We shall have no objection.
10. I/We also understand that the Owner shall not be bound to accept the lowest tender and reserves the right to reject any or all tenders without assigning any reason thereof and/or to re-invite the tenders at its sole discretion.
11. I/We understand that if our tender is accepted. I/We/AM/Are individually/ jointly responsible for the due performance of the contract
12. I/we also furnish herewith appendix to Form of Tender duly signed by us in acceptance of what is set out therein.
13. I/We have understood the relevant clauses of Conditions of Contract pertaining to the provisions of Prime Cost sums and Provisional Sums and further agree that in case of any doubt or difference of interpretation of those provisions, the decision of the Owner / Engineer shall be final and conclusive.
14. I/We also enclose herewith all the Tender Documents duly signed by us in acceptance of the Terms and Conditions, Drawings, Details, Schedules and Bill of Quantities with our offered rates filled in for various items of the works in support of our offer.
15. I/We also undertake that I/We our firm/company has not been blacklisted by any organization.
16. Our bankers are (with full address)

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 -----  
 -----

**Signature of Contractor/ Authorized Representative**

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

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

**Address** \_\_\_\_\_

**Particulars of Contractor/**

**Agency on whose behalf signed:**

**Tele. No.** \_\_\_\_\_

**Mobile No.** \_\_\_\_\_

**Fax No.** \_\_\_\_\_

**APPENDIX TO FORM OF TENDER**  
**(Schedule of Fiscal Aspects)**

**Annexure-IV**

S. No.	GCC No.	Item	Description of Fiscal Aspect / Tender Terms
1		Earnest Money Deposit	<b>₹ 0.12 Lacs in the form of CDR/FDR valid for 12 months</b> pledged to the Chief Accounts Officer, SMVD Institute of Medical Excellence, Kakryal, Katra (J&K).
2	27	Time of Completion	<b>02 months from the</b> date of issuance of NOA.
3	55	Liquidated Damages for Delay	At the rate of 0.25% of Contract Value per fortnight or part thereof.
4	55	Limit of Liquidated Damages	Up to maximum 10% of Contract Value.
5	30	Defects Liability / Maintenance Period	12 Months from the date of acceptance of the total installation as certified by the Engineer in charge as per Clause 17 of the Special Conditions.
6	40	Taxes & duties	Shall be deemed to include and cover for all Customs Duties, Excise Duties, Sales Tax on Works Contract, Sales Tax on Material, Port Dues, transport charge, Entry Tax, Service Tax, VAT, TDS, Octroi, labour cess, all types of education cess, E.S.I. & PF for labours, Toll tax, Stamp Duties, Central and State Government or local body or Municipal Taxes or Duties and/or taxes or duties from any other body whatsoever which shall be applicable from time to time. all statutory withholding of taxes shall be made at source.
7	59	Insurance	Workman compensation, third party insurance, CAR policy against all loses/damages during the period of contract till end of defect liability period shall be liability of the contractor.
8	53	Retention Money/ Security Deposit	By deduction from the Bills @ 10% of the bill amount.
9	53	Limit of Retention Money/ Security Deposit	10% of Contract Value.
10	53.2	Release of Retention Money/ Security Deposit	The retention / security deposit shall be released after successful completion of the Defect Liability Period under Clause 17 & 18 of the Special Conditions as per certificate / recommendations of the Engineer Incharge.
11		Payment Terms	a) 75% of Contract Sum will be paid on delivery and installation of material and equipment as per Technical Specifications to the satisfaction of the Engineer Incharge (No part shipment of a full equipment will be entertained for payment) subject to submission and approval of all shop drawings, including but not limited to all plans, procedures and deliverables mentioned in the Special Condition, namely Pre-delivery Inspection and Test Plan, Acceptance Testing Procedure, Method

S. No.	GCC No.	Item	Description of Fiscal Aspect / Tender Terms
			Statement, etc. b) 15% on Testing and commissioning of the Equipment and Material to the satisfaction of Engineer Incharge as per Special Conditions. c) 10% on final submission of all As-built / completion drawings including O&M manuals, maintenance charts etc. to be satisfaction of the Project Manager and approval from the client, including obtaining of all licensing approvals from statutory authorities.
12		Space for Labour hutment	No space shall be provided
13		Contractor store, site offices and other facilities	Contractor will have to make their own arrangements.
14		Over time work	Nothing extra shall be paid on this account.
15		No financial or other compensation for delays	Nothing extra shall be paid on this account.
16.		Interface with other vendor / Coordination with the others vendor	Contractor shall be responsible for the coordination with other contractors working at the site for smooth work progress of the project.
17		Water & Electricity	Water and electricity required for the installation / construction purposes shall be arranged by the contractor at its own cost. The Contractor shall provide at its own cost distribution as per its requirements and therefore the costs of cable switches, fuses etc. shall be borne by the Contractor.
18		Site Cleaning	The Contractor shall maintain the site and all work thereon in clean condition at all times. The contractor shall remove all scrap, debris and other unwanted material from the site and as directed by the Divisional Manager / Owner's Representative. In case of default the owner shall have the right to get cleaned the site from the other agency and the cost for it shall be debit to the contractor account.
19		Withholding payment	The Divisional Manager / Owner's Representative may withhold payment on account of subsequently discovered evidence and nullify the whole or a part of any payment certificate to such extent as may be necessary to protect the Owner from loss on account of including but not limited to the following: (i) Defective work not remedied by the Contractor. (ii) Failure of the Contractor to make payments properly and regularly to his own workers, to his sub-contractors, to his suppliers. (iii) Damage by the contractor to the work of other contractors, sub-contractors or vendors etc.

## FORM OF AGREEMENT

Annexure-V

(On stamp paper of ₹ 100/-)

ARTICLE OF AGREEMENT made on this ..... day of \_\_\_\_\_ Two Thousand and \_\_\_\_\_ BETWEEN Shri Mata Vaishno Devi Institute of Medical Excellence, Kakryal (SMVDIME) in short or through the Medical Superintendent, SMVDIME, hereinafter called "Owner" which expression shall, include its successors and assigns wherever the context or meaning shall so require or permit, of the one part and \_\_\_\_\_ (hereinafter referred to as "Contractor" ) of the other part.

WHEREAS the Owner is desirous of having **“Supply, Installation, Testing and Commissioning of 40 KVA UPS Systems in SMVDIME”** in Shri Mata Vaishno Devi Institute of Medical Excellence, Kakryal, Katra (J&K) as mentioned, enumerated or referred to the documents forming part of the “TENDER” and acceptance thereof copies of all of which hereto annexed are designed to form part of this contract and are included in the term “CONTRACT” wherever herein used.

AND WHEREAS the Owner has accepted the tender of the Contractor for the provisions of execution, completion and maintenance of works under Defect Liability Period of the said work.

AND WHEREAS the Contractor has agreed with the Owner to execute, complete and maintain during the Defect Liability Period, subject to the conditions and instructions set forth, herein (hereinafter referred to as “the said conditions”) the works, shown upon the documents forming part of the contract as stated hereinafter, on the item rate basis and as set forth amounting to the contract sum of ..... (Rupees ..... only) hereinafter referred to as “the Said Contract amount/Sum”.

### IT IS HEREBY AGREED AS FOLLOWS NOW:

1. In this agreement words and expressions shall have the same meanings as are respectively assigned to documents hereinafter referred to.
2. The following documents shall be deemed to form and construed as part of this agreement.
  - a) The Said tender and Appendix.
  - b) Form of Tender and Information & Instructions to Tenderer
  - c) The General Conditions of Contract
  - d) The Special Conditions of Contract
  - e) Specifications
  - f) Preamble to Bill of Quantities
  - g) Bill of Quantities
  - h) The Drawings
  - i) The Letter of Acceptance
  - j) Other additional documents as required and listed herein.
3. In consideration of the payments to be made by the Owner to the Contractor for the works to be executed by him, the Contractor shall and will provide, execute and complete the said work on or before the date mentioned in the time schedule of completion of work attached to the tender documents and shall maintain the same at his own cost during the Defects Liability Period, thereafter perform all such aspects and things in the contract mentioned or described or which are to be implied there from or may be reasonably necessary for the completion of the said works and at the times and the matter subject to the terms and conditions or stipulations mentioned in the contract.

4. In consideration of the due provisions, execution and completion of the said works, the Owner does hereby agree with the Contractor that the Owner will pay to the Contractor the respective amount for the work actually done by him and such other sums as may become payable to the contractor under the provisions of the contract. Such payment to be made at any such time and in such manner as provided for in the agreement.
5. The said Terms & Conditions and Appendices thereto shall be read and construed as forming part of this Agreement and the parties hereto shall respectively abide by themselves to the said terms & conditions and perform the agreements on their part respectively in the said terms & conditions contained.
6. The SMVDIME reserves to itself the right of altering the Drawings and nature of the work by adding to or omitting any items of work or having portions of the same carried out without prejudice to this Contract. Also for any reason the Owner feel at any stage of work, that further work is not to be executed the same can be stopped and the work done by the contractor if any can be closed and finalized, and the contractor will not have any financial claim on this account
7. Time shall be considered as the essence of this Contract and the Contractor hereby agrees to commence the work soon after the site is handed over to him or from 15<sup>th</sup> day after the date of issue of formal work order as provided for in the said terms and conditions whichever is later and to complete the entire work within stipulated time from the date of commencement of work subject nevertheless to the provisions for extension of time.
8. All disputes arising out of or in any way connected with this agreement shall be deemed to have arisen at Kakryal-Katra and only courts in Katra/ Reasi shall have jurisdiction to determine the same.
9. That the several parts of this Contract have been read by the Contractor and fully understood by us.
10. **IN WITNESS WHEREOF** the official Seal of **SHRI MATA VAISHNO DEVI INSTITUTE OF MEDICAL EXCELLENCE** was thereto affixed and signed by ..... on its behalf and the contractor has signed this Agreement on the dates respectively mentioned against their signatures in the presence of the following witnesses.

For and on behalf of CONTRACTOR

For and on behalf of  
 Shri Mata Vaishno Devi Institute OF Medical  
 Excellence  
**(Owner)**

Date .....

Date .....

**IN THE PRESENCE OF**

1. Signature \_\_\_\_\_  
 Name \_\_\_\_\_  
 Address \_\_\_\_\_
2. Signature \_\_\_\_\_  
 Name \_\_\_\_\_  
 Address \_\_\_\_\_

1. Signature \_\_\_\_\_  
 Name \_\_\_\_\_  
 Address \_\_\_\_\_
2. Signature \_\_\_\_\_  
 Name \_\_\_\_\_  
 Address \_\_\_\_\_

**FORM OF INDEMNITY BOND**  
**(On ₹ 20/- Stamp Paper)**

**Annexure-VI**

KNOW all men by these presents that I/We \_\_\_\_\_ do hereby execute indemnity Bond in favour of the Medical Superintendent, Shri Mata Vaishno Devi Institute of Medical Excellence, Kakryal Katra (J&K) having their office at Administrative Block, SMVD University, Kakryal near Katra (J&K) and M/s. \_\_\_\_\_ having their office at \_\_\_\_\_ on this \_\_\_\_\_ day of \_\_\_\_\_ 2012

WHEREAS the Shri Mata Vaishno Devi Institute of Medical Excellence, Kakryal, Katra (J&K) have appointed \_\_\_\_\_ as the Contractors for the work “**Supply, Installation, Testing and Commissioning of 40 KVA UPS Systems in SMVDIME**” in Shri Mata Vaishno Devi Institute of Medical Excellence, Kakryal and M/s. \_\_\_\_\_ as Owner’s Representative.

**THIS DEED WITNESS AS FOLLOWS:**

I/We, \_\_\_\_\_ do hereby indemnify and same harmless (1) Medical Superintendent, Shri Mata Vaishno Devi Institute of Medical Excellence, Kakryal, Katra and (2) M/s \_\_\_\_\_ against and from :

- 1) Any third party claims, civil or criminal complaints/liabilities, site mishaps and other accidents or disputes and/or damages occurring, or arising out of any mishaps at the site due to fault work, negligence, faulty construction and/or for violating any law, rules and regulations in force, for the time being while executing/executed civil works by me/us.
- 2) Any damages, loss or expenses due to or resulting from any negligence or breach of duty on the part of me, if any, servants
- 3) Any claim by an employee of mine/ours or of sub-contractor/s, if any, under the Workmen Compensation Act, Minimum Wages Act, Building and other Constructions Workers Act and Owners Liability Act, 1939 or any other law, rules and regulations in force for the time being and any acts replacing and/or amend the same or any of the same as may be in force at the time and under any law in respect of injuries to persons or property arising out of and in the course of the execution of the contract work and/or arising out of and in the course of employment of any workmen/employee.
- 4) Any act or omission of mine/ours or sub-contractor/s if any, our/their servants or agents which may involve any loss, damage, liability, civil or criminal action.

**IN WITNESS WHEREOF THE \_\_\_\_\_ HAS SET HIS/HER HANDS ON THIS DAY OF \_\_\_\_\_ 2012.**

SIGNED AND DELIVERED BY THE  
AFORESAID \_\_\_\_\_  
IN THE PRESENCE OF WITNESS:

- 1)
- 2)

## GENERAL CONDITIONS OF CONTRACT      Annexure-VII

### 1. Definitions & Interpretations

In the contract (as herein under defined) unless, it is otherwise repugnant to the text, the definition of the following words and expressions shall have the meaning hereunder assigned except otherwise specified: -

- i) “Site” means the lands and other places on, under, in, or through which the works are to be executed or carried out and any other lands or places provided by the Owner for the purpose of the works together with such other places as may be specifically designated in the contract as forming part of the site.
- ii) The expression “work” or “works” shall unless there be something either in the subject or context repugnant to such construction be construed and taken to mean the works to be executed in accordance with the contract or parts thereof as the case may be and shall include all additional, altered or substituted works as required for the performance of the contract.
- iii) “Drawings” means the drawings referred to in the documents and any modification of such drawings approved in writing by the Owner and such other drawings as may from time to time be furnished or approved in writing by the Owner / Consultant.
- iv) “Bill of Quantities” means the schedule of quantities or items, materials & Rates, Summaries, etc. as finally accepted.
- v) “Specification” means the specifications including Indian or British or other approved standard specification where so required.
- vi) “Contract” means this agreement and all documents which form part thereof and / or annexed thereto and all amendments thereto made in accordance with the provisions hereof based on Notice Inviting Tenders, the sealed Quotations and the Tender documents including the Tender, General conditions of the contract, specifications, designs & drawings, priced schedule & priced Bill of quantities and schedule of rates and acceptance thereof, read in conjunction and complementary to one and other.
- vii) “Contract Price” or “Contract Value” or “Contract Sum” means the sum set out hereto as the total value of the contract and shall be subject to additions and / or deductions and rebated in accordance with the provision herein contained.
- viii) “Owner” means Shri Mata Vaishno Devi Shrine Board, Katra Jammu (J&K) through the Medical Superintendent, SMVD Institute of Medical Excellence and includes the Owner’s representatives, successors, and assigns.
- ix) “Engineer” means Engineer Incharge or his authorized supervisor and representatives or such other firm / persons, as shall be nominated by the Owner.



- x) “Contractor” means who is awarded contract to perform the work in accordance with the contract and includes the contractor’s personnel, representatives, successors and permitted assigns.
- xi) “Permanent Works” shall mean the works which are of a permanent nature and are not Temporary works.
- xii) “Temporary works,” means all temporary works of every kind required in or about the execution, completion or maintenance of the works.
- xiii) “Materials” means the materials, apparatus, equipment, fittings, fixtures and other things for incorporation in the works.
- xiv) “Period of Maintenance/Defect Liability Period” shall mean the period of 365 (one-year) days calculated from the date of completion and handing over of the work as communicated by Owner.
- xv) “Market Rate” means the rate as decided by the Owner, on the basis of cost of materials inclusive of any taxes, duty, Octroi or such statutes in force at the time of work and cost of labour at site where the work is to be executed plus the percentage to cover all overheads and profit.
- xvi) “Approved” means approved in writing; “approval” means approval in writing.
- xvii) “Month” means calendar month.
- xviii) “Week” means seven consecutive calendar days.
- xix) “Day” means a calendar day beginning and ending at midnight

**2. Extent of Contract:** - It is an item rate contract. The contract comprises the construction, completion and maintenance of the works and except in so far as the contract otherwise provides, the provision of all labour, materials, constructional plant, temporary works and everything whether of a temporary or permanent nature required in and for such construction, completion and maintenance so far as the necessity for providing the same is specified in or reasonably to be inferred from the contract.

**3. Letter of Intent/Acceptance/Award:** - Before signing of the contract, the Owner may issue by registered post or by otherwise, depositing at the registered office of the contractor, letter of Intent/Acceptance to enter into a contract with the contractor for the execution of the works in accordance with the contract. Upon issue of such Letter of Acceptance/Intent by the Owner, the Owner shall be deemed to have signified his intention to award the contract, however, the process shall be deemed to be complete only when the contract has been entered into by the Owner and the Contractor. However, until a formal contract agreement is prepared and executed, the tender together with the Owner’s letter of intent shall constitute a binding contract between the parties.

#### **4 Contract Agreement**

4.1 Within 07 (seven) days after the issue of letter of acceptance, the contractor shall have to enter into a written deed of agreement incorporating all the terms and conditions as embodied in the Tender Documents or modified subsequently in writing and those contained in the letter of acceptance, with the Owner.

4.2 The following documents shall be deemed to form and be read and construed as part of the Contract Agreement:

- a) The said Tender and Appendix.
- b) Form of Tender
- c) Conditions of contract.
- d) Letter of acceptance.
- e) Contract price.
- f) Priced Bill of Quantities as accepted.
- g) Specifications.
- h) Drawings.
- i) Other additional documents as exchanged in correspondence on the subject

**5 Language (s):** - The language in which the contract documents shall be drawn up shall be English.

**6. Documents Mutually Explanatory:** - Except if and to the extent otherwise provided by the contract, the provisions of the conditions of contract shall prevail over those of any other document forming Part of the contract. Subject to the foregoing, the several documents forming the contract are to be taken as mutually explanatory of one another but in case of ambiguities or discrepancies, the same shall be explained and adjusted by the Engineer who shall thereupon issue to the contractor instructions directing in what manner the work is to be carried out.

#### **7. Contractor's General Responsibilities**

7.1 The contractor shall, subject to the provisions of the contract, and with due care and diligence, execute, complete and maintain the works and provide all labour incl. Supervision materials, constructional plant and all other things, whether of a temporary or permanent nature, required in and for such execution, completion and maintenance so far as the necessity for providing the same, excluding those to be provided by the Owner is specified in, or is reasonably to be inferred from the contract.

7.2 The contractor shall carry out and complete and maintain the works in Accordance with good engineering practices and using materials and Workmanship of the quality and standards therein specified provided that Where and to the extent that approval of the quality of materials or of the standards of workmanship is a matter of option, such quality and standards shall be to the satisfaction of the Owner / Consultant / Engineer / Engineer's Representative.

#### **8. Contractor's Superintendence**

**8.1** The Contractor shall give and/or provide all necessary superintendence during the execution of the works and as long thereafter as the Owner may consider necessary for the proper fulfillment of the Contractor's obligations under the Contract. The Contractor or

his competent and authorized technical agent or representative and all other technical staff approved of in writing by the Owner (which approval may at any time be withdrawn) are to be constantly on the works and shall give whole time to the superintendence of the same. Such representatives shall be adequately qualified and have the required experience in similar works. If such approval shall be withdrawn by the Owner, the contractor shall as soon as is practicable (having regard to the requirement of replacing him as hereinafter mentioned) after receiving written notice of such withdrawal remove the agent from the site and shall not thereafter employ him again on the site in any capacity and shall replace him by another agent approved by the Owner. Such authorized agent or representative shall receive on behalf of the contractor, directions and instructions from the Owner/Consultant/Engineer or (subject to the limitations contained in the contract) the Engineer's Representative.

**8.2 Contractor's senior representative for execution and co ordination of Works:** - The contractor shall have on site, at all times during working hours throughout the Course of the contract, at least one competent senior representative who shall be Empowered to make decisions bindings on the contractor in respect of all matters likely to arise in connection with the execution and coordination of the works at site and shall keep the Engineer and the Owner informed at all times about the name and designation of such representative. Only Contractor's senior representative shall have the power to take joint measurements and sign the measurement books / bills.

**8.3 Removal of contractor's employees:** - The Owner / Engineer shall be at liberty to object to and require the contractor to remove forthwith from the works any person employed by the contractor in or about the execution or maintenance of the works who in the opinion of the Engineer misconducts himself or is incompetent or negligent in the proper performance of his duties or whose employment is otherwise considered by the Engineer to be undesirable and such person shall not be again employed upon the works without the written permission of the Owner/Engineer. Any person so removed from the works shall be replaced as soon as possible by a competent substitute approved by the Engineer.

**8.4 Unauthorized Persons:** - No unauthorized persons are to be allowed on the site. The contractor shall instruct all such persons to keep out and shall take steps to prevent trespass.

**8.5 Safety of Site Operations:** - The contractor shall take full responsibility for the safety, stability and adequacy of all site operations and methods of construction including all temporary works, provided that the contractor shall not be responsible, except as may be expressly provided in the contract, for the design of the permanent works.

**9. Assignment:** - The contractor shall not sublet the contract or any part thereof without the prior written consent of the Owner / Engineer.

**10. Sub-Letting:** - Except where otherwise expressly provided in this contract, the contractor shall not sub-let the whole or any part of the works without the prior written consent of the Owner/Engineer and such consent, if given, shall not relieve the contractor from any liability or obligation under the contract and he shall be responsible for the acts, defaults and neglect of any sub-contractor, his agents, servants or workmen as fully as if they were the acts,

defaults or neglects of the contractor or his agents, servants or workmen. Provided always that the provision of labour on a piecework basis shall not be deemed to be sub-letting under this clause.

**11. Technical Specification:**

As shown in annexure IX.

**12. Work to be to the satisfaction of Owner / Consultant / Engineer**

**12.1** The contractor shall execute, complete and maintain the works in strict Accordance with the contract to the satisfaction of the Owner/Consultant/Engineer and shall comply to the Engineer's instructions and directions on any matter concerning the works. The contractor shall take instructions and directions only from the Engineer or from the Engineer's Representative.

**12.2** The contractor shall forthwith comply with all instructions issued to him by the Engineer/Engineer's Representative in regard to any matter in respect of which the Engineer/Engineer's Representative is expressly empowered by these conditions to issue instructions. If within seven days after receipt of a written notice from the Engineer/Engineer's Representative requiring compliance with an instruction the contractor does not comply therewith, then the Owner may employ and pay other persons to execute any work whatsoever which may be necessary to give effect to such instruction and all cost, incurred in connection with such action, shall be recoverable from the contractor by the Owner as a debt or may be deducted by him from any amount due or to become due to the contractor under this contract and carrying out such works by other persons/agencies shall not relieve the contractor from fulfilling his obligations under the contract.

**13. Remedy for Bad Work:** - If it shall appear to the Owner or his representative in charge of the work, that any work has been executed with unsound, imperfect or unskillful workmanship or with materials of any inferior description, or that any materials or articles provided by him for the execution of work are unsound or of a quality inferior to that contracted for, or otherwise not in accordance with the contract, the contractor shall on demand in writing from the Engineer specifying the work, materials or articles complained notwithstanding that the same may have been inadvertently passed, certified and paid for, forthwith rectify and remove and reconstruct the work, so specified in whole or in part as the case may require, at his own risk and cost and in the event of his failure, the Engineer may rectify or remove and re-execute part or whole of the work with new materials after dismantling the rejected works at the risk and cost in all respects of the contractor.

**14. Setting Out:** - The contractor shall be responsible for the true and proper setting out of the works in relation to original points, lines and levels of reference given by the Engineer and mentioned in the drawings and for the correctness (subject as above mentioned) of the position, levels, dimensions and alignment of all parts of the works and for the provision of all necessary instruments, appliances and labour in connection therewith. The checking of any setting out or of any line or level by the Engineer or the Engineer's representative shall not in any way relieve the contractor of his responsibility for the correctness thereof and the contractor shall carefully protect and preserve all bench-marks, sight-rails, pegs ad

other things and references used in setting out the works.

- 15. Watch & Ward & Lighting:** - The contractor shall in connection with the works provide and maintain at his own cost adequate lights, guards, fencing, warning signs and watch & ward staff when and where necessary or required by the Engineer or Engineer's representative or by duly constituted authority for the protection of the works or for the safety and convenience of the public or others.
- 16. Care & Protection of Works:** - From the commencement to the certified completion of the whole of works, the contractor shall take full responsibility for the care thereof and of all Temporary works and in case any damage, loss or injury shall happen to the works or to any part thereof or to any Temporary works from any cause whatsoever (save and except the excepted risks as defined in conditions of the contract) the contractor shall at his own cost repair and make good the same so that at completion, the works shall be in good order and condition and in conformity to every respect with the requirements of the contract and the Owner/Engineer's instructions. In the event of any such damage, loss or injury happens from any of the excepted risks, the contractor shall, if and to the extent required by the Engineer, repair and make good the same as aforesaid at the cost of the Contractor. The contractor shall also be liable for any damage to the works occasioned by him including his sub -contractors in the course of any operations carried out by him for the purpose of completing any outstanding work and complying with his obligations. The contractor shall indemnify the Owner from all risks on this account.
- 17. Compliance with statutes, regulations, etc.:** - The contractor shall conform to, in all respects, with the provisions of any such statute, ordinance or law as aforesaid and the regulation or Bye-Laws of any local or other duly constituted authority prevailing, which may be applicable to the works or to any Temporary works and with such rules and regulations of public bodies and companies as aforesaid and shall keep the Owner indemnified against all penalties and liability of every kind for breach of any such statute, ordinance or law, regulation or bye-law. Provided always that the Owner will repay or allow to the contractor all such sums as the Engineer shall certify to have been properly payable and paid by the contractor in respect of such fees, after due verification of the documents.
- 18. Fossils, etc.:** - All fossils, coins, articles of value or antiquity and structures and other remains or things of geological or archaeological interest discovered on the site of the works shall be deemed to be the absolute property of the Owner and the contractor shall take reasonable precautions to prevent his workmen or any other persons from removing or damaging any such article or thing and shall immediately upon discovery thereof and before removal acquaint the Owner/Engineer's representative of such discovery and carry out at the expense of the Owner and the instructions of Engineer's representative's to the disposal, or otherwise, of the same.
- 19. Patents Rights & Royalties:** - The contractor shall save harmless and indemnify the Owner from and against all claims and proceedings for or on account of infringement of any patent

rights, design trade mark or name or other protected rights in respect of any constructional Plant, Machine work or material used for or in connection with the works or Temporary works or any of them and from against all claims, demand, proceedings, damages, costs, charges and expenses whatsoever in respect thereof or in relation thereto. The contractor shall pay all tonnage and other royalties, rent and other payments or compensation (if any) for getting stones, sand gravel, clay or other materials required for the works or Temporary works or any of them.

- 20. Interference with Traffic and adjoining properties:** - All operations necessary for the execution of the works and for the construction of any Temporary works shall so far as in compliance with the requirements of the contract permits, be carried on so as not to interfere unnecessarily or improperly, with the public convenience or the access to use and occupation of public or footpaths or to or of properties whether in the possession of the Owner or of any other person and the contractor shall save harmless and indemnify the Owner in-respect of all claims, demands, proceedings, damages, costs, charges and expense whatsoever arising out of or in relation to any such matters in so far as the contractor is responsible therefore.
- 21. Opportunities for other contractor/agencies:** - The contractor shall, in accordance with the requirements of the Engineer, afford all reasonable opportunities for carrying out their work to any other contractor or agencies employed by the Owner and their workmen and to the workmen of the Owner and of any other duly constituted authority who may be employed in the execution on or near the site of any work not included in the contract or of any contract which the Owner may enter into in connection with or ancillary to the works. For any dispute in the matter, the same should be referred to Owner/Engineer and decision given by them will be binding.
- 22. Supply of Plant, Materials & Labour at site of work:** - The contractor shall at his own expense supply and provide all the constructional plant, tools & equipment, temporary works, materials both for temporary and for permanent works, labour (skilled & unskilled and including the supervision thereof), transport to or from the site and in and about the works and other things of every kind required for the construction, completion and maintenance of works. The makes and brands of various construction materials are specified in the list of approved makes.
- 23. Site Clearance**
- 23.1 Contractor to keep site clear:** - During the progress of the works, the contractor shall keep the site reasonably free from all unnecessary obstruction and shall store or dispose of any constructional plant and surplus materials and clear away and remove from the site any wreckage, rubbish or temporary works which are no longer required.
- 23.2 Clearance of Site on completion:** - On the completion of the works, the contractor shall clear away and remove from the site all constructional plant, surplus materials, rubbish and temporary works of every kind and leave the whole of the site and works clean and in a workman

like condition to the full satisfaction of the Owner not later than one month from the virtual completion of the works.

**24. Engagement of labour and labour Regulations**

- i) The contractor shall employ labour in sufficient numbers either directly or through sub-contractors to maintain the required rate of progress and of quality to ensure workmanship of the degree specified in the contract and to the satisfaction of the Owner/Engineer.
- ii) The contractor shall not employ, in connection with the works, any person who is a minor as laid down in the prevalent laws.
- iii) The contractor shall pay to the labour, employed by him either directly or through sub-contractors, wages not less than fair wages as defined in the Labour Laws / Labour Regulations.
- iv) The contractor shall, in respect of labour employed by him either directly or through sub-contractors, comply with or cause to be completed with the contractor's labour Regulations in regard to all matters provided therein.
- v) The contractor shall comply with the provision of the latest payment of wages act, Minimum wages Act, Owner's Liability Act, Workmen's compensation Act, Industrial Disputes Act, and the Maternity Benefit Act, the contract labour (Regulation and Abolition) Act, or any modifications thereof or any other law relating thereto and rules made there under from time to time.
- vi) The contractor shall indemnify Owner against any payments to be made under and for the observance of the Regulations aforesaid, without prejudice to his right to claim indemnity from his sub-contractors.
- vii) The decision of the Owner in matters relating to the reports from the Inspecting Officers shall be final and binding and deductions for recovery of any liquidated damages in this respect may be made from any amount payable to the contractor.
- viii) Observance by Sub-Contractors: - The contractor shall be responsible for the observance by sub-contractors employed by him in the execution of this contract, of the provisions hereof and applicable laws, rules and regulations.

**25. Quality of Materials & Workmanship:** - All materials and workmanship shall be the best of the respective kinds described in the contract and in accordance with the Owner/Engineer's instructions and shall be subjected from time to time to such tests as the Owner/Engineer may direct at the place of manufacture or fabrication or on the site or at all or any of such places. The contractor shall upon the instructions of the Engineer/ Engineer's Representative

furnish him with documentation to prove that the materials & goods comply with the requirements of contract and for requirement stated above. The Engineer may issue instructions in regard to removal of material from site or any work, if these are not in accordance with the contract. The contractor shall provide such assistance instruments, machinery, labour and materials as are normally required for examining, measuring and testing and work and the quality, weight or quantity of any materials before incorporation in the works for testing as may be selected and required by the Engineer/Engineer's representative. All materials brought to site for use on work shall conform to relevant Indian Standard Code published by Bureau of Indian Standards.

**26. Examination of work before covering up.**

26.1 No work shall be covered up or put out of view without the approval of the Engineer or the Engineer's Representative and the contractor shall afford full opportunity for the Engineer or the Engineer's Representative to examine and measure any work which is about to be covered up or put out of view and to examine foundations before permanent work is placed thereon. The contractor shall give due notice to the Engineer's Representative whenever any such work or foundations is or are ready or about to be ready for examination and the Engineer's Representative shall without unreasonable delay, unless he considers it unnecessary and advises the contractor accordingly, attend for the purpose of examining and measuring such work.

**27. Commencement and completion of Works:** - The contractor shall commence the works on site immediately on receipt of an order in writing to this effect from the Owner and shall proceed with the same with due expedition and without delay except as may be expressly sanctioned or ordered by the Engineer or be wholly beyond the contractor's control.

**28. Possession of Site for Construction**

**28.1 Purpose:** - The Owner will with the Engineer's written order to commence the works, give to the contractor possession of so much of the site as may be required to enable the contractor to commence and proceed with the construction programme and otherwise in accordance with such reasonable proposals of the contractor as he shall by notice in writing to the Engineer make and will from time to time as the work proceed give to the contractor possession of such further portions of the site as may be required to enable the contractor to proceed with the construction of the works with due dispatch in accordance with the said programme or proposals (as the case may be).

**28.2 Power, Water & Other Facilities:** - The contractor shall be responsible for providing within the scope of work all facilities necessary for the performance of the work including (but not limited to) water, electrical power, electrical power through generator, transportation, labour tools, construction equipment and machinery, access and right (s) of way to or about the job site(s). However, the owner at its discretion may assist in getting the power connection, but cost of power consumed shall be paid by contractor.



**29. Final Certificates & Termination of responsibilities**

**29.1 Final Completion Certificate:** - On successful completion of entire works covered by the contract to the full satisfaction of Owner/Engineer, the contractor shall ensure that the following works have been completed to the satisfaction of Engineer: (a) clear the site of all scaffolding, wiring, pipes, surplus materials, contractor's labour, equipment and machinery  
(b) demolish, dismantle and remove all contractor's site offices and quarters and other temporary works, structures and constructions and other items and things whatsoever brought upon or erected at the site or any land allotted to contractor by the Owner and not incorporated in the permanent works  
(c) remove all rubbish, debris etc. from the site and the land allotted to contractor and shall clear, level and dress, compact the site as required and said land to the satisfaction of the Engineer,  
(d) Shall put the Owner in undisputed custody and possession of the site and all land allotted by the Owner to the contractor.  
(e) All defects/imperfections have been attended & rectified to full satisfaction of the Engineer during the Defect Liability Period.

Unless the contractor shall have fulfilled the provisions of the clause, the works shall not be deemed to have been completed. Upon the satisfactory fulfillment by contractor as stated above, the contractor shall be entitled to apply to the Engineer for a final completion certificate in respect of the entire work.

This issuance of a completion certificate shall be without prejudice to the Owner's rights and contractor's liabilities under the contract, including the contractor's liability for the Defect Liability Period nor shall the issuance of a completion certificate in respect of the works or work at any site be construed as a waiver of any right or claim of the Owner against the contractor in respect of work or the works at the site and in respect of which the final completion certificate has been issued.

**29.2 Defect Liability/Maintenance Completion Certificate:** - The contract shall not be considered as completed until a Maintenance Completion Certificate shall have been signed by the Engineer and delivered to the Owner with a copy to the contractor stating that the works have been completed and maintained during the Defect Liability Period by the contractor to his full satisfaction. The Maintenance Completion Certificate shall be given by the Engineer within twenty eight days after the expiration of the Maintenance/Defect-Liability-Period.

**29.3 Cessation of Owner's Liability:** - The Owner shall not be liable to the contractor for any matter or thing arising out of or in connection with the contract or the execution of the works unless the contractor shall have made a claim in writing in respect thereof before the issuance of the Defect Liability/Maintenance Completion Certificate under this clause.

**30. Defect-Liability/Maintenance Period**

**30.1** The contractor shall maintain the whole of permanent works in a thoroughly sound, substantial efficient and perfect condition during the Defects-Liability Period of 12 months

from the date of completion of the whole or part of works, as certified by the Engineer, remedying at his own cost and to the satisfaction of the Engineer, any defects (excepting fair wear & tear, cleaning, normal day to day maintenance during the use of the building after being occupied) which may become apparent, prior to or during this Defects-Liability period, arising out of defective materials and/or workmanship or default, neglect or omission of the contractor notwithstanding, that the Owner has used portions of the works before the whole of the works were completed, during the Defect Liability Period. All tools plant, machinery, materials, superintendence, labour and other devices of all kinds necessary for such maintenance of the works during Defect Liability Period are to be supplied by and at the expense of the contractor. The whole cost of rectification of defects, replacement of defective work or part thereof to the satisfaction of the Engineer, shall be at the expense of the contractor.

**30.2 Remedy on contractor's failure to remove defective work:** - If the contractor shall fail to carry out any such work as aforesaid required by the Engineer, Owner shall be entitled to carryout such work by his own workmen or by other contractors and if such work which in the opinion of the Owner, the Contractor was liable to do at his own expense under the contract, then all expenses consequent thereon or incidental thereto shall be recoverable from the contractor by the Owner and shall be deducted by the Owner from any money/ amount due or that becomes due to the contractor.

**31. Variations:-**

If the Owner/Engineer may make any variation in quality or quantity of the works or any part thereof that may in their opinion be necessary, then the Engineer / Owner shall have power to order the contractor to carry out the same and in any of the following:

- (a) Increase or decrease the quantity of any work included in the contract
- (b) Omit any such work
- (c) Change the character or quality or kind of any such work
- (d) Change the levels lines position and dimensions of any part of the works and
- (e) Execute additional work of any kind necessary for the completion of the works and no such variation shall in any way vitiate or invalidate the contract but the value (if any) of all such approved variations shall be taken into account in ascertaining the amount of the contract price.

**32. Valuation of Variations:** - Any item not existing in the agreed rate list shall be paid on the following basis: -

- a) If the item is existing in the DSR schedule of rates of 2007, the same will be allowed at an appreciation of 40%.
- b) In case, the item does not exist as per (a) above, the same will be paid on the basis of analysis of the rates based on the actual market rates of various inputs with 15% of contractor's profit.

**33 Contract Price not subject to Variation**

The contract rates shall not be adjusted in respect of any increase or decrease of cost to the

contractor in carrying out the works by reason of alteration in the rates of wages and allowances payable to labour or change in the conditions of employment thereof or change in the cost of materials (whether for the permanent or temporary works) consumable stores fuel and power or variations in the rates of freight and insurance or in the incidence of or rates of landing charges or the operation of any law or statute or variation in the cost of any other matter or thing of whatsoever nature subsequent to the date of Tender.

So, it must be clearly understood by the contractor that no claim on account of enhanced rates on those items of work already accepted due to fluctuations of rates of materials will be entertained during the currency of the contract for the work, as per bill of quantities attached to the agreement and the additional work, if any, under relevant clause of the contract.

**34. Plants etc. not to be removed:** - No constructional Plant Temporary works or materials or any part thereof shall be removed from the site without the written consent of the Owner which consent shall not be unreasonably withheld where the same is no longer immediately required for the purpose of completion of the works. The Owner will permit the contractor the exclusive use of all such constructional plant, temporary works and materials in and for the completion of the works until the happening of any event which gives right to the Owner to exclude the contractor from the site and proceed with the completion of the works.

**35. Quantities:** - The quantities set out in the Bill of Quantities are only approximate quantities of the work and they are not to be taken as the actual and correct quantities of the works to be executed by the contractor in fulfillment of his obligations under the contract & the quantities may vary to an extent conforming to actual site conditions & requirements and such variation whether in the quantity of Individual items or in the over all amount of the contract to actual shall not in any way vitiate or invalidate the contract, nor shall the contractor be entitled to any additional financial claim for increase or decrease of quantities of any item/items of work.

**36. Works to be measured**

**36.1** The Owner/Engineer shall except as otherwise stated ascertain and determine by measurement the quantity and value of work done in accordance with the contract. He shall, when he requires any part or parts of the works to be measured give notice to the contractor's authorized agent or representative who shall forthwith attend or send a qualified agent to assist the Engineer or the Engineer's Representative in checking such measurements & other substantiations of the Bill submitted by the contractor and shall furnish all particulars required by either of them. Should the contractor not attend or neglect or omit to send such agent then the measurement made by the Engineer or approved by him shall be taken to be the correct measurement of the work and shall be conclusive and binding on the contractor.

**36.2** Unless otherwise described in the schedule of quantities, the method of measurement shall be as described in method of measurement of building and civil engineering works (IS

**1200 Part I to XXV) latest edition of Bureau of Indian Standards.**

- 37. Urgent Repairs/Works:** - If by reason of any accident or failure or other event occurring to in or in connection with the works, or any part thereof, either during the execution of the works or during the period of defect liability/maintenance, any remedial or other work or repair shall, in the opinion of the Engineer or Engineer's Representative be urgently necessary for security and safety of life or for the works or adjoining property, and the contractor is unable or unwilling to do such work or repair, the Owner may employ his own or other workman to do such work or repair, as the Engineer or the Engineer's Representative may consider necessary. If the work or repair so done by the Owner is work which, in the opinion of the Engineer, the contractor was liable to do at his own expense under the contract, all costs and charges properly incurred by the Owner in so doing shall on demand be paid by the contractor to the Owner or may be deducted by the Owner from any monies due or which may become due with the contractor. Provided always that the Engineer or the Engineer's Representative (as the case may be) shall, as soon as after the occurrence of any such emergency, as may be reasonably practicable notify, the contractor thereof in writing.
- 38. Payment in Event of Frustration:** - In the event of the contract being frustrated whether by war or otherwise, howsoever, the sum payable by the Owner to the contractor in respect of the works executed shall be the same as that which would have been payable hereof if the contract had been terminated under the provisions of conditions of the contract.
- 39. Serving of Notices**
- 39.1 On Contractor:-** Any notice to be given to the Contractor, under the terms of the contract shall be served by sending the same by registered post to or leaving the same at the contractor's Principal place of business (or in the event of the contractor being a company to or at its Registered Office).
- 39.2 On Owner:** - Any notice to be given to the Owner, under the terms of the contract, shall be served by sending the same by Registered post to or leaving the same at the Owner's last known address.
- 40. Excise & Sales Taxes, Works contract Tax for works.**
- 40.1** The contractor shall be responsible for payment of all taxes, duties, levies, fees or charges in respect of the works including but not limited to sales taxes, Tax on works contract, excise duties and octroi, payable in respect of materials, equipments, plant and other things required for the contract. All of the aforesaid taxes, duties, levies, fees and any other statutory taxes/ charges shall be to the contractor's account and Owner shall not be required to pay any additional or extra amount on this account. Variation of the taxes, duties, levies, fees etc., if any, till completion of the work, shall be deemed to be included in the accepted rates and no extra claim on this or any other account will be entertained.
- 40.2 Taxes on Profit:** - The contractor will be required to pay all taxes levied by the central and/or state Governments on such part of his profit in respect of the contract as is chargeable

therewith under the laws for the time being in force.

41. **Excavated materials property of Owner:** - All materials and things of any kind obtained from excavations or found on or under the site or under any additional site, which the contractor may be allowed to occupy, shall remain the property of the Owner and shall not be used in the works or sold or otherwise disposed of without the written authority of the Owner unless otherwise expressly provided in the specification. No excavations are to be made upon the site or additional site beyond those shown on the drawings without written authority of the Engineer or the Engineer's Representative.
42. **Contract supersedes previous Documents:** - The contractor shall have no right to any increase in the rates in the Bill of Quantities nor any other right whatsoever by reason of any representative's explanation or statement given or to be given or by a reason of any information, promise, or guarantee given or alleged to have been given to him by any person (whether in the Employ of the Owner or not) before the date of the contract it being understood that the contract embodies the whole arrangements between the parties with reference to the contract hereby constituted and all previous correspondence, negotiations, representatives, explanations, statements, promises or guarantees whether oral or written shall be excluded.
43. **Dimensions and Levels:** - All dimensions and levels shown on the drawings shall be verified by the contractor on the site and he will be held responsible for the accuracy and maintenance of all dimensions and levels. Figured dimensions are in all cases to be accepted and no dimension shall be scaled. Large-scale details shall take precedence over small-scale drawings. In case of discrepancy the contractor shall ask for clarification from the Engineer's Representative before proceeding with the work.
44. **Assistance for Engineer / Engineer's Representative:** - The contractor shall provide for the Engineer/Engineer's Representative at all times during the contract including maintenance, a competent person or all such other men as he may require to assist him in carrying out or checking any measurements, levels, setting out or measuring up of work. The contractor is also to provide ladders, gangways etc. and the necessary attendance to move and adopt as directed for inspection or measurement of the works by the Owner/Engineer and their representatives.
45. **Construction Records:** - The contractor shall keep and provide to the Engineer's Representative full and accurate Records of the dimensions and positions of all new work and any other information necessary for the Engineer's Representative to be able to prepare complete drawings, recording details of the works as constructed.
46. **Owner's Supply of Materials:** - No material shall be supplied by the Owner.
47. **Lighting for works:** - The contractor shall at all times provide adequate and approved

lighting as required for the proper execution and supervision and inspection of the works at his own cost.

48. **Site Instruction Book:** - The Engineer's Representative shall maintain a site instruction book on the site in which he or his authorized representative's remarks, instructions, decisions and other essential details, of the work shall be recorded. The contractor shall regularly note the contents of this book and initial it signifying his having done so and take immediate action on the same.
49. **Progress Report:** - The contractor shall submit monthly progress reports indicating status of each activity planned for the period under consideration and summary of each completed and planned activity and the anticipated starting date for the activities planned but not in progress, schedule of materials including the details of materials received and expected time of arrival of other materials as ordered and such other details affecting the programme and progress of the work to the Engineer's Representative in a form as required by him which shall also include reasonable number of progress photographs of the works.
50. **Approved Makes:** - The specifications provide a list of makes of some materials specified. The Owner / Engineer have the right to choose any of the specified makes, which according to him is the best and most suitable for the purpose. The tender price quoted shall cover this aspect. Only when it is not possible to use any of the specified makes, either due to non-availability or due to technical reasons, the contractor shall propose alternative makes and if found suitable these shall be approved by the Owner for construction but without any extra cost to the Owner.
51. **Keeping Site Clean:** - During the progress of the works and when directed by the Engineer's Representative, the contractor shall keep the site clear of all rubbish and debris including that which may be deposited on the site by any sub-contractor until the date of issue of certificate of completion. The cost of keeping the site clean shall be deemed to have been included for in the rates. On completion of the works, the contractor shall at his own expense clear away and remove from the site not later than 15 days from the date of completion of works all constructional plant, surplus material, rubbish and temporary works of every kind and leave the entire site and works clean and in work man like condition to the satisfaction of the Engineer's representative.
52. **Extension of Time:-** The time for completion of the works in the event of any authorized deviations or additional work resulting in additional cost over the contract sum, shall be extended, if requested by the contractor, in the proportion in which the cost of the altered, additional or substituted work bears to the original contract sums plus any additional time, which the 'Owner' may consider reasonable on the recommendations of the Engineer. Similarly, in the event of deletion of some items, the time for completion for the work shall be reduced in the proportion of altered cost to the original contract sum.

**52.1 If the work be delayed by:**

- a. Force Majeure, or
- b. Serious loss or damage by fire, or
- c. Civil commotion, local combination of workmen, strike or lock out, affecting any of the trades employed on the work, or
- d. Any other cause, which in the absolute discretion of the Owner is beyond the contractor's control.

Then upon the happening of any such event causing delay, the contractor shall immediately give notice thereof in writing to the Owner/Engineer, but shall nevertheless use constantly his best endeavors to prevent or make good the delay and shall take all possible steps to the satisfaction of the 'Engineer' to proceed with the works.

Request for extension of time, shall be made by the contractor in writing no later than fourteen days of the happening of the event causing delay, the contractor may also, if practicable, indicate in such a request, the period for which extension is desired.

In any such case, the 'Owner' on the recommendations of the Engineer may give a reasonable extension of time for completion of the work, which shall be communicated to the contractor by the Engineer. Any extension of completion period shall not entitle the contractor to any other monetary gain or claim.

The term "Force Majeure" in the contract shall mean civil war, tidal waves, fire, major floods, earthquake ( above 7 magnitude on Richter Scale ) damage from Aircraft, nuclear fission, riots ( other than among the contractor's employees ), lighting and other causes over which the contractor has no control and as accepted by the Owner whose decision shall be binding and final.

This will not entitle the contractor to any claims for the increase in rates / cost of the contract.

**53. Security Deposit/ Retention Money**

**53.1** Security deposit/ Retention Money at the rate of 10% (Ten percent only) shall be deducted from the Running account bills of the contractor so as to build upto 10% of contract value.

**53.2** The security deposit deducted from the running account bills shall be released after successful completion of defect liability period as per the terms & conditions of the contract on the certification of the Engineer.

**54. Mobilization Advances:** - No Mobilization advance shall be paid to the contractor.

**55. Liquidated damage:** -If the contractor shall fail to complete the works within the stipulated period of completion, the contractor shall be liable to pay to the Owner as pre-estimated damages / penalty for delay at the rate of 0.25% percent of the contract price for each fortnight of delay subject to a maximum of 10% (Ten Percent) of the contract value or as

recommended by the Engineer Incharge.

**56. TERMINATION OF CONTRACT: -** Foreclosure in full or in part due to abandonment or reduction in scope of work

**56.1** If at any time after acceptance of the tender Owner decides, to abandon or reduce the scope of the works for any reason whatsoever and hence not require the whole or any part of the works given to be carried out, the Engineer shall give notice in writing to that effect to the contractor and the contractor shall have no claim to any payment of compensation or otherwise whatsoever, on account of any profit or advantage which he might have derived from the execution of the works in full, but which he did not derive in consequence of the foreclosure of the whole or part of the works.

**56.2** The contractor shall be paid at contract rates full amounts for works executed at site and in addition a reasonable amount as certified by the Engineer for the items hereunder mentioned which could not be utilized on the work to the full extent because of the foreclosure:

- a. Any expenditure incurred on preliminary site work, e.g. temporary access roads, temporary labour huts, staff quarter and site office storage accommodation and water storage tanks.
- b. The Owner shall have the option to take over contractor's materials or any part thereof either brought to site provided the material conforms to specified standards.
  - i. For materials taken over or to be taken over by the Owner, the cost to be paid shall take into account purchase price, cost of transportation .
  - ii. For materials not retained by the Owner, no compensation on this account will be paid any such material will be lifted by the contractor at his cost and site cleaned neatly.

**57. CANCELLATION OF THE CONTRACT IN FULL OR IN PART:**

- a. **If the contractor: -**
  - i. at any time makes default in proceeding with the works with due diligence and continues to do so even 15 days after a notice in writing from the Engineer; or
  - ii. Commits defaults in complying with any of the terms and conditions of the contract and does not remedy it within 15 days after a notice in writing is given to him in that behalf by the Engineer; or
  - iii. fails to complete the works or any part of the work on or before the date of completion and does not complete them within the period specified in notice give in writing in that behalf by the Engineer; or
  - iv. has obtained a contract with the Owner as a result of ring tendering or other non-bonafide methods of competitive tendering; or
  - v. The owner shall cancel the contract by a written notice to the contractor.



**b. The Owner shall on such cancellation have powers to:**

- i) Take possession of the site and any materials, constructional plants, implements, stores, etc. thereon, and make out a list of such material in presence of the representative of the contractor who shall have to be present on one day notice and in case of non compliance of the notice measurements taken by the owner rep. shall be considered as final and contractor will have no claim of any sort regarding this..
- ii). Carry out the incomplete work by any means at the risks and cost of the contractor.
- iii) On cancellation of the contract in full or in part, the Engineer shall determine what amount, if any, is recoverable from the contractor for completion of the works or in case the works or part of the works not to be completed, the loss or damage suffered by Owner. In determining this amount, credit shall be given to the contractor for the value of the work executed by him up to the time of cancellation, the value of the contractor's materials taken over and incorporated in the work, and use of machinery belonging to the contractor.
- iv) Any excess expenditure incurred or to be incurred by the Owner in completing the works or part of the works or the excess loss or damage suffered or may be suffered by the Owner as aforesaid after allowing such credit shall be recovered from any amount due to the contractor on any account, and if such amount is not sufficient, the contractor shall be called upon in writing to pay the same, within 30 days of the notice given to that effect by the 'Engineer'.
- v) If the contractor shall fail to pay the required sum within the aforesaid period of 30 days, the Owner shall have the right to sell any or all of the contractor's unused materials, constructional plant, implements, temporary buildings; etc. and apply the proceeds of sale thereof towards the satisfaction of any sums due from the contractor under the contract and in accordance with the provisions thereof.
- vi) Any sums in excess of the amounts due to the Owner and unsold materials constructional plant, etc. shall be returned to the contractor, provided always that if cost or anticipated cost of completion by the Owner, of the works is less than the amount which the contractor would have been paid had he completed the works, such benefit shall not accrue to the contractor.

**58 Payment Terms:**

Unless otherwise provided payment shall be made as per payment terms specified in the Schedule of Fiscal Aspects.

**(i) Final Payment:**

The contractor shall submit his final bill substantiated with complete supporting documents as required by the Engineer, showing the account of all works / supplies as executed by him in details,

the quantities and value of work done in accordance with contract, within 30 days of date of completion of all works as certified by the Engineer. The Owner shall pay the net amount, if due, after all recoveries and deductions within 20 days of receipt of certified bill from the Engineer. After final payment no claims shall be entertained at the later stage.

## **59. CONTRACTORS LIABILITY AND INSURANCE**

**59.1** From commencement to completion of the works, the contractor shall take full responsibility for the care thereof and for taking precautions to prevent loss or damage and to minimize loss or damage to the greatest extent possible and shall be fully responsible/liable for any damage or loss that may happen to the works or any part thereof, to any fixed/unfixed materials supplied at site against which payment or recoverable advance may have been paid or not, from any cause whatsoever and shall at his own cost, repair and make good the same, so that at completion, the works shall be in good order and condition and in conformity in every respect with the requirements of the contract and instructions of the Engineer. Without limiting his obligations and responsibilities under the above clause, the contractor shall insure the following in the joint names of the Owner and the contractor, against all loss or damages from whatever cause for which he is responsible under the terms of the contract and in such manner that the Owner and the contractor are covered during the period of construction of the works and the defects liability period for loss or damage arising from a cause occurring prior to the commencement of the damage caused by the contractor, in the course of any operation carried out by him for the purposes of complying with his obligations.

(a) The works and the temporary works to the full values of such works executed from time to time.

(b) The Materials, constructional plant and other things brought to site by the contractor to the full value of such materials, constructional plant and other things.

**59.2 DAMAGE TO PERSONS AND PROPERTY:** - The contractor shall indemnify and keep indemnified the Owner against all losses and claims for injuries or damage to any person or any property whatsoever which may arise out of or in consequence of the construction and maintenance of the works and against all claims, demands, proceedings, damages, costs, charges and expenses whatsoever in respect of or in relation thereto. Before commencing execution of the work, the contractor shall, without in any way limiting his obligations and responsibilities under the conditions, insure against any damage, loss or injury which may occur to any property (including that of the Owner) or to any person (including any employee of Owner) by or arising out of carrying out of the contract.

**59.3 Owner to be indemnified:** - The contractor shall at all times indemnify the Owner against all claims, damages or compensation under the provision of Payment of Wages Act, Minimum Wages Act, Owner's Liability Act, Industrial Disputes Act, and the Maternity Benefit Act or any modifications thereof or any other law relating thereto and rules made there under from time to time or as a consequences of any accident or injury to any workmen or other persons in or about the works whether in the employment of the contractor or

not, save and except where such accident or injury has resulted from any act of the Owner their agents or servants, and also against all costs, charges and expenses of any suit action or proceedings arising out of such accident or injury and against all sum or sums which may with the consent of the contractor be paid to compromise or compound any such claim. Without limiting his obligations and liabilities as above provided the contractor shall insure against all claims, damages or compensation payable under the workmen's compensation Act, 1923 or any modification thereof or any other law relating thereto. All the aforesaid insurance policies shall provide that they shall not be cancelled till the Engineer has agreed to their cancellation. The contractor shall prove to the Engineer or his authorized representatives from time to time that he has taken out all the insurance policies referred to above and has paid the necessary premia for keeping the policies alive till the expiry of the Defects Liability Period.

60. **SETTLEMENT OF DISPUTES:** - The instructions, decision, opinion, certificate or evaluation of the Engineer, with respect of or any of the matter regarding which the decision of the Engineer is stated to be as final or conclusive or binding in these conditions of the contract or specifications or in the Bill of Quantities forming part of the contract, shall be final conclusive and binding on the parties hereto and shall not be subject to be appealed. Such matters hereinafter shall not be subject to be appealed. Such matters hereinafter shall be referred to as "excepted matters". The decision of the "OWNER" in any and all matters shall be final and binding on both the parties in the agreement.
61. **Work not to be stopped:** - The contractor expressly agrees that in the event there arise any kind of dispute/disputes or the matter of dispute/disputes is referred to arbitration, the contractor shall at no stage stop or slow down the work on this excuse and shall proceed diligently to complete and handover all works as per contract within the scheduled completion period.
62. **Arbitration:** - Any dispute or difference whatsoever arising between the parties out of or relating to the construction, interpretation, application, meaning, scope, operation or effect of the contract or the validity or the breach thereof, shall be first tried for amicable settlement through consultation / discussion between the parties. If the disputes can not be settled by parties within 30 days from the date of consultation, such dispute shall be submitted for arbitration to an Arbitrator nominated by the Chief Executive Officer, Shri Mata Vaishno Devi Shrine Board, Katra, whose decision shall be final and binding upon all the parties.

Any of the parties may apply to the Chief Executive Officer, SMVDSB for appointment of arbitrator in the event of any dispute / difference. The Arbitrator so appointed shall immediately enter upon reference and decided the dispute in accordance with law prevailing in J&K viz. J&K Arbitration and conciliation Act, 1997.

63. **Jurisdiction of Courts:** - All disputes arising out in any way connected with this contract shall be deemed to have arisen at Kakryal- Katra and only courts in Katra/ Reasi shall have jurisdiction to determine the same.

## SPECIAL CONDITIONS

**1. GENERAL:** - These special conditions are intended to amplify the General Conditions, and shall be read in conjunction with the same. For any discrepancies between the General Conditions, and these Special Conditions, the more stringent shall apply.

This tender shall act only as a guide to the system desired by the Owners. The specifications described in this tender are based on the "Basis of Design" and are in minimum required from the tenderer.

**2. SCOPE OF WORK:** - The general character and the scope of work to be carried out under this contract are illustrated in Drawings /Schematics, Specifications and Schedule of Quantities. The Contractor shall execute the said work as per the terms and condition set out in the tender documents and in conformity with the specifications laid down. The contractor shall furnish all labour, materials and equipments, transportation and incidentals necessary for supply, installation, testing and commissioning of the complete UPS System as described in the tender document. This also includes any material, equipment, appliances and incidental work not specifically mentioned herein or noted on the Drawings/Documents as being furnished (or installed), but which are necessary and customary to complete the installation.

In general, the work to be performed under this contract shall comprise/include the following: -

- a. The contractor shall supply, install, test and commission UPS System including provision of all necessary hardware and relevant spares.
- b. It shall be the responsibility of the contractor to perform all checks on wiring for trouble-free operation of the equipment.
- c. Proper operation and maintenance of the system shall be the responsibility of the contractor.
- d. No claim for extra items shall be entertained for installation/commissioning of the system. All the works in connection with completion of the system shall be in the scope of this tender.

**3. QUALITY ASSURANCE:** - The system shall be installed by competent technicians & workers approved by the manufacturer/supplier of the equipment. The successful contractor shall furnish a list of workers/technicians approved by the manufacturer/supplier of the system prior to commencement of work.

**4. BYE-LAWS AND REGULATIONS:** - The installation shall be in conformity with the Bye-laws, Rules and Regulations and Standards of the local authorities concerned so far as these become applicable to the installation.

**5. ENGINEER AND FOREMAN:** - The Contractor shall employ competent qualified personnel from his organization for the installation of the entire UPS system components.

Engineer shall be posted at site on full-time basis for the direction of installation of the UPS equipment.

For quality control & monitoring of workmanship, contractor shall assign at least one full time engineer who shall be exclusively responsible for ensuring strict quality control, adherence to specifications and ensuring top class workmanship for the UPS installation.

**6. APPROVALS & CLEARANCES:** - The installation shall comply with relevant rules and regulations codes as applicable.

All associated activities if required for necessary clearances/permissions/approvals/licenses from concerned authorities are in the scope of vendor without any additional cost to the Owners. Actual statutory fees for approvals/licenses payable shall, however, be borne by the Owners on production of proof of payments made.

**7. DRAWINGS:** - The contractor shall follow the tender specifications in preparation of his shop drawings, and for subsequent installation work after the approval of the Project Manager/ Architect / Consultant and the contractor shall check the drawings of other services to verify spaces in which his work will be installed.

Maximum headroom and space conditions shall be maintained at all points. Where headroom appears

inadequate, the contractor shall notify the Project Manager / Consultants before proceeding with the installation.

The contractor shall examine all architectural, structural and other services drawings before starting the work and report to the Project Manager any discrepancies and obtain clarification. Any changes found essential to co-ordinate installation of this work with other services and trades shall be made with prior approval of the Architect / Project Manager and without additional cost to the Owners. The data given in the drawings and specifications are of guidance only.

**8. ACCESSIBILITY:** - The contractor shall confirm the adequacy of the size of the openings and clearances for proper installation of this equipment. The contractor shall locate all equipments which must be serviced, operated or maintained, in fully accessible positions. The exact location and size of all access panels, required for each equipment shall be finalized and got approved from the Project Manager / Architect / Consultants well in advance.

**9. SHOP DRAWINGS: -**

- a. Upon award of work, and prior to the start of the system installation, the contractor shall submit a complete layout of the entire system, showing all interconnected wiring and equipment, for the approval of the Architect / Project Manager / Consultants.
- b. All the shop drawings shall be prepared on computer and on a system compatible with the kind of system being followed by the Architect / Consultants. Within four weeks after the award of the contract, the Contractor shall furnish, for the approval of the Architect / Project Engineer / Consultants two sets of detailed shop drawings of the entire system. These shop drawings shall contain all information required by the Architect / Project Manager / Consultants.

These drawings shall contain details of construction, size, arrangement, operating clearances,

performance characteristics and capacity of all items of equipment, also the details of all related items of work by other Contractors. Each item of equipment / material proposed shall be a standard product. When the Architect / Project Manager / Consultants makes any amendments in the above drawings, the contractor shall supply two fresh sets of drawings with the amendments duly incorporated, alongwith the drawings on which corrections were indicated. After final approval is obtained from the Architect / Project Manager / Consultants, the Contractor shall submit further twelve sets of shop drawings to the Consultant for the exclusive use by the Project Engineer and other contracting agencies. No material or equipment may be delivered or installed at the job site until the Contractor has in his possession, the approved shop drawings for the particular material / equipment installation.

- c. Shop drawings shall be submitted for approval sufficiently in advance of planned delivery and installation of any materials to allow Project Manager ample time for scrutiny. No claims for extension of time shall

be entertained because of any delay in the work due to his failure to produce shop drawings at the right time, in accordance with the approved programme.

- d. Manufacturer drawings, catalogues, pamphlets and other documents submitted for approval shall be in four sets. Each item in each set shall be properly labeled, indicating the specific services for which material or equipment is to be used, giving reference to the governing section and clause number and clearly identifying in ink the items and the operating characteristics. Data of general nature shall not be accepted.
- e. Approval of shop drawings shall not be considered as a guarantee of measurements or of building dimensions. Where drawings are approved, said approval does not mean that the drawings supersede the contract requirements, nor does it in any way relieve the contractor of his responsibility or requirement to furnish material and perform work as required by the contract.
- f. Where the work of the Contractor has to be installed in close proximity to, or will interfere with work of other trades, he shall assist in working out space conditions to make a satisfactory adjustment. The contractor shall prepare composite working drawings and sections at a suitable scale not less than 1:50, clearly showing how his work is to be installed in relation to the work of other trades. If the contractor installs his work before coordinating with other trades, or so as to cause any interference with work of other trades, he shall make all the necessary changes without extra cost to the Owners.

**10. MATERIAL AND EQUIPMENT:** - All materials and equipment shall conform to the relevant Standards and shall be of the approved make and design listed in Appendix-III. The Contractor shall be responsible for the safe custody of all materials and shall insure them against theft and damage in handling.

**11. MANUFACTURERS INSTRUCTIONS:** - Specific instructions, from manufacturers of the materials and equipment used in this project, and not specifically mentioned in these documents, shall be followed in all cases. All the documents shall also be submitted in the CD.

**12. INSTALLATION:** - The work related to system shall be carried out by the Contractor, in full knowledge of, and with complete co-ordination of the respective services contractor.

**13. TESTING:** - The installed system shall be tested as per relevant codes as applicable. The results for these shall be submitted in quadruplicate for scrutiny. Load test, committed input power factor, compliance of committed 3rd harmonic & THD values, at different percentages of loads shall be displayed in testing.

The contractor shall pay for and arrange, without any extra cost to the Owners, all necessary testing equipment, instruments, materials, accessories, requisite amount of load appropriate to rated load and requisite labour. Any defects in materials and / or in workmanship detected in the course of testing shall be rectified by the contractor, entirely at his own cost, to the satisfaction of the Architect/ Project Engineer / Consultants.

**14. COMMISSIONING:** - The contractor shall indicate his readiness for commissioning of the system to the Project Engineer and shall commission the system only on obtaining the approval for the same. Upon completion, system shall be operated in presence of project Manager / Consultants to demonstrate satisfactory, operation.

**15. TRAINING:** - Two training sessions shall be provided by the contractor to the Owner personnel free of cost.

**16. OPERATING INSTRUCTIONS & MAINTENANCE MANUAL:** - The Contractor shall submit a draft copy of comprehensive operating instructions and maintenance schedule for all systems and equipment included

in this contract. Upon approval of the draft, the contractor shall submit four (4) complete bound sets of printed operating instructions and maintenance manuals.

The contractor shall also submit a preventive maintenance schedule for the hardware components supplied. All the documents shall also be submitted in the CD.

**17. DEFECTS LIABILITY PERIOD:** - The Contractor shall guarantee the entire installation for one year for defects liability period which shall be reckoned from the date, installation has been successfully handed over to the Owners. This certificate of completion shall be issued after the tests have been carried out to the satisfaction of the site Project Engineer and the required completion drawings submitted. The Contractor shall make good at his own cost and to the satisfaction of the Architect / Project Engineer / Consultants all defects arising out of bad workmanship /faulty materials or not in accordance with the drawings, specifications and / or the said standards.

**18. MAINTENANCE DURING DEFECTS LIABILITY PERIOD:** - It shall be the responsibility of the contractor to carry out the maintenance of the complete system during the Defect Liability period at no extra cost.

All components, parts and assemblies supplied by the vendor shall be guaranteed against defects in materials and workmanship for one year from the date of handing over to the Owners.

Labour, repair or replacement of system components shall be the responsibility of contractor at no extra cost to the Owners.

All equipment that require repairing shall be immediately serviced and repaired. All replacement parts and labour shall be supplied promptly and free-of-charge to the Owners.

**19. UPTIME GUARANTEE:** - The contractor shall guarantee for the installed system an uptime of 99% for sub system & 99.99% for total system. In case of shortfall in any month during the defects liability period, the Defects Liability period shall get extended by a month for every month having shortfall. In case of shortfall beyond the defects liability period, the contract for Maintenance shall get extended by a month for every month having the shortfall and no reimbursement shall be made for the extended period.

The contractor shall provide log in the form of diskettes and bound printed comprehensive log book

containing tables for daily record of all temperatures, humidity, power consumption, daily services rendered for the system, alarms, maintenance and record of unusual observations etc. Contractor shall also submit preventive maintenance schedule.

Each tenderer shall submit along with the tender, a detailed operation assistance proposal for the Owner's site representative / Consultant's review. This shall include the type of service planned to be offered during Defects Liability Period and beyond. The operation assistance proposal shall give the details of the proposed monthly reports to the Management.

The tenderer shall include a list of other projects where such an Operation Assistance has been provided.

**20. PARTIAL ORDERING:** - The Owners through the Architect / Owners reserve the right to order equipment and material from any and all alternates, and materials of parts thereof from one or more tenders.

**21. COMPLETION DRAWINGS:** - The contractor shall submit three complete set of original “as installed drawings” in ink on tracing paper and further four copies to the Architect / Project Engineer after the completion of work. These drawings must give the following information:

- a. Location of equipment and panel.
- b. Complete schematic diagram of the installation, as installed.

No. completion certificate shall be issued until set of the “as installed drawings” and detailed servicing manuals are submitted. These shall be prepared and submitted by the Contractor without extra charge to the Owners.

**22. FACTORY INSPECTION AND TEST CERTIFICATES FOR UPS SYSTEM:** - The OWNER / consultant may carry out inspection and testing of equipments at manufacturer’s works. No equipment shall be delivered without prior written confirmation from Architect /Consultants / Owner’s site representative. All expenses related to testing and travelling expenditure for three personnel shall be to tenderer account. All expenses relating to test shall be borne by Contractor.

The following test certificates shall be submitted along with UPS.

Type and Routine Test: - Type and routine test for various components and sub assemblies shall be in accordance with the IS and/or NEMA.

Functional Tests: - Functional tests to demonstrate compliance with all specified requirements and published specifications, such as frequency regulation, voltage regulation, current limiting, fuse clearing capability of inverters, demonstration of phase and frequency control of inverters for synchronization with range of adjustments. Transfer and retransfer of static switches under influence of under voltage and over current, tests on chargers, batteries and other system components to conform compliance with specifications.

Burn-in: - The complete UPS system shall be operated under rated conditions and maximum ambient temperature for not less than 8 hours prior to other tests to be conducted.

Battery Testing: - Detail battery sizing calculations along with test data to be furnished. The battery testing shall be carried out at the site.

**23. MAINTENANCE:** -

- a. All Inclusive Maintenance Contract for UPS System:
  - i. Scope of work shall cover all pieces of equipment including batteries installed by supplier.
  - ii. Schedule to cover manufacturer’s recommendations and/or common engineering practice (for all equipment under contract).
  - iii. Equipment history card giving full details of equipment and frequency of checks.
  - iv. Monthly status report.
  - v. Break-downs shall be attended to within two hours of reporting.
  - vi. Adequate number of persons to the satisfaction of the Owners shall be provided including relievers.
  - vii. Statutory requirements of EPF, ESIC and other applicable labour legislations to be complied with; and monthly certification to that effect to be submitted to the Owners.



- viii. Duty allocation and Roaster control shall be contractor's responsibility.
- ix. No overtime shall be payable by the Owners for any reason whatsoever.

b. Shut Downs:

- i. No routine shut downs shall be permitted during office hours.
- ii. Contractor shall be at liberty to carry out maintenance on holidays and after office hours but with prior permission of the Owners.

## TECHNICAL SPECIFICATIONS

### 1. GENERAL REQUIREMENTS

- 1.1 The scope of work for supply and installation of UPS system shall include design manufacture, supply, installation, testing and commissioning of all related equipments together with all accessories and auxiliaries as per specifications.

The system shall be fully operational and shall comply to the specified codes and standards.

The contractor shall be responsible for providing all materials, equipments and engineering services specified or which are required to fulfill the intent of ensuring reliability of the total work covered under these specifications within his quoted price.

- 1.2 Supply and installation of the UPS system covered under this specification shall conform to the latest editions of codes and standards mentioned below and all other applicable Standards.

- a. IEEE Standard 446-1987 : Emergency and standby power systems.
- b. IEEE Standard 450-1975 : Maintenance, Testing of Lead Acid Batteries
- c. IEEE Paper 4-177 : Some discharge characteristics of lead acid batteries.
- d. IEC 146: Performance testing of UPS
- e. ANSI C 37.90a, : Surge withstand capability test.  
IEEE Standard 472
- f. ANSI C 34.2: Practices and requirements for semiconductor power rectifiers.
- g. ANSI C 37.90: Relays and relay system associated with electrical power apparatus.
- h. NEMA PE-1-1983: Uninterrupted Power System Standard
- i. IS 2208 & IS 9224: Cartridge fuses for voltages upto and including 650 V  
(Part 1 & Part 2) (IEC 269)
- j. IS 9224 (Part - 4): Fuses for protection of semiconductors.
- k. BS 2709 (I.E.C 119): The Electrical Performance of Semiconductor Rectifiers.  
(Metal Rectifiers)
- l. BS 4417 (I.E.C 146): Semi-conductor Rectifier Equipments.
- m. IS 8623 (I.E.C 439): Factory-built Assemblies of switchgear and control gear for voltages upto and including 1000 V AC and 1200 V DC.
- n. IS 694 (I.E.C 228) : PVC insulated Cables for switchgear and controlgear wiring.
- o. IS 1652 & IS 1652: Lead-acid stationary cells and batteries.
- p. BD 9720: Custom-built transformers and inductors of assessed quality.
- q. IP20: Degree of protection.

- r. IEC: Semi Conductor Convertor Standards.
  - s. JEC: Standard of the Japanese Electro technical committee
  - t. JIS : Japanese Industrial Standard.
  - u. JEM : The standard of the Japan Electrical Manufactures Association.
  - v. ISO 9001 & ISO 14001 approved
- 1.3 The contractor shall submit his offer for UPS systems as indicated in the tender document.
  - 1.4 All components of the UPS equipment shall have Surge Withstand Capability (SWC) to meet the requirements of ANSI C 37.90a, IEEE Standard 472-1974.
  - 1.5 All components of UPS system shall withstand short circuit current without any damage.
  - 1.6 Following general requirements shall be met for ensuring proper circuit protection.
    - a. Fuses shall not be larger than 125% of the primary circuit current where the secondary circuit fuse protection has not been provided.
    - b. All the neutral conductors in three phase UPS systems shall be sized equal to at least 150% of the maximum phase current. In addition, all the isolators and circuit breakers used in three phase UPS system shall also be rated such that the neutral poles shall take at least 150% of the maximum phase current.
    - c. All control shall be designed and positioned such that possibility of inadvertent or accidental operations are eliminated.
    - d. All UPS system cabinets, frames and power equipment shall be double earthed.
  - 1.7 The UPS design shall ensure that a single component/ device failure shall not result in failure of the entire UPS system. The design of UPS System shall be modular to permit easy maintenance.
  - 1.8 The various overload capacities of inverters, static switch, step down transformer/voltage stabilizer as specified herein are the minimum requirements. However, if the Contractor's offered system has better overload capacities for the above devices, the same shall be highlighted by the Bidder in his bid .
  - 1.9 The UPS system offered by the contractor shall be suitable for operating continuously at the rated capacity indicated in tender with in ambient temperature 0-40 deg.C and relative humidity of 0 to 95%. Also the UPS system shall be suitable for operation as per full rating upto 1000 meters above sea level without derating. The Contractor shall furnish a certificate towards compliance on ambient conditions permissible.
  - 1.10 The UPS system to be supplied by the contractor shall have maximum humming noise level of 65 DB one meter away from the UPS cabinets.
  - 1.11 Suppression of Radio Interference shall be provided to meet statutory requirements.
  - 1.12 Detailed literature should be provided showing Quality Assurance Procedure adhered to.
  - 1.13 The contractor shall submit detailed item by item compliance statement along with the tender.

## **2. FUNCTIONAL REQUIREMENTS**

- 2.1 Contractor shall furnish On-Line Uninterruptible Power Supply (UPS) system of continuous duty of the ratings mentioned in Bill of Quantities. Each UPS shall give regulated filtered & uninterruptible power supply as described in the specifications.

- 2.2 Contractor shall note that the KVA ratings of the UPS systems shall be guaranteed at 40 deg.C ambient temperature. In case contractor's standard UPS KVA rating are based at a lower temperature, the contractor must consider a derating factor of atleast 1.5% per deg.C for arriving at the specified UPS capacity at 40 deg.C ambient temperature.
- 2.3 In case the calculated /specified UPS capacity is not the same as one of the standard KVA ratings of the UPS manufacturer, the next higher standard KVA rating shall be selected. UPS of non standard rating shall not be acceptable.
- 2.4 UPS system supplied by the contractor shall be the latest state of the art technology system fully digitalized using microprocessor controlled full wave IGBT rectification and IGBT inverter.
- 2.5 Batteries shall be 12 volt valve regulated sealed maintenance free specially meant for UPS application.
- 2.6 Monitoring and control system shall also be state of the art technology LCD touch panel type providing all relevant data described in this document.
- 2.7 The monitoring and control system shall be capable of RS 232/RJ 45 input software for connecting to customer's computer system for data display and monitoring.
- 2.8 All necessary components required for protecting UPS equipment and connected inputs and outputs shall be furnished by the Contractor as an integral part of the UPS system.
- 2.9 The control logic power supply shall have redundant power supply AC input and the system battery as power sources.
- 2.10 The UPS systems shall include but not be limited to the following equipment :
  - a. UPS system including 100% capacity float-cum-boost charger with 100% sealed valve regulated lead acid batteries with guaranteed battery life of 5 years.
  - b. Suitable factory built battery cabinet for housing the batteries, including terminal isolator /breaker and power disconnect device. The enclosure shall conform to IP 20 as minimum.
  - c. All cables, connectors, accessories like trunkng, cable trays, conduits etc. required for connection between battery and the UPS unit.

### 3. STATIC CONVERTER

- 3.1 **GENERAL:** - The static converter (rectifier) shall be a multi-functional converter providing functions of power conversion, battery charging and shall have the additional functions of input power factor improvement and current harmonics reduction. The converter equipment shall include all necessary control circuitry and device to conform requirements like voltage regulation, current limiting, wave shaping, transient recovery, automatic synchronization etc. as given below.

The converter shall be a solid state static IGBT based PWM converter utilizing Intelligent Power Module (IPM) and shall include intelligent features like the drive circuitry, over current protection, over temperature protection, control power failure protection and short circuit protection.

The IPM transistors shall enable high speed switching at 6 KHz thus reducing the heat dissipation in the UPS and thereby providing high efficiency.

The PWM converter shall utilize the above and achieve unity power factor and reduce input current harmonics as given earlier and thus improve the overall power factor of the converter achieving input KVA savings.

During any step inverter load change (0-100%) the converter shall only supply 100% current to the inverter. The battery shall not be cycled at any time during this step load changes.

3.2 **INPUT CURRENT LIMIT:** - The converter logic shall provide input current limiting by limiting the DC output current. Two (2) line-side current transformers shall be employed as a means of sensing the current amplitude. The converter logic shall also be capable of providing auxiliary current limited when the logic is signalled to do so via an external dry contact closure (e.g. UPS fed from generator). The converter shall be capable of supplying overload current in excess to the full load rating. It shall also have sufficient capacity to provide power to a fully loaded inverter while simultaneously recharging the system battery to 95% of full capacity within 10 times the discharge time. The DC output current limit values shall be as follows:

- Rectifier output current (maximum) 100%
- Rectifier output current (aux.) 25% - 100% variable.

*Note: 100% current shall be under the battery recharging mode.*

3.3 **BATTERY CHARGE CURRENT LIMITED:** - The converter logic shall provide current limiting function of battery charging to prevent the battery from damage. The following battery current limit and protection shall be provided.

- Battery charge current limit 10% of battery Ah rate.
- Over-current protection at 120% of above item.

3.4 **VOLTAGE REGULATION:** - The rectifier / charger output voltage does not deviate by more than +/- 1% of the nominal output voltage, due to the following conditions:

- From 0 to 100% loading.
- Rectifier input variations of voltage and frequency within the limitations set in Section 3.10.
- Environmental condition variations within the limitations set in Section 3.10.

3.5 **AUTOMATIC INPUT CURRENT WALK-IN:** - The converter logic shall employ circuitry to allow a delayed and timed ramping of input current. Subsequent to energizing the converter input, the ramping of current shall be delayed by a maximum of 3 seconds. Upon starting the walk-in process, the ramping of current is timed to assume the load gradually within 1 through 60 seconds (every 1 second selectable).

3.6 **INPUT OVERLOAD PROTECTION:** - The A/C input fuses shall be provided at the converter input as a means of overload protection. The AC maximum current shall be controlled by the Converter.

3.7 **EQUALIZING CHARGE TIMER:** - The UPS logic shall provide an electronic automatic equalize charge timer which shall be selectable 24 hours for Lead Acid type or 8 hour for Alkaline type batteries. The timer circuit, once activated shall provide a high rate equalizing charge voltage to the system battery for the selected time. The circuit shall also be capable of manual activation via the LCD touch panel mounted on the front door. The level of equalizing voltage shall be equal to that stated by the battery manufacturer. Upon completion of the timer count, the converter output voltage shall automatically return to the specified float voltage.

3.8 **STEP LOAD CHANGE:** - During any step inverter load change (0-100%), only the converter shall supply 100% current to the inverter. The batteries SHALL NOT be cycled at any time during these step load changes.

3.9 **INPUT VOLTAGE:** - The converter shall be fed from the Normal Power Supply source.

3.10 **THE CONVERTER SHALL MEET THE FOLLOWING SPECIFICATIONS IN ADDITION TO OTHER REQUIREMENTS STATED HEREIN:**

Nominal Voltage : 415V, 3 Phase, 3 Wire

Voltage Range :  $\pm 15\%$

Normal Frequency : 50 Hz  $\pm 5\%$

Frequency Range :  $\pm 5\%$  ( $\pm 2.5\text{Hz}$ )

Input Power Factor : 0.98 lagging or more at full load  
(PF improvement without using any filter)

Input Harmonic Current THD : < 3% typical at 100% load  
< 5% maximum at 50% load

Duty : 0 to 40 deg.C

Cooling : Forced cooling using fans with thermal relays using a latched cut out for re-setting as protection for cooling fans. Each individual fan shall have its own thermal relay.

Ambient operating temperature range: 0 to 40 deg.C maximum.

Operating Relative Humidity : 0-95% non-condensing.

Operating Altitude : Sea Level to 1,000 meters.

Magnetized sub-cycle in rush current: Typically 8 times normal full load current

Converter Walk-in time : 1 through 60 seconds  
(every 1 second selectable, (0 to 100% rated load))

Input : Suitable terminals shall be provided for termination of cables from the AC distribution board.

#### 4. **STATIC INVERTER**

4.1 **GENERAL:** - The static inverter shall be of solid state type using proven Pulse Width Modulation (PWM) technique. The inverter equipment shall include all necessary control circuitry and devices to conform requirements like voltage regulation, current limiting, wave shaping, transient recovery, automatic synchronization etc. as given below.

The inverter shall utilize Insulated Gate Bipolar Transistors (IGBT) or Intelligent Power Module (IPM) Transistors which shall provide intelligent features like the drive circuitry, over-current protection, over temperature protection, control power failure protection and short circuit protection.

The IGBT / IPM transistors shall enable high speed switching of 6 KHz thus reducing the heat dissipation in the UPS and thereby providing high efficiency.

The UPS shall utilize both Voltage and Current feedback control circuits so that the inverter shall act not only as a constant voltage source but also as a load required current source. This shall enable the inverter to quickly adapt to the changing load current value and wave shape.

4.2 **VOLTAGE REGULATION:** - The inverter output voltage shall not deviate by more than + 1% RMS due to the following steady state conditions :

- a. From 0 to 100% loading
- b. Inverter DC input voltage varies from maximum to minimum.
- c. Environmental conditions variations within the limitations set in the section 4.8.

4.3 **FREQUENCY CONTROL:** - The inverter output frequency shall be controlled by an oscillator internal to the UPS module logic. It shall be capable of synchronizing to an external reference (e.g. the bypass source or another UPS module) or operating asynchronously. The oscillator shall maintain synchronization with the external reference within the limitations set hereunder. The inverter shall operate on self run mode without synchronism if the bypass frequency exceeds the set value. The oscillator, while running asynchronously, shall maintain the frequency as 50 Hz  $\pm$  0.01% (or + 0.005 Hz). Automatic adjustment of phase relationship between inverter output and standby bypass source shall be gradual at a controlled slew rate which shall be adjustable at the rate of 0.5, 1.0, 2.0, 3.0 Hz / second. (default 2.0 Hz / second).

The inverter output frequency shall not vary during steady state or transient operation due to the following conditions:

- a. From 0 to 100% loading.
- b. Inverter DC input varies from maximum to minimum.
- c. Environmental condition variations within the limitations set in section 4.8.

4.4 **OUTPUT VOLTAGE HARMONIC DISTORTION:** - The inverter output shall limit the amount of harmonic content to the values stated in section 4.9. The use of excessive or additional filtering shall not be required to limit the harmonic content thus maintaining a high level of efficiency, reliability and original equipment footprint.

4.5 **OUTPUT OVERLOAD CAPABILITY:** - The inverter output shall be capable of providing an overload current while maintaining rated output voltage to the values stated in section 4.8. An LED indicator shall be located on the control panel to identify this condition. If the time limit associated with the overload condition expires or the overload is in excess of the set current amplitude, the load shall be transferred to the bypass source without interruption.

4.6 **INVERTER CURRENT LIMIT:** - The inverter output shall be limited to 150% of rated load current. The two sensing locations shall operate separately and independently thus providing redundancy and, in the event of a failure, preventing unnecessary damage to power transistor components / fuses. Load current above 150% shall cause an immediate transfer of the load to the bypass source for fault clearing.

4.7 **INVERTER OVERLOAD PROTECTION:** - The AC output from the inverter shall utilize fuses for overload protection. The inverter shall utilize a contactor to isolate the inverter output from the critical bus.

The inverter fuses shall be the fast acting semiconductor type.

The inverter output isolation contactor shall be located in the UPS module and shall be controlled by the internal UPS module system logic.

**4.8 THE INVERTER SHALL MEET THE FOLLOWING SPECIFICATIONS IN ADDITION TO OTHER REQUIREMENTS STATED HEREIN:**

Voltage Input : Three Phase UPS :  
Nominal 360 V DC (Range 290 V to 414 V DC to maximum DC bus voltage during charging the batteries).

Nominal Voltage Output : 415 V  $\pm$  1% AC 3 Phase, 4 Wire (0.05%)

Voltage Regulation :

a. For 0 to 100% loading :  $< \pm$  1%

b. Inverter DC input voltage vary  
From maximum to minimum :  $< \pm$  1%

c. Environmental conditions given below :  $< \pm$  1%

Transient Voltage Regulation :

a. AT 100% step load change :  $< \pm$  3%

b. At loss or return of AC input :  $< \pm$  1%

c. At load transfer from bypass to inverter :  $< \pm$  3%

Time to recover from transient to normal voltage : 20 milli seconds

Wave form

a. Normal frequency : 50 Hz

b. Frequency regulation for all conditions of  
input supplies, loads and temperature  
occurring simultaneously or in any  
combination (automatically controlled) :  $\pm$  0.01%

c. Synchronization limits for synchronism  
between the inverter and standby AC source : 49 Hz to 51 Hz.

d. Field adjustment range for above : 50  $\pm$  0.25 Hz to 50  $\pm$  1.5 Hz

**4.9 TOTAL VOLTAGE HARMONIC DISTORTION** :  $<$  2% THD for 100% linear load  
:  $<$  4% THD for 100% non-linear load

Duty : Continuous

Cooling : Forced cooling using fans.

Ambient operating temperature range : 0 to 40deg.C maximum continuous.

Operating relative humidity : 0-95% non-condensing.



Operating altitude : Sea level to 1000 meters.

Output : Suitable terminals are provided for termination of cables for connecting inverter output to AC distribution board.

- 4.10 **REVERSE PHASE SEQUENCE PROTECTION:** - In the event of Phase sequence reversal at the input, UPS system shall continue to work on the main power supply, or UPS systems shall go into battery mode, and shall not trip the UPS system.

## 5. **BYPASS AND STATIC TRANSFER SWITCH**

- 5.1 A bypass circuit shall be provided as an alternate source of power other than the inverter. A high speed switch and wrap-around contactor shall be used for the critical load during automatic transfers to the bypass circuit. The static switch and wrap-around contactor shall drive power from an upstream bypass feed circuit breaker internal to the UPS module provided for overload protection. The wrap-around contactor shall be electrically connected in parallel to the static switch and shall at the same time as the static switch, energize and upon closure, maintain the bypass source. The static switch shall only be utilized for the time needed to energize the wrap-around contactor thus increasing reliability. The bypass circuit shall be capable of supplying the UPS rated load current and also provide fault clearing current. The UPS system logic shall employ sensing which shall cause the static switch to energize within 150 microseconds thus providing an uninterrupted transfer to the bypass source when any of the following limitations shall exceed :

Inverter output under voltage or over voltage.  
Overload beyond the capability of the inverter  
DC circuit under voltage or over voltage  
Final end voltage of system battery is reached.  
Bypass source present and available  
System failure (e.g. Logic fail, fuse blown, etc.)

- 5.2 **KEEPING THE ABOVE REQUIREMENTS IN VIEW, THE STATIC SWITCH SHALL HAVE THE FOLLOWING MINIMUM RATING:**

Capacity continuous equal to 100% of continuous rating of the inverter.

Capacity overload equivalent to overload characteristics specified for UPS.

- 5.3 **NOMINAL BYPASS INPUT VOLTAGE** : 415 V / 240 V, 3 phase, 4 wire

Voltage Range :  $\pm 10\%$  of nominal

Nominal Frequency : 50 Hz

Frequency range :  $\pm 2\%$

Please refer to selectable range of Inverter given in point 4.3 & 4.8

Output Fault Clearing : Current: 1000%

Duration : 20 milli seconds

Ambient operating temperature : 0 to +40 degree C continuous

Operating relative humidity : 0-95% non-condensing

Operating altitude	: Sea level to 1000 meters
Cooling	: Natural Convection
Duty	: Continuous

- 5.4 **AUTOMATIC RE-TRANSFER:** - In the event that the critical load must be transferred to the bypass source due to an overload, the UPS system logic monitors the overload condition and, upon the overload being cleared, perform an automatic re-transfer back to the inverter output. The UPS system logic shall only allow a re-transfer to occur three times within a ten minute period. Re-transfer shall be inhibited on the fourth transfer due to the likelihood of a recurring problem at the UPS load distribution. The re-transfer a load to the inverter shall also be inhibited due to the limitations set in section 5.3.
- 5.5 **MANUAL TRANSFER:** - The UPS shall be capable of transferring the critical load to / from the bypass source via LCD touch panel. When performing manual transfer to inverter or automatic re-transfers, the UPS system logic shall force the inverter output voltage to match the bypass input voltage and then parallel the inverter and bypass source providing a make-before-break transition allowing a controlled walk-in of load current to the inverter.
- 5.6 **MAINTENANCE BYPASS SWITCH (MBS):** - The UPS shall include as standard equipment, a zero energy maintenance bypass switch. Full UPS wrap-around enables personnel to do work inside the UPS module or maintenance bypass switchboard without danger fro high voltage conditions.

## 6. UPS BATTERY SYSTEM

- a. The UPS system shall, as an integral part, provide battery system as asked in BOQ.
- b. The latest state of the art Valve Regulated Sealed Maintenance Free Lead Acid Batteries shall be used with a 20 hours discharge rating.
- c. The battery system shall be sized to provide as per BOQ back up time when the UPS is supplying 100% rated load at 0.8 load power factor.
- d. An ageing factor of 15% shall be applied to the capacity arrived at, to allow for compensation against capacity loss during float operation.
- e. The battery system design shall be provided with necessary devices to prevent deep discharge beyond recommended limits to prevent the batteries discharging beyond end cell voltage specified by the battery maker. The connections from battery to battery shall be by using copper bus bar strips and the entire battery system shall be used in IP20 steel cabinet enclosure and shall be similar to the UPS enclosure.
- f. All batteries shall be clearly identified and identification numbers marked on the batteries and a schematic diagram along with the complete calculations, including manufacturers supporting curves, shall be submitted with the tender.

## 7. OPERATION

- a. Under normal operation, the UPS load will be fed from the Inverter with the bypass switch inhibited. The Converter, apart from providing DC power to the Inverter, also charges the battery under the float charge mode. The battery charge system shall have float charge, equalising charge and recovery charge modes, to replenish the batteries self-discharging part while the battery is fully charged, equalising the battery cell voltage to a constant value forcibly, and recharging the battery system to the required values when the batteries have been used, respectively.
- b. The Inverter shall constantly monitor the AC source frequency and shall be in synchronisation with the AC input source till the frequency of the AC input source is within synchronising limit and if the frequency of the standby source exceeds the synchronising limit the Inverter will work on its own internal oscillator maintaining an output frequency of 50 Hz +/- 0.01% under all conditions of load. When the Inverter operates on its internal oscillator, it shall continuously monitor the frequency of the input source and when the input source frequency returns to within

synchronisation limit, the Inverter shall automatically synchronise itself with the input A/C source frequency and use it as a signal for Inverter output frequency control.

- c. **Battery Operation:**
  - i. When the A/C input voltage drops below specified limits or in case of a power failure the Inverter continues to supply AC power of constant voltage and constant frequency utilising the battery system as a power source until the input voltage returns to normal requirement. When the power supply is resumed or the input voltage returns to limits, the Converter shall automatically start and the load fed for normal operation status.
  - ii. If the power failure continues beyond battery back up time or the battery voltage drops to the final discharge voltage, the Inverter should automatically stop and at the same time transferring the load to the bypass circuit. On resumption of power supply, the Converter shall automatically re-start the operations and charge the batteries whereas the Inverter should inhibit automatic start and should be started manually.
- d. **Bypass Operation:** When power is supplied from the Inverter in synchronisation with the bypass, it shall accomplish the following:
  - i. When the UPS output current reaches overload status it shall automatically transfer the load to bypass circuit with no interruption and when the overload status is cleared it automatically re-transfers the load to Inverter.
  - ii. When the battery final discharge condition is reached, the load shall automatically be transferred to the bypass circuit without interruption.
  - iii. In case of failure of the UPS, the load shall be automatically transferred to the bypass circuit with no interruption and when the failure is cleared, re-transfer the load to the Inverter shall be done manually.
  - iv. There should be provision made in the system to prevent, when necessary, asynchronous transfer.
  - v. When the UPS goes on bypass mode in any of the conditions described above and if at that time there is no bypass power supply available due to power failure, the UPS shall remain in standby mode and as soon as the bypass power supply is available will transfer the load to bypass.
  - vi. A maintenance bypass transfer switch shall be provided with lock and key arrangement and should be manually done by authorised personnel only.

## **8. CABINET AND ENCLOSURES**

- 8.1 The entire UPS system, including all components like inverter, static switch, maintenance bypass, shall be housed in free-standing steel type factory-finished enclosures complying with the protection standards of IP20. The enclosure shall be openable using a special tool for internal access. The colour shall be light grey.
- 8.2 **VENTILATION:** - Forced air-cooling shall be provided to allow components to operate within their rated temperature specified. The cooling fans shall have thermal relays protection using a latched cut fire re-setting, as a protection for the cooling fans.

Similarly, the backup battery system shall also be housed as described earlier in an IP20 cabinet.

## 9. CONTROL AND MONITORING

- a. The UPS shall utilize state of the art full DDC control software driven Control and Monitoring System.
- b. It shall be provided with LED displays. The display system shall have, as a minimum individual LEDs with different colours for the following:
  - i. Load on Inverter
  - ii. Battery operation
  - iii. Load on Bypass
  - iv. UPS failure
  - v. LCD failure
  - vi. Overload
- c. The UPS logic should provide one set of normally open dry contact / relay output to allow interfacing of UPS operating status to an external system and should be capable of providing, as a minimum, 10 numbers status and, should the UPS manufacturer's standard product does not provide such software, the bidder must add additional equipment and cost for the same.
- d. The UPS shall also have an RS232 port for interfacing to BAS system along with web based monitoring system to monitor the UPS parameters and may generate SMS and email depending on the events or client's centralised computer network through SNMP monitoring modules. Following system as a minimum shall be monitored:-
  - i. Battery Health
  - ii. Overload
  - iii. Battery Back up time
  - iv. Load on By pass
- e. LCD touch panel
  - i. The UPS shall be provided with a operator friendly large scale LCD touch panel.
  - ii. The LCD touch panel shall also include graphic measurement display, operational procedures of each activity, fault status display and also have capability to record at least 50 faults.
  - iii. The touch screen panel shall clearly define specified areas for operational function, execution and message display.
  - iv. It should be possible to operate the entire UPS system and its components and obtain all measurements and data through the touch screen operation. The measurement software should provide capability to measure phase voltage, current in each phase, frequency, power factor, available battery time etc.
  - v. Under all operating conditions, the system software should have capability for displaying fault alarm automatically. The tenderer should describe in detail the faults that would be displayed under this mode.

## 10. TESTING AND COMMISSIONING: - In addition to all detailed Testing and Commissioning specified under Technical Specifications testing shall be carried out in accordance with the appropriate Indian Standards or Codes of Practice.

The Contractor shall produce and circulate to the Engineer for comment comprehensive commissioning procedures and method statements. These documents shall outline all work by the Contractor for testing, commissioning and setting to work the complete installation. Details of all testing instruments and test procedures are to be provided.

The commissioning and testing of the systems shall be carried out by a specialist team of commissioning engineers employed by the Contractor.

It shall be necessary for the Contractor to demonstrate the competence of this team of engineers prior to commencement of the testing and commissioning. The Contractor shall submit full details of qualifications, commissioning experience and proposed duties of each member of the commissioning team for acceptance by the Engineer. A detailed 'Commissioning Plan' shall be developed and subjected to the approval of the Engineer.

All Testing and Commissioning shall be witnessed by the Manager, and in the case of factory equipment tests or pressure tests at the manufacturer's works, by the parties nominated by the Employer. Not less than fourteen days' notice shall be given by the Contractor for this purpose.

Testing and Commissioning shall be properly certified in a manner to be agreed with the Engineer and six copies of all certificates shall be issued to the Engineer on completion.

Detailed test records, certificates and performance data shall be supplied for all tests. The information to be included on test certificates shall be sufficient to identify the systems or equipment to which the certificate refers, and shall also bear the Contract reference and heading given in equipment sections.

Only when the complete installation and systems have been so certified and all test figures and other relevant information has been recorded in the prescribed manner and accepted by the Engineer will the works be considered acceptance for handing over to the Employer.

The Contractor shall include in his tender all costs associated with all required Testing and Commissioning including the cost of making good any defects arising out of such tests and having the work retested. Such costs shall also include the provision of all instruments necessary for the testing and commissioning.

The Contractor shall be responsible for the calibration and setting of all protection systems and devices in the presence of the Engineer. All settings shall then be permanently marked on the control equipment. All calibration procedures shall be properly recorded.

The Contractor shall submit Type Test and Test Certificates issued by recognized Testing Authorities on specific equipment as stated in Technical Specification. Prescribed articles as specified shall be batch-tested and bear approved labels.

The Contractor shall make all necessary arrangements including paying any fees incurred for all tests required by the relevant Authorities before and after the installation turn-on. It is the responsibility of the Contractor to ensure that the tests are scheduled to avoid delay in the turn-on and overall completion of the project.

## **SPECIFICATIONS FOR UPS SYSTEM**

<b>RATING OF UPS</b>	: AS PER BOQ
<b>TYPE</b>	: ON LINE
<b>INPUT:</b>	
VOLTAGE	: 415V $\pm$ 15%
FREQUENCY	: 50Hz $\pm$ 10%
<b>OUTPUT:</b>	
VOLTAGE	: 415V $\pm$ 1% (True sine wave)
<b>OVER LOAD CAPACITY</b>	: 110% for 03 Minutes 125% for 05 Minutes 150% for 01 Minutes
<b>FREQUENCY</b>	: 50Hz $\pm$ 0.05
<b>DC CHARACTERSTICS</b>	: DC ripple with battery connected = $\pm$ 1 %
<b>OPERATING TEMPERATURE</b>	: 40 Degree centigrade maximum. 0-95% Humidity.
<b>CABLE ENTRY</b>	: Cable entry provision to be given for bottom entry.
<b>BYPASS</b>	: Manual bypass to be provided.
<b>PROTECTIONS &amp; INDICATIONS</b>	: Standard protections and indications to be provided as required. No Filter.
<b>THD DATA OUTPUT</b>	: Harmonic distortion shall be less than 20% on linear load 5% on non linear loads as per IEC.
<b>CREST FACTOR</b>	: Crest Factor should be >3:1. UPS should be parallel upto six units without using any separate synchronization panel.
<b>BATTERIES</b>	: Batteries to be sealed maintenance free complete with all the required mounting accessories.
<b>BACKUP TIME</b>	: 20 Minutes as per BOQ.
<b>COOLING</b>	: Forced Air.
<b>BATTERY CHARGING CURRENT</b>	: Vendor to specify.
<b>BATTERY CAPACITY</b>	: To be indicated, Calculations to be furnished by the tenderer. Specify VAH.
<b>DIMENSIONS OF UPS &amp; BATTERY</b>	: To be filled by the tenderer
<b>OVERALL SPACE FOR MOUNTING ALONG WITH ROOM SIZE EARTHING</b>	: To be filled by the tenderer.

## **GUARANTEE PROFORMA**

### **GUARANTEE FOR UPS SYSTEM INSTALLATION**

We hereby guarantee the year round UPS System which we have installed in the Complex described below:

Building - **SHRI MATA VAISHNO DEVI INSTITUTE OF MEDICAL EXCELLANCE (HOSPITAL BLOCK)**

Location - **KAKRYAL- KATRA, JAMMU**

Owner - **SHRI MATA VAISHNO DEVI SHRINE BOARD, KATRA**

For a period of ONE YEAR from the date of acceptance of the total installation, WE AGREE TO repair or replace to the satisfaction of the Owner, any or all such work that may prove defective in workmanship, equipment or materials within that period, ordinary wear and tear and unusual abuse or neglect excluded, together with any other work, which may be damaged or displaced in so doing. In the event of our failure to comply with the above mentioned conditions within a reasonable time, after being notified in writing, we collectively and separately, do hereby authorise the Owner to proceed to have the defects repaired and made good at our expense, and we shall pay the cost and charges thereof, immediately upon demand.

WE ALSO HEREBY UNDERTAKE to test the entire installation upon completion and ensure that all units are functioning satisfactorily.

**SIGNATURE OF CONTRACTOR**  
for UPS SYSTEM INSTALLATION

**DATE :**

**SEAL**

## Appendix – I

### SCHEDULE OF QUANTITIES

#### GENERAL NOTES

1. The items given in this schedule are provisional. The Contractor shall be paid for the actual quantity of work executed as measured at the site at the rates tendered. The Owner reserves the right to increase or decrease any of the quantities or to omit totally any item of work. Any claim by the Contractor on these accounts will not be entertained.
2. All the items of work given in this schedule of quantities shall be executed strictly in accordance with the latest Indian Standard Specifications and the requirements of the Electricity Supply Authority read in conjunction with the relevant drawings and Specifications.
3. The Contractor shall visit the site and shall satisfy himself as to the conditions under which the work is to be performed. He shall also check and ascertain the location of any existing structure or equipment or any other situation which may affect the work. No extra claim as a consequence of ignorance or on ground of insufficient description will be allowed at a later date.
4. All equipment and material shall be BIS compliant.
5. All approval shall be obtained from Project Manager prior to supply at site.
6. All equipment and material shall be inspected at manufacturer's works as per relevant BIS codes by the Project Manager or his representative before despatch to site.
7. All vendor drawings shall be approved by the Project Manager before fabrication work starts.
8. All Testing and Commissioning shall be as per relevant IS for equipment and IS: 732: 1989 for the installation. All these testing records are to be maintained.
9. The rate for each item of work included in the Schedule of Quantities shall, unless expressly stated otherwise, include cost of :
  - a. All materials, fixing materials, accessories, appliances tools, plants, equipment, transport, labour and incidentals required in preparation for and in the full and entire execution, testing, balancing, commissioning and completion of work called for in the item and as per Specifications and Drawings.
  - b. Wastage on materials and labour.
  - c. Loading, transporting, unloading, handling/double handling, hoisting to all levels, setting, fitting and fixing in position, protecting, disposal of debris and all other labour necessary in and for the full and entire execution and for the job in accordance with the contract documents, good practice and recognize principles.
  - d. Liabilities, obligations and risks arising out of Conditions of Contract.
  - e. All requirements of Specifications, whether such requirements are mentioned in the item or not. The Specifications and Drawings where available, are to be read as complimentary to and part of the Schedule of Quantities and any work called for in one shall be taken as required for all.
  - f. In the event of conflict between Schedule of Quantities and other documents including the Specifications, the most stringent shall apply. The interpretation of the Architect / Engineer shall be final and binding.
10. All equipments, quantities and technical data indicated in this Schedule are for the Contractor's guidance only; these are based on the documents prepared by the Services Consultant. This schedule must be read in conjunction with other documents. The Contractor shall be paid for the actual quantity of work executed by him in accordance with the approved Shop Drawings at the contract rates.
11. This Schedule shall be fully priced and the extensions and the totals duly checked. The rates for all the items shall be filled in INK including NIL items.



12. No alteration whatsoever is to be made to the text or quantities of this Schedule unless such alteration is authorised in writing by Services Consultant. Any such alterations, notes or additions shall, unless authorized in writing, be disregarded when tender documents are considered.
13. In the event of an error occurring in the amount of the Schedule, as a result of wrong extension of the unit rate and quantity, the unit rate quoted by the tenderer shall be regarded as firm and the extensions shall be amended on the basis of rates.
14. Any error in totalling in the amount column and in carrying forward total shall be corrected. Any error, in description or in quantity, omission of items from this Schedule shall not vitiate this Contract but shall be corrected and deemed to be variation required by the Services Consultant/Project Manager.
15. The Contractor shall procure and bring Materials/Equipment to the site only on the basis of drawings approved for construction and shop drawings and not on the basis of Schedule of Quantities which are approximate only. This also applies to the Contractor's requisition for Owner supplied materials.
16. The unit rate for all local equipment or materials shall include cost of equipment and materials including all taxes and duties and also including forwarding, freight, insurance and transport into Contractor's store at site, storage, installation, testing, balancing, commissioning and other works required.

## Appendix – II

Schedule for Supply, installation, Testing and commissioning of UPS SYSTEM as per specifications and complete in all respects:

S. No.	Description	Unit	Qty.	Rate	Amount
1.	40 KVA 3 phase input (415 V $\pm$ 15%), three phase output (415 V $\pm$ 1%) in stand alone mode with 20 minutes battery backup each complete with battery rack & inter connector for batteries & Isolation switch for each bank battery.	Set	01		
	<b>Total</b>				

### **Important Note:**

Quoted price shall be inclusive of the following:

- i. Approved rating single core copper conductor cable connecting as batteries.
- ii. All equipment shall be housed in individual cabinets.
- iii. Battery backup must be given for full resistive load. Battery should be sealed maintenance free type.
- iv. Battery monitoring system shall be provided.
- v. Real time Web based UPS monitoring system with software on remote computer and by SMS/email shall be provided.
- vi. BMS Interface required with each UPS.

**G. Total =**

### Appendix – III

#### LIST OF APPROVED MAKES FOR EQUIPMENT & MATERIALS

S. No.	Details of Materials / Equipment	Manufacturer's Name
1.	UPS Systems	Eaton Power Quality Pvt. Ltd. Emerson Network Power (I) Pvt. Ltd., GE Power Controls (I) Pvt. Ltd., Luminous Power Technologies Pvt. Ltd., (DB Power) PCI Ltd., APC (India) - Schneider Electric
1.	Sealed Maintenance Free Lead Acid Batteries (VRLA)	Shinkobe Exide Global Yuasa Amar Raja U Plus
2.	Cables	KEI Polycab Universal
3.	MCCB	L&T (D- sine) Schneider Electric (MG-N-S) Asea Brown Boveri