

GOVERNMENT OF INDIA
CENTRAL INSTITUTE OF PSYCHIATRY
(General Section)

91-651-2451115(Exch) -2451113(O)

Fax: 91-651-2233668

E-mail: director@cipranchi.nic.in

Web: www.cipranchi.nic.in

Kanke, Ranchi- 834006, Jharkhand

File No 3769

Dated :19/09//2018

Open Tender Notice(2018-19)

Sealed tenders are invited from resourceful, experienced and bonafide bidders who are technically sound and financially capable for the following work at Central Institute of Psychiatry, Kanke, Ranchi-834006.

Sl. No	Tender No.	Description of Items / Services	Bid Security Amount
1.	Gen/01/18-19/M&E	Automated Sliding Double Door Steam Sterilizer with Accessories	Rs.50000/-
2.	Gen/02/18-19/M&E	Bicycle Ergometer for Functional Medical endurance Training System	Rs.10000/-
3.	Gen/03/18-19/M&E	Low level laser therapy	Rs.10000/-
4.	Gen/04/18-19/M&E	Shortwave therapy	Rs.10000/-
5.	Gen/05/18-19/M&E	Upper Limb CPM	Rs.10000/-
6.	Gen/06/18-19/M&E	Combination Therapy	Rs.10000/-
7.	Gen/07/18-19/M&E	Traction Therapy Couch Hydraulic Height Elevation	Rs.10000/-
8.	Gen/08/18-19/M&E	Ultra-Brief Pulse ECT Machine	Rs.25000/-
9.	Gen/09/18-19/M&E	500 KVA DG Set	Rs.50000/-
10.	CCN/01/18-19/M&E	100 Hz Repetitive Transcranial Magnetic Stimulator (rTMS) Compatible with H Coil (Under Buyback scheme of existing 100 Hz rTMS system; Magstim Rapid2)	Rs.50000/-
11.	CCN/02/18-19/M&E	Dry electrode EEG Cap with Software for Usage with existing 128-Channel HEEG System (eego mylab; ANT Make)	Rs.50000/-
12.	CCN/03/18-19/M&E	Signal Processing Software for rTMS & Bistim (Magstim make)	Rs.50000/-
13.	CCN/04/18-19/M&E	Integration Software with existing Quadri Pulse Stimulator (PoweMag make; Mag&More, GmbH)	Rs.50000/-
14.	CCN/05/18-19/M&E	Helmet based Coil for Deep Brain Structure Transcranial Magnetic Stimulation (dTMS)	Rs.50000/-
15.	CCN/06/18-19/M&E	Upgradation of existing tDCS system (HPC Kit; Magstim make)	Rs.50000/-

Note: - The last date of submission of tender is 10.10.2018 till 4.00 PM .The Details about above mentioned tender is available in our website i.e. www.cipranchi.nic.in and also in CPP Portal website i.e. at the URL eprocure.gov.in.

Sd/-
(Director)

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Note: - (1). The Director, C.I.P. reserves the right to accept or reject any or all tenders so received without assigning any reasons.

Any attempt direct or indirect on the part of a tenderer, to influence the Director, C.I.P., or any other authority, concerned with tender works will be a disqualification.

(2) Tender documents will be purchased from General Section of Central Institute of Psychiatry, Kanke, Ranchi – 834006 by submitting tender fee (Rs.300/- Rupees Three hundred) in the form of Demand Draft favoring Administrative Officer, Central Institute of Psychiatry, Kanke, Ranchi – 834006 or by submitting Cash Rs 300/- (Rupees three Hundred Only) in the Cash Section of Central Institute of Psychiatry, Kanke, Ranchi – 834006 w.e.f. 20.09.2018. to 10.10.2018 in the institute between 10.00 a.m. to 04.00 p.m. Tender forms dully filled and signed in respect of each item should be sent in a sealed envelope containing Price bid and Technical bid separately in sealed envelopes, and superscribed as Tender for equipment along with tender nos. so as to reach the Director, Central Institute of Psychiatry, Kanke, and Ranchi on or before 10.10.2018 latest by 4.00 P.M. The tender will be opened on 11.10.2018 at 03.00 p.m. In case 11.10.2018 is declared a holiday for unforeseen reason, it will be opened on the next working day. The date of opening of price bids will be intimated to the technically qualified bidders.

(3) The tender document can also be downloaded from www.cipranchi.nic.in and also from CPP Portal website i.e. at the URL procure.gov.in in which case the tender fee Rs.300/- (Rupees Three hundred) is not required.

Sd/-
(Director)

भारत सरकार
केन्द्रीय मनश्चिकित्सा संस्थान
(सामान्य शाखा)

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काँके, राँची, झारखण्ड-834006

सं०:-3769

दिनांक:-19/09/2018

खुली निविदा सूचना(2018-19)

केन्द्रीय मनश्चिकित्सा संस्थान, काँके, राँची-834006 द्वारा तकनीक एवं वित्तीय रूप से सक्षम, अनुभवी, योग्य साधन-सम्पन्न एवं प्रमाणिक बोलीदाताओं से मुहरबंद निविदा आमंत्रित करती है।

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नोट:-निविदा जमा करने की अंतिम तिथि दिनांक 10.10.2018 को अपराह्न 4.00 बजे तक है। उपरोक्त निविदा से संबंधित विस्तृत जानकारी हमारे वेबसाइट www.cipranchi.nic.in तथा सी०पी०पी० पोर्टल वेबसाइट यू०आर०एल० eprocure.gov.in में उपलब्ध है।

ह०/-
(निदेशक)

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- निदेशक, केन्द्रीय मनश्चिकित्सा संस्थान, काँके, राँची- 834006 के पास बिना कोई कारण बताए किसी भी प्राप्त निविदा अथवा सभी निविदाओं को स्वीकार या अस्वीकार करने का अधिकार सुरक्षित है। निदेशक, केन्द्रीय मनश्चिकित्सा संस्थान अथवा निविदा कार्यों से जुड़े किसी भी पदाधिकारी को प्रभावित करने के लिए निविदाकार की ओर से किया गया कोई भी प्रत्यक्ष या अप्रत्यक्ष प्रयास अयोग्यता माना जाएगा।
- निविदा दस्तावेज, सामान्य शाखा, केन्द्रीय मनश्चिकित्सा संस्थान, काँके, राँची, से संस्थान के प्रशासकीय पदाधिकारी, केन्द्रीय मनश्चिकित्सा संस्थान, काँके, राँची, के पदनाम से राँची में भुगतान रु० 300/- (तीन सौ रुपए मात्र) का डिमाण्ड ड्राफ्ट प्रत्येक निविदा के लिए जमा कर दिनांक-20.09.2018 से 10.10.2018 तक पूर्वाह्न 10.00 बजे से अपराह्न 4.00 बजे तक प्राप्त किया जा सकता है। प्रत्येक मद के लिए पूर्ण रूप से भरा एवं हस्ताक्षर किया हुआ निविदा प्रपत्र सीलबंद लिफाफे में भेजा जाना चाहिए, जिसमें तकनीकी बिड एवं वित्तीय बिड अलग-अलग सीलबंद लिफाफे में डाला जाए, लिफाफे के ऊपर बड़े अक्षरों में संबंधित "उपकरण का नाम हेतु निविदा" लिखा होना चाहिए तथा इसे निदेशक, केन्द्रीय मनश्चिकित्सा संस्थान, काँके, राँची के पास दिनांक-10.10.2018 अपराह्न 4.00 बजे तक अवश्य प्राप्त हो जाना चाहिए। निविदा दिनांक 11.10.2018 को अपराह्न 3.00 बजे खोला जाएगा। किसी अप्रत्याशित कारणवश दिनांक 11.10.2018 को अवकाश की घोषणा होने पर यह निविदा अगले कार्यदिवस को खोला जाएगा। तकनीकी रूप से योग्य निविदा दाताओं को वित्तीय निविदा खोलने की तिथि के बारे में सूचित किया जाएगा।
- निविदा मद से संबंधित दस्तावेज, विपत्र, नियम व शर्त के विस्तृत विवरण का कागजात केन्द्रीय मनश्चिकित्सा संस्थान, काँके, राँची के सामान्य शाखा से स्वयं आकर प्राप्त कर सकते हैं प्रत्येक निविदा के लिए निविदा शुल्क के रूप में या तो रु० 300/- (तीन सौ रुपए मात्र) नकद रूप में संस्थान के रोकड. शाखा में जमा कर सकते हैं अथवा रु० 300/- (तीन सौ रुपए मात्र) की राशि प्रशासकीय पदाधिकारी, केन्द्रीय मनश्चिकित्सा संस्थान, काँके, राँची के पदनाम से डिमाण्ड ड्राफ्ट के रूप में दे सकते हैं। निविदा दस्तावेज हमारे वेबसाइट www.cipranchi.nic.in तथा सी०पी०पी० पोर्टल वेबसाइट y00aaro0e0.eprocure.gov.in से भी डाउनलोड किया जा सकता है। वेबसाइट से डाउनलोड करने कि स्थिति मे निविदा शुल्क जमा करने की कोई आवश्यकता नहीं है।

List of items to be Purchased through Open Tender 2018-19

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**Sd/-
(Director)**

Section – V

Technical Specifications for Automated Sliding Double Door Steam Sterilizer with Accessories

Tender No Gen/01/18-19/ M&E.

Automated Sliding Double Door Steam Sterilizer with Accessories – 1 no

- a. Steam sterilizer, horizontal shape, with pneumatically operated vertically sliding double doors, inner chamber volume of around 520 to 550 liters; Minimum Inner chamber dimensions-660mm width x 660mm height x 1250mm depth
- b. Vacuum pump - Should have inbuilt water-ring type vacuum pump of 3HP/5HP to provide pre-vacuum and post-vacuum pulses, to withstand negative pressure and create high vacuum of 26"hg; The sound level of vacuum pump shall be <80DP and no vibration. Vacuum pump brand shall be New Genre OR Vindi vak. This should also be fitted with suitable stainless steel condenser and piping.
- c. Material : Inner chamber - Stainless steel SS 316 quality with a minimum thickness of 6mm; Both the doors – Stainless steel SS 316 quality with a minimum thickness of 12 mm; Inbuilt steam generator – made of stainless steel SS 304 quality; All connecting pipes shall be made of good quality stainless steel; Jacket-boiler quality steel; stand-mild steel with anticorrosion paint.
- d. Electrical immersion type heaters of 18KW/36KW, equipment should be operated on 400-440 V, 3 phases with neutral, AC supply.
- e. Should provide heat resistant SILICON door gasket withstand upto 140oC.
- f. The sterilizer shall have to draw the water, automatically through a feed water pump, when needed in the inbuilt boiler.; preferably Crompton make water pump
- g. Insulation of Glass wool thickness shall be 75-100mm. Insulation cover shall be made of good quality stainless steel 304 quality
- h. Should provide analog gauges for chamber pressure and Jacket pressure; Necessary calibration certificates to be submitted during supply
- i. The sterilizer shall be fitted with Pressure switch, Contactor, solenoid valves, pressure transmitter, steam trap, water reading glass, safety valve, plug screen, vacuum drier etc..as needed
- j. Working temperature of sterilizer is 121oC to 134oC and the corresponding pressure is 1.2 to 2.1 kg/cm²
- k. Validation Port shall be provided
- l. Should have microprocessor based controls, with touch screen display; Minimum of six programmable cycles, Bowie Dick test cycle, Leak test cycle should be provided; Preferred make of HMI and PLC: Siemens / Allen Bradley / Mitsubishi
- m. Shall have digital displays of Chamber Pressure, Chamber temperature, Cycle no., Batch no., Time & Date, Alarm indicator, Error code, Low water indicator etc.,
- n. Shall have provision for RS 232 port for data communication, In-built Real Time Clock with date and time function and F0 value
- o. Should be supplied with a suitable printer that will automatically and continuously monitor and record dates, time of day, load, identification no. and operating parameters i.e. temperature, pressure and residence time, throughout the length of the autoclave cycles.
- p. Shall have necessary safety features that both doors should not open at time; Door should not open when the process is ON; Process should not start either in auto or manual if either side is open; Sterile door will open finally after completion of cycle and non-sterile door will not open unless sterile door is opened etc.,
- q. Should have suitable alarm / indications
- r. ISO 9001:2008 certified company
- s. Accessories: Qty – 1 No Stainless Steel loading / unloading carriage made of SS 316 and Qty - 2Nos. Stainless steel transfer trolley made of SS 304
- t. Documents:- User manual in English, Hydraulic test certificate, Material test certificate, IQ, OQ, DQ & PQ documents, Leak Test certificate, Gauge calibration certificate, Master Gauge calibration certificate and Warranty certificate

- u. The system delivery should include installation on turnkey basis with dedicated onsite training to end users by the authorized representatives from the principal manufacturers.
- v. The required electrical & water supply arrangement (if required) for all above machines should be done by the supplier.
- w. The installation charges of equipment must be quoted separately in Price bid.
- x. Warranty must be 5 years and Installation on turnkey basis. ISO / CE certified.
- y. You should also quote your rates for CMC/AMC of the machine for the next five years after expiry of 05 years warranty period. A firm assurance of manufacturer to be given regarding the supply of spares/ accessories for 5 years after the warranty period.
- z. Buyback price must be quoted for our existing machines as mentioned below from SI No (i) to (iv), failing which tender proposal would be deemed un responsive.
 - (i)** Horizontal High Pressure Rectangular Sterilizer electrically operated (for sterilization & drying of Linen) Size: 600 x 600 x 1200 MM Depth (Automatic, Make: Nat Steel, Model: 24 SR/E/HP/HV, Sl. No. 846) -01 No.
 - (ii)** Horizontal High Pressure Rectangular Sterilizer electrically operated (for sterilization & drying of Linen) Size: 600 x 600 x 1200 MM Depth (Non Automatic, Make: Nat Steel, Model: 24 SR/E, Sl. No. 772) -01 No.

Section-V

Technical Specification for Bicycle Ergometer Functional Medical endurance Training System

Tender No Gen/02/18-19/ M&E.

Bicycle Ergometer for use in functional medical endurance training and should be supplied with Wireless device for measuring spatial and temporal GAIT parameters, 6 min walking test, and turn test.

The unit should have the following features:

1. Workload range between 15-500 Watt pedaling speed independent and 15-1000 watt pedaling speed dependent.
2. Heart rate monitoring.
3. Integrated chip card system in series
4. Deep passage for simple training positioning
5. Horizontal and vertical seat adjustment
6. 3 Training programmes [quick start, watt (time training), pulse]
7. Multi colored background lighting with feedback function for correct training performance
8. Pulse receiver, polar-coded.
9. Performance range graduation in 5 watt steps
10. Max. User weight: 150-200 kg.
11. Speed range 20 - 120 rpm
12. Dimensions (L/W/H) 120/65/155 cm
13. Total weight : 60-65 kg
14. Medical interface RS232 for the connection to the IPN-Test Software (Computer)
15. Power supply: 220-240V/50 Hz.
16. Certification: EU/TUV/CE/ISO
17. The installation charges of equipment must be quoted separately in Price bid.
18. Warranty must be 5 years and Installation on turnkey basis.
19. You should also quote your rates for CMC/AMC of the machine for the next five years after expiry of 05 years warranty period. A firm assurance of manufacturer to be given regarding the supply of spares/ accessories for 5 years after the warranty period.

Section-V
Technical Specification for Low level laser therapy
Tender No Gen/03/18-19/ M&E.

Low level laser therapy for treating joints, muscles and tendons It is the combination of the red and infrared wavelengths,

The unit should have the following features:

1. Touch orthopedics with 5 red and 5 infrared laser channels
 2. Glass front with touch screen
 3. 5 plastic optical fibers and 5 quartz optical fibers (infrared channels)
 4. Color display for visualization and adjustment of the treatment parameters
 5. Individual control of each individual laser
 6. Storage for 20 treatment protocols
 7. Multilingual, intuitive menu structure (German, English, Portuguese, French)
 8. Wear-free and easy to clean (glass surface)
 9. Own development, production, maintenance and service
- | | | |
|--|---|---|
| ▪ Laser protection class | : | Class 3B |
| ▪ Power Supply | : | 100-240 V AC / 50-60 Hz |
| ▪ Number of laser channels (10 in total) | : | 5 red laser channels = 658 nm
5 infrared laser channels = 808 nm |
| ▪ Optical power per channel | : | Max. 40 mW |
| ▪ Emission | : | Continuous and pulsed |
| ▪ Modulation frequency | : | 0-10,000 Hz; Resolution: 1 Hz |
| ▪ Internal memory | : | 20 individual treatment profiles |

The unit should be supplied with a unit should have system to measure tissue saturation index, it should portable and battery operated Bluetooth device based on near infrared spectroscopy, 5 plastic optical fibers and 5 quartz optical fibers, 20 silicone applicators, Pack of hole plaster (3 rolls), 20 self-adhesive applicators, 2 laser goggles.

10. Certification: EU/TUV/CE/ISO
11. The installation charges of equipment must be quoted separately in Price bid.
12. Warranty must be 5 years and Installation on turnkey basis.
13. You should also quote your rates for CMC/AMC of the machine for the next five years after expiry of 05 years warranty period. A firm assurance of manufacturer to be given regarding the supply of spares/ accessories for 5 years after the warranty period.

Section-V
Technical Specification for Shortwave therapy

Tender No Gen/04/18-19/ M&E.

1. Microprocessor based Continuous and Pulsed Shortwave Diathermy Unit for Superficial and deep tissue treatment.
2. Operating Frequency : 27.12 MHz
3. Operation modes : Capacitive, Resistive and Inductive
4. Emission modes : Continuous and pulsed
5. Continuous Output : 450 W to 470 W
6. Pulsed Output : 1050 W to 1100 W
7. Tuning : Automatic
8. Frequency : 20 - 200 Hz
9. Impulse length : 400 to 450 micro seconds
10. Display : LCD
11. The unit should offer minimum 20 pre-set therapeutically protocols for common conditions.
12. The unit should be supplied complete with disc electrodes(2 Nos), rubber electrodes(2 Nos), felt spacers(2 Nos), high frequency cables(2 Nos), electrode arms(2 Nos), Inductive electrode and flexiplode (One each).
13. Should be USFDA/European CE certification
14. System should work on 220V-230V/50Hz.
15. Should be supplied with Servo Voltage Stabilizer of required rating.
16. Should be supplied with wireless computer aided hand dynamometer with motion sensor for rehabilitation and training of whole body.
17. The unit should have system to measure tissue saturation index, it should portable and battery operated Bluetooth device based on near infrared spectroscopy.
18. Certification: EU/TUV/CE/ISO
19. The installation charges of equipment must be quoted separately in Price bid.
20. Warranty must be 5 years and Installation on turnkey basis.
21. You should also quote your rates for CMC/AMC of the machine for the next five years after expiry of 05 years warranty period. A firm assurance of manufacturer to be given regarding the supply of spares/ accessories for 5 years after the warranty period.

Section-V
Technical Specification for Upper Limb CPM

Tender No Gen/05/18-19/ M&E.

The unit should have the following features:

1. Useful to prevent joint stiffness in the Wrist, post-operative recovery of ROM
2. Should be used for passive rehabilitation of the wrist by means of flexion-extension and ulnar-radial deviation movements.
3. The unit should be supplied with wireless portable dynamic and static balance training device for upper limb trunk and standing
4. The unit should be height adjustable.
5. The movement of the unit should be supervised by remote control with start & stop.
6. The machine should be based on casters wheel for easy transportation.
7. Flexion-extension range: 80° - 0° - 80°
8. Ulnar- radial range: 20° - 0° - 30°
9. Speed: min. $2^{\circ}/\text{sec}$. – max. $4.5^{\circ}/\text{sec}$.
10. Range of movement: adjustment by electromechanical limit switch
11. Arm support for rotating movement.
12. Input: 12 V DC / 50/60 Hz - 4.8W
13. Output: 12V DC- 1.25A
14. Electric safety : Class II B Standard EN 60601-1
15. Electromagnetic compatibility : Group 1 Class B Standard EN 60601-1-2
16. Classification according to EEC Directive 93/42: Class II a.
17. Weight: 47 Kg.
18. Power supply: 230 VAC- 50 Hz, 400mA
19. Certification: EU/TUV/CE/ISO
20. The installation charges of equipment must be quoted separately in Price bid.
21. Warranty must be 5 years and Installation on turnkey basis.
22. You should also quote your rates for CMC/AMC of the machine for the next five years after expiry of 05 years warranty period. A firm assurance of manufacturer to be given regarding the supply of spares/ accessories for 5 years after the warranty period.

Section-V
Technical Specification for Combination Therapy
Tender No Gen/06/18-19/ M&E.

A. Specifications:

1. Combined Therapy System for Ultrasound and Electrotherapy in one unit.
2. Colour graphic screen with touch panel
3. User-friendly operation by touch screen and buttons.

B. Ultrasound therapy specification

1. Continuous and pulsed work mode
2. Multi frequency head area 5 cm² 1-3 MHz working in single frequency of 1 MHz or 3 MHz or a combination between 1&3 MHz.
3. Multi frequency head area 1 cm² 1-3 MHz working in single frequency of 1 MHz or 3 MHz or a combination between 1&3 MHz.
4. Ergonomic treatment heads
5. Modulation from 1 to 200 Hz
6. Ultrasound Probes should be water-resistant.
7. Sound and visual signal of contact of the probe with patient
8. Automatic calculation of depth and energy density
9. Automatic power switch off
10. Timer up to 30 min.
11. Real-time device with indication of correct contact between coupling of head and patient's skin
12. Unlimited Memories to store the patient data file
13. Intensity: 3 W cm² in both continuous and pulsed modes

C. Electrotherapy specifications

1. Setting of different wave modulations.
2. Outputs: 2 independent output channels
3. Low frequency Currents: Galvanic, galvanic-interrupted, diadynamics (CP, LP, interrupted and interrupted), rectangular, triangular, exponential, Biphasic, Trabert, faradics (triangular, rectangular)
4. Medium Frequency Currents: IFT bipolar, IFT quadripolar, IFT isoplanar, IFT vectorial, MF of stimulation, Kotz Current
5. Should have minimum 50 Pre-set protocols with anatomical images for placement of electrodes.
6. Should have 700 to 1000 slots for storing the customised protocols.
7. The unit should have system to measure tissue saturation index, it should be portable and battery operated Bluetooth device based on near infrared spectroscopy.
8. Should be European CE/ US FDA certified product.
9. Should work on Power supply of 220V/50Hz.
10. Should be supplied with the voltage stabilizer of required rating.

D. Special Requirement

11. Certification: EU/TUV/CE/ISO
12. The installation charges of equipment must be quoted separately in Price bid.
13. Warranty must be 5 years and Installation on turnkey basis.
14. You should also quote your rates for CMC/AMC of the machine for the next five years after expiry of 05 years warranty period. A firm assurance of manufacturer to be given regarding the supply of spares/ accessories for 5 years after the warranty period.

Section-V
Technical Specification for Traction Therapy Couch Hydraulic Height Elevation

Tender No Gen/07/18-19/ M&E.

Traction unit complete with Traction Table for Cervical and Lumbar Traction.

The Unit should have the following features:-

1. The unit should have traction force adjustable from 2.5 kg to 91 kg.
2. The unit should have the Intermittent & Static treatment modes.
3. The unit should have Patient safety switch with adjustable alarm.
4. The unit should have colour LCD display for all set treatment perimeters.
5. The unit should be supplied with flexion stool with height adjustment.
6. The unit should have variable speed control with quiet operation throughout treatment period.
7. The unit should have variable hold and rest times from 0 - 99 seconds.
8. The unit should have the power input of 220-240VAC, 50Hz.
9. The unit should have the CE marked and protection Class 2A medical device.
10. The unit should be supplied with Hydraulic Traction Table, Pelvic (Lumbar) traction harness, Thoracic traction harness, Thoracic harness straps (pair), Cervical traction head halter, Cervical pillow, Spreader bar,
11. The unit should have system to measure tissue saturation index, it should be portable and battery operated Bluetooth device based on near infrared spectroscopy.
12. The traction machine and traction table should be of same manufacturer for the better compatibility.
13. The traction table should have adjustable height mount for traction machine with offset positioning for changing angle of traction application.
14. The traction table should have hydraulic height elevation.
15. The unit should have power assisted backrest and foot sections incorporate anti-trap design.
16. The unit should provide the accessory for cervical treatment in sitting position.
17. The unit should have breathing hole and plug.
18. The unit should have adjustable angle backrest from horizontal to +80 degree.
19. The unit should have adjustable angle head/foot section from -25deg. to +75 deg.
20. The unit should have height range from 50-101cm and width 70cm.
21. The unit should have safe working load and lifting capacity from 220 to 240 kg.
22. The unit should have retractable wheel design with adjustable foot for stability on uneven surfaces.
23. The unit should have European CE/TUV International Safety Standard.
24. The installation charges of equipment must be quoted separately in Price bid.
25. Warranty must be 5 years and Installation on turnkey basis.
26. You should also quote your rates for CMC/AMC of the machine for the next five years after expiry of 05 years warranty period. A firm assurance of manufacturer to be given regarding the supply of spares/ accessories for 5 years after the warranty period.

Section – V

Technical Specifications for Ultra Brief Pulse ECT Machine Tender No Gen/08/18-19/ M&E.

Main Features:

1. Should deliver current of bi-directional square wave ultra-brief pulse of 0.3ms
2. Should have facility of Right Unilateral (0.3ms) ultra-brief stimulation
3. Should have 4 channels EEG, 1 channel ECG and optical motion sensor to monitor the movement during seizure for providing assessing seizure efficacy.
4. Should have four different stimulus parameter knobs to vary pulse width, frequency, duration & current.
5. Should have facility to monitor real time dynamic impedance during procedure & also static impedance.
6. Should have LCD with Touch screen display with impedance display.
7. Should have protection against paddle to paddle short circuit or open circuit conditions.
8. The Stimulus Control push button to be hinged for prevention of accidental delivery of stimulus and should have visual indication of the status of Stimulus enable, Delivery or fault.
9. Should have stimulus current from 500-900mA, Frequency 20-120Hz, Pulse width – 0.3 1msec, Stimulus duration of 0.5-8sec.
10. Minimum Power: 0.3 Joules for 220-ohm patient impedance
11. Maximum Power: 202.8 Joules for 220-ohm patient impedance.
12. Charge: 4.0 – 1152m Coulombs.
13. Should have 2 channel thermal chart recorder with gain knobs for higher resolution printing.
14. Should have facility to connect system to any External PC and will be provided with monitoring software to view physiological monitoring. The traces should be available in real time throughout the treatment. The data can be stored with all the treatment parameters on the PC or can be converted in to text format.
15. Should have facility of Comprehensive database to store the complete patient information and can be configured according to user needs.
16. The equipment should be tested and certified by International agencies and should have ISO 9001 certification with CE or TUV approved.
17. The System should be US FDA approved.
18. Should be supplied with one high performance desktop computer with latest processor with high processing speed at least 3.0 GHz, Memory (RAM) of minimum 16 GB, Hard drive capacity of at least 2 TB, 2 Tb of external HDD, All data transfer ports including high speed Ethernet port, USB 3.0, and high end color laser printer.
19. The CD/DVD/Bluray writer should be able to archive EEG data on a CD/DVD/Blu-ray, which should have the capability to be read on any Windows, based PC without any additional software. Similar archiving should be available with Pen drives or any other removable storage media.
20. Only vendor who is able to quote and deliver all equipment/machines will be considered.
21. The system should comply with CE and IEC standards and quality. Device should be CE 93/42/EEC marked and meet the following standards: EN 60601-1-1, EN 60601-1-2, EN 60601-1-26
22. The system delivery should include installation on turnkey basis with dedicated onsite training to end users by the authorized representatives from the principal manufacturers.
23. Warranty must be 5 years.
24. You should also quote for CMC / AMC for the next five years. A firm assurance of manufacturer to be given regarding the supply of spares/ accessories for 5 years after the warranty period.

Section-V

Technical Specification for 500 KVA DG Set

Tender No Gen/01/18-19/ M&E.

A) DIESEL ENGINE:

Diesel Engine shall be of multi cylinders, vertical type, 4- stroke cycle, water-cooled, Natural Aspiration / turbo charged, diesel engine developing suitable BHP for giving power rating as per ISO 8528 – Part – 1 in KVA at the load terminals of alternator at 1500 rpm at actual site conditions.

The engine shall be capable for delivering specific prime power rating at variable loads for PF of 0.8 lag with 10% overload available in excess of specified output for one hour in every 12 hours. The average load factor of the engine over period of 24 hours shall be 0.85 (85%) for prime power output.

The engine shall be fitted with following accessories subject to the design of the manufacturer :-

- a) Dynamically balanced fly wheel.
- b) Necessary flexible coupling with guard between alternator and engine.
- c) Air cleaner (dry / Oil bath type).
- d) A Mechanical / electronic governor to maintain engine speed at all conditions of load.
- e) Fuel service tank as per standard design of the manufacturer. Tenderers are to specify the capacity of the fuel tank. Fuel tank should have the provisions of inlet, outlet connection, air-vent, drain plug and level indicator. MS fuel piping from tank to engine with valves, unions, reducers, flexible hose connection and floor mounting pedestals, twin fuel filters and fuel injectors.
- f) Dry exhaust manifold with suitable exhaust residential grade silencer to reduce the noise level.
- g) Suitable self – starter for 12 V / 24 V DC.
- h) Battery charging alternator unit and voltage regulator, suitable for starting batteries, battery racks with interconnecting leads and terminals.
- i) Necessary gear driven oil pump for lubricating oil, priming of engine bearing as well as fuel systems as per manufacturer recommendations.
- j) Naturally aspirated / turbo charger (as per manufacturer standard).
- k) Lubrication oil cooler.
- l) Lubrication oil filters with replaceable elements.
- m) Crank case heater as per manufacturer recommendations.
- n) Fuel injection : Engine should have suitable fuel injection system in order to achieve low fuel consumption.
- o) Fuel control solenoid.
- p) Fuel pump with engine speed adjustment.
- q) Engine control panel : Fitted and having digital display for following :-
 - I. Start / Stop key switch
 - II. Lube oil pressure indication
 - III. Water temperature indication.
 - IV. RPM indication
 - V. Engine hour indications
 - VI. Battery charging indication
 - VII. Low lub. Oil trip indication
 - VIII. High water temperature indication
 - IX. Over speed indication
- r) All moving parts of the engine shall be mechanically guarded.
- s) Radiator / Heat Exchanger System / Remote Radiator.
- t) Any other item not included / specified but is a standard design of the manufacturer.

GOVERNOR:

Mechanical governor of class A2 for up to and including 200 KVA capacity and Electronic governor of class A1 for capacity above 200 KVA, as per ISO 3046 / BS 5514 with actuator shall be provided as per standard design of manufacturer. Governor shall be a self contained unit capable of monitoring speed.

FREQUENCY VARIATION:

The engine speed shall be so maintained that frequency variation at constant load including no load shall remain within a band of 1% of rated frequency.

FUEL SYSTEM: Fuel system for the engine shall be fed through engine driven fuel pump. The daily service tank shall be complete with necessary support, gauges, connecting pipe work etc. In case of Top Mounted tanks, non return valves are must in fuel supply and return line of specified value. Pipe sealant should be used for sealing for all connections. No Teflon tape to be used.

LUBRICATING OIL SYSTEM: Necessary lubricating oil system shall be so designed that when the engine starts after a long shut down lubrication failure does not occur. Necessary priming pump for lubricating oil circuit as per recommendation of manufacturer shall be installed, to keep bearings primed. This pump shall be normally automatically operative on AC / DC supply available with the set.

STARTING SYSTEM: Starting System of the Engine shall comprise of necessary heavy-duty battery of 12V / 24V DC (as per manufacturer standard), and suitable starter motors, axial type gear to match with the toothed ring on the flywheel. A bimetallic relay protection to protect the starter motor from excessively long cranking runs suitably integrated with the engine protection system shall be included within the scope of the work & requirements of control panel, indications and auxiliaries etc. The scope shall cover all cabling, terminals, including initial charging etc. The system shall be capable of starting the DG set within 20 – 30 Sec. even in winter condition with an ambient temperature down to 0° C.

BATTERY CHARGER: The battery charger shall be suitable to charge required numbers of batteries at 12 V / 24 V complete with transformer, rectifier, charge rate selector switch, indicating ammeter & voltmeter etc. connections between the battery charger and batteries shall be provided with suitable copper leads with lugs.

PIPING WORK:

MS Pipe (medium class) of adequate size shall be used for fuel line connections. M.S. black pipes will be permitted for the exhaust and water lines. The pipe work shall be inclusive for all fittings and accessories such as valves, bends, reducers, elbows, flanges, flexible connection and all necessary hardware etc. as required. The installation shall cover clamps, supports, hangers etc, as are necessary for completing the work. However, the installation shall be sectionalized with flanged connections as are necessary for easy isolation for maintenance of the units.

COMMON BED PLATE: Engine and alternator shall be directly coupled or coupled by means of flexoplate / flexible coupling as per manufacturer standard design and both units shall be mounted on a common bed plate together with all auxiliaries to ensure perfect alignment of engine and alternator with minimum vibrations. The bed plate shall be suitable for installation on suitable anti – vibration mounting system.

EXHAUST SYSTEM:

1) Exhaust Piping: All MS pipes for exhaust lines shall be conforming to relevant IS. The runs forming part of factory assembly on the engine flexible connections up to exhaust silencer shall be exclusive of exhaust piping item.

The work include necessary cladding of exhaust pipe work using 50 mm thick Loosely bound resin mattress / mineral wool / Rockwool, density not less than 120 kg/m³ and aluminium cladding (0.6 mm thick) for the complete portion.

- a) The piping for the exhaust should have minimum backpressure.
- b) Number of bends should be kept minimum and smooth bends should be used to minimize back pressure.
- c) Pipe sleeve of larger dia. should be used while passing the pipe through concrete wall and gap should be filled with felt lining.
- d) Exhaust piping inside the Acoustic Enclosure / Genset room should be lagged with asbestos rope along with aluminium sheet cladding / insulated to avoid heat input to the room.
- e) Exhaust flexible shall have it's free length when it is installed. For bigger engines, 2 flexible bellows can be used.
- f) For engine up to 500 KVA, only one bellow is required. However, if exhaust pipe length is more than 7 Mtrs then additional bellow / provision for expansion should be provided.
- g) MS pipes and long bend / elbows should be used.
- h) The exhaust outlet should be in the direction of prevailing winds and should not allow exhaust gasses to enter air inlet / windows etc.
- i) When tail end is horizontal, 45 Degree downward cut should be given at the end of the pipe to avoid rain water entry into exhaust piping.
- j) When tail end is vertical, there should be rain trap to avoid rain water entry. If rain cap is used, the distance between exhaust pipe and rain cap should be higher than diameter of pipe. Horizontal run of exhaust piping should slope downwards away from engine to the condensate trap. Silencer should be installed with drain plug at bottom.

2) SILENCER:

Residential type silencer suitable for outdoor mounting shall be provided with all relevant accessories required as per manufacturer's design.

AIR SYSTEM:

It is preferable to provide vacuum indicator with all engines to indicate choked filter. Maximum air intake restrictions with clean and choked filters should be within prescribed limit as per OEM / manufacturer recommendation for the particular model of the engine. Gensets should be supplied with medium duty / heavy duty air cleaners.

COOLING SYSTEM:

System should be designed for ambient temperature of 40 Deg. C

Water softening / demineralizing plants should be used, if raw water quality is not acceptable.

Coolant should be used mixed with additive as per recommendation of OEM / Manufacturer for various engine models.

Radiator fan flow should be free from any obstruction.

B) ALTERNATOR:

The alternators shall be self excited, screen protected, self-regulated, brushless, Horizontal foot mounted in single / double bearing construction suitable for the following:

Rated PF	:	0.8 (Lag)
Rated voltage	:	415 Volts
Rated frequency	:	50 Hz
No. of Phases	:	3
Enclosure	:	SPDP
Degree of Protection	:	IP – 23
Ventilation	:	Self ventilated air cooled
Ambient Temperature	:	40 Deg C Maximum
Insulation Class	:	F / H
Temperature Rise	:	Within class F / H limits at rated load
Voltage Regulation	:	+/- 1%
Voltage Variation	:	+/- 5%
Overload duration / capacity	:	10% for one hour in every 12 hours of continuous use.
Frequency Variation	:	As defined by the Engine Governor (+/- 1%)
Excitation	:	Self / separately excited
Type of AVR	:	Electronic
Type of bearing and Lubrication arrangement	:	Anti – friction bearing with Grease lubrication
Standard	:	IS 4722 & IEC : 34 as amended upto date

Alternator should be able to deliver output rating at actual site condition.

EXCITATION:

The alternator shall be brushless type and shall be self / separately excited, self – regulated having static excitation facility. The exciter unit be mounted on the control panel or on the alternator assembly. The rectifier shall be suitable for operation at high ambient temperature at site.

AUTOMATIC VOLTAGE REGULATORS (AVR):

In order to maintain output terminal voltage constant within the regulation limits i.e. +/- 1%, Automatic voltage regulator unit shall be provided as per standard practice of manufacturer.

FAULT TRIPPING:

In the event of any fault e.g. over voltage / high bearing temperature / high winding temperature or an external fault, the AVR shall remove the excitation voltage to the alternator. An emergency trip shall also be provided.

STANDARDS:

The alternator shall be in accordance with the following standards as are applicable :

- IS 4722 / BS 2613 : 1970 The performance of rotating electrical machine.
- IS 4889 / BS 269 rules for method of declaring efficiency of electrical machine.

PERFORMANCE:

Voltage dip shall not exceed 20% of the rated voltage for any step load or transient load as per ISO 8528 (Part – I). The winding shall not develop hot spots exceeding safe limits due to imbalance of 20% between any two phases from no load to full load.

The generator shall preferably be capable of withstanding a current equal to 1.5 times the rated current for a period of not more than 15 seconds as required of IS 4722 : 1992.

The performance characteristics of the alternator shall be as below:

- a) Efficiency at full load 0.8 PF
 - i. Upto 25 KVA – not less than 82%
 - ii. Above 25 KVA and upto 62.5 KVA – not less than 86%
 - iii. Above 62.5 KVA & upto 250 KVA – not less than 90%
 - iv. Above 250 KVA – not less than 93.5%
- b) Total distortion factor - Less than 3%
- c) (i) 10 % Overload - One hour in every 12 hour of continuous use.
(ii) 50% Overload - 15 Seconds

TERMINAL BOXES:

Terminal boxes shall be suitable for UG cables / Bus trunking. The terminal box shall be suitable to withstand the mechanical and thermal stresses developed due to any short circuit at the terminals.

EARTH TERMINALS:

2 Nos. earth terminals on opposite side with vibration proof connections, non – ferrous hardware etc. with galvanized plate and passivated washer of minimum size 12 mm dia. Hole shall be provided.

SPACE HEATERS:

Alternator of capacity more than 500 KVA shall be provided with suitable space heaters to maintain the winding temperature automatically such that it does not absorb moisture during long idle period. The heater terminals shall be brought to a separate terminal box suitable for 230 V AC supply and a permanent caution notice shall be displayed.

TESTS ON GENERATING SETS:

Following tests shall be conducted on the DG Set before these are put into operation.

- i. The routine tests as per relevant IS standards at manufacturer's works. Copies of such test certificates are to be enclosed.
- ii. Insulation resistance tests.
- iii. Operational checks.
- iv. Full load run test for continuous 12 hours including 10% overload allowed for 1 hour at Contractor's / OEM / Manufacturer's premises in the presence of representative of Engineer-in-charge. Hourly readings for all important parameters shall be taken during the test run. These readings must be certified to be acceptable by the OEM / Manufacturer's of D.G. set. All consumables like fuel, lubricating oil, coolant etc shall be provided by the tenderer. Adjustable Electrical Load shall be arranged by the tenderer. The contractor shall intimate department for the testing dates & place at least fifteen days earlier. All expenses for conducting tests except traveling, lodging & boarding of the representative of the Engineer-in-Charge shall be paid by the contractor. In addition to the above tests in the workshop of contractor's / OEM / Manufacturer's premises, load run test for at least 6 hours shall be carried out at the site of work on available load.
- v. If, however, due to any reason the department can not send their representative to attend the testing, the full load testing shall be done at site with artificial load to be arranged by the contractor.
- vi. All the expenses to be incurred for testing i/c cost of POL / Consumables and artificial load shall have to be born by the successful tenderer within his quoted rates. Nothing extra shall be payable.

C) AMF CONTROL PANEL:

AMF control panel shall be fabricated by the manufacturer of the DG Set / OEM as per standard manufacturing practice. OEM recommendation in respect of AMF panel is also acceptable.

The control panel shall be fabricated out of 1.6 mm thick sheet steel, totally enclosed, dust, damp and vermin proof free standing floor mounted type and front operated. It shall be made into section such that as far as feasible, there is no mixing of control, power, DC and AC functions in the same section and they are sufficiently segregated except where their bunching is necessary. Hinged doors shall be provided preferably double leaf for access for routine inspection from the rear. The degree of protection required will be IP – 42 conforming to IS 2147.

EQUIPMENT & REQUIREMENT:

The AMF control cubicle panel shall incorporate assembled equipment duly wired and as per systems requirement and OEM recommendation. However the system shall generally comply with the following requirements as under:

- i. Back up protection for mains & DG sets supply with suitable capacity and KA rating of 4 poles for electromechanical over load, short circuit & earth fault protection shall be provided.
- ii. Mains & Alternator power 4P contractor of suitable Amps capacity, 415 Volts, 50 Hz with auxiliary contacts for AMF panel for interlocking & indications shall be provided. The DG Set contractor shall have adjustable thermal overload relay in each case to suit the capacity of the DG Set.
- iii. 415 Volts, 4 strip Aluminium Bus Bars for AMF panel with colour coded heat shrinkable insulation shall be provided.
- iv. Flush mounted digital voltmeters of nominal size 96 mm square of suitable range with selector switch.
- v. Flush mounted digital ammeters of nominal size 96 mm square of suitable range with selector switch & CTs.
- vi. Flush mounted digital frequency meter.
- vii. Energy meters (KWH) suitable for 415 V, three phases, 4 wires system (flush mounted)
- viii. Power meters (KW) suitable for 415 Volts, three phases, 4 wires systems.
- ix. Equipment and relay with visual indications for testing the healthiness of the generating set with test mode and with "load on" mode.
- x. Suitable capacity battery charger with trickle & boost charging facility (with automatic cut off system while battery is charged through the Gen. Set) with voltmeter, ammeter, with shunt, surge suppressor.
- xi. Indicating lamps for "Mains ON", "GEN ON" & LOAD ON"
- xii. Instrument fuses (HRC type) for circuit protection.
- xiii. Audio visual annunciation for
 - a. Low lubricating oil pressure.
 - b. High water temperature.
 - c. Engine over speed.
 - d. Set fails to start
 - e. Over current trip of alternator
 - f. Earth fault.
- xiv. Test / Auto / Manual selector switch.
- xv. Push button for engine start / stop / re-set,
- xvi. Suitable range of C.T's 15 VA burden, class-I for metering & class 15P10 for protection.
- xvii. All internal wiring for various meters / equipment, battery charger etc, shall be done with insulated copper wire of not less than 2.5 sq mm. cross sectional area and with markers for easy identification.
- xviii. Three phase monitoring relay.
- xix. Hooter for engine stop.
- xx. Hooter cancel switch.
- xxi. Control fuses.
- xxii. A set for DC control relay for monitoring engine shut down, engine starting and failure to start lockout etc.
- xxiii. Any other relay if necessary to make the control panel complete and functional and to meet the site requirement as specified in the scope of work under additional condition.
- xxiv. Alternatively compact Electronic DG Set automatic operation & control relay may be provided in place of individual relays. Electronic Multiple Metering unit in place of individual units for measuring electrical & engine parameters shall be acceptable.

D) SYSTEM OPERATION:

MANUAL MODE:

- i) It shall be possible to start up the generator set only by the operator by pressing the start push button is kept pressed.
- ii) Alternator close and trip operation shall also be operated by pressing appropriate button on the panel. However, closure of the contractor shall be feasible only after alternator has build up full voltage.
- iii) Engine shut down otherwise due to faults, shall also be manual by pressing "Stop" button.

TEST MODE:

During test mode engine shall get the start signal even though the main supply is healthy and the alternator start building up voltage but the set shall not take load by closing of contactor for alternator. If the main failure taken place during testing mode the load shall be transferred to DG set.

AUTO MODE: During failure of power, the DG set will start automatically within 30 seconds (in three attempts) and power contractor of DG set will automatically close. As soon as the power resumes the same will automatically trip and close the power contractor of supply mains. The engine should stop automatically.

E) ACOUSTIC ENCLOSURE: OEM recommendation in respect of ACOUSTIC ENCLOSURE is also acceptable.

CONSTRUCTION:

- It should have weather proof corrosion resistant modular construction fabricated with 2mm / 1.6 mm thick CRC Sheet outer and should adhere to mandatory gazette noise regulation norms.
- All the sheet steel components should be pretreated with zinc phosphate prior to polyester powder coating with zinc plated or stainless steel fasteners.
- The container should be designed for easy access to serviceable parts. It should have glass control panel viewing window. It should have provision for illumination inside enclosure.
- The doors should be fitted with high quality EPDM gaskets to avoid leakage of sound.
- For security and safety, it should have special lockable door handles with single key and emergency stop button.
- Detachable cable glands shall be provided.

PAINTING:

- The sheet metal component should be powder coated after seven tanks pre-paint treatment.
- To have longer life of container it should be P.P. based powder coated (inside as well as outside).
- Base frame should be epoxy coated when fabricated.

ACOUSTIC INSULATION:

- Sound proofing of enclosure should be done with quality rock wool / glass wool / mineral wool conforming to IS: 8183 of 96 Kg. /m³ density. Alternatively insulated with fire retardant foam as per standard manufacturing practice of the manufacturer shall also be acceptable.
- The rock wool / glass wool / mineral wool shall further be covered with fiberglass cloth / fiber tissue paper fire resistive and perforated powder coated sheet of 0.6 mm thickness.
- The Acoustic Enclosure shall be as per type tested design approved by laboratory for compliance of sound level of 75 dBA at 1 meter specified by Ministry of Environment & forest / CPCB.
- Drawing of the type tested enclosure & copy of test certificate shall be provided at the time of submission of technical bid.

VENTILATION AND AIR CIRCULATION:

- The ventilation system shall be designed to provide air inlet / exhaust acoustic louvers for efficient air circulation and shall have following special features.
 - a. Adequate ventilation is to be provided to meet air requirement for combustion and heat removal.
 - b. The temperature inside the enclosure shall not exceed 5-7⁰C more than the ambient temperature near air suction point.

EXHAUST SYSTEM:

A high efficiency residential silencer along with its associated piping and flexible bellow is to be mounted inside the acoustic enclosure. Exhaust piping with its insulation shall be provided as per item of BOQ.

F) EARTHING:

Copper Plate earthing for DG Set body earthing & Neutral earthing shall be provided as per CPWD General Specifications for Electrical Work Part-I (Internal) 2013, Part-II (External) 1994 & part-VII (DG set) 2013 as per following:

1. Two sets of Copper earth plate system for the DG Set body earthing by two distinguished copper earth strip of size as mentioned in the BOQ. The DG Set shall be earthed with the common earthing system.
2. Two sets of Copper earth plate for neutral earthing. Neutral of Each DG Set shall be connected with two distinguished copper earth strips with neutral bushing to be provided with the alternator or panel as the case may be.

General Condition and Commercial Conditions for 500 KVA DG Set

1.1 INTRODUCTION

1.1.1 Scope

1.1.1.1 These specifications cover the general specifications pertaining to diesel engine driven generating sets & their installation.

1.1.1.2. These General Specifications cover the equipments and materials for the DG Sets, their testing and/ or inspection as may be necessary before their dispatch from their respective works, their delivery at site, all preparatory works, assembling, installation and adjustments, commissioning, final testing, putting into operation and handing over of the complete system.

1.1.1.3 These General Specifications are subject to revision from time to time.

1.1.1.4 Each DG Set installation work has its own particular requirements. These General Specifications shall be supplemented with tender specifications as may be required for a particular work. The tender specifications, wherever they differ from these 'General Specifications', shall have overriding value and shall be followed for that particular work. A specimen NIT for DG Set works is appended at Appendix 'IV' for general guidance.

1.1.2 Related Documents

These General Specifications shall be read in conjunction with the General conditions of contract. These General Specifications shall also be read in conjunction with the tender specifications, schedule of work, drawings and other documents connected with the work.

1.1.3 Site Information

The tenderer should, in his own interest, visit the site and familiarise himself with the site conditions before tendering. For any clarification, tenderer may discuss with the Engineer-in-Charge.

1.2 CONFORMITY WITH STATUTORY ACTS, RULES, STANDARDS AND CODES

- (i) All components shall conform to relevant Indian Standard Specifications, wherever existing, amended to date. A list of such standards is appended in Appendix 'V'.
- (ii) All electrical works shall be carried out in accordance with the provisions of Indian Electricity Act, 2003 and Indian Electricity Rules, 1956 as amended up to date. They shall also conform to CPWD General Specifications for Electrical Works, Part-I (Internal), 2013 and Part-II (External), 1994 and Part IV (Sub- station), 2013, as amended up to date.
- (i) In respect of all labour employed directly or indirectly on the work for the performance of the contractor's part of work, the contractor at his own expense, will arrange for the safety provisions as per the statutory provisions, B.I.S recommendations, factory act, workman's compensation act, CPWD code and instructions issued from time to time. Failure to provide such safety requirements would make the tenderer liable for penalty for Rs. 200/- for each violation. In addition the Engineer-in-charge, shall be at liberty to make arrangements and provide facilities as aforesaid and recover the cost from the contractor.
- (ii) The contractor shall provide necessary barriers, warning signals and other safety measures while executing the work of DG Set installation, cables etc. or wherever necessary so as to avoid accident. He shall also indemnify CPWD against claims for compensation arising out of negligence in this respect. Contractor shall be liable, in accordance with the Indian Law and Regulations for any accident occurring due to any cause. The department shall not be responsible for any accident occurred or damage incurred or claims arising there from during the execution of work. The contractor shall also provide all insurance including third party insurance as may be necessary to cover the risk. No extra payment would be made to the contractor due to the above provisions thereof.

1.3 *WORKS TO BE ARRANGED BY THE DEPARTMENT*

Unless otherwise specified in the tender documents, the following works shall be arranged by the Department:

- (i) Space for accommodating all the equipments and components involved in the work. However, watch and ward shall be responsibility of the contractor.
- (ii) Power supply (Single/three phase).

1.4 *WORKS TO BE DONE BY THE CONTRACTOR*

Unless otherwise mentioned in the tender documents, the following works shall be done by the contractor and therefore, their cost shall be deemed to be included in their tendered cost-whether specifically indicated in the schedule of work or not: -

- (i) Foundations for equipments including vibration isolation springs/ pads,
- (ii) Making good all damages caused to the structure during installation and restoring the same to their original finish.
- (iii) Minor building works necessary for installation of equipments, foundation trench for fuel line & cable, making of opening in walls or in floors and restoring them to their original condition/ finish and necessary grouting etc. as required.
- (iv) All supports for exhaust & water pipes, chimney, bus trunking (if included in scope of contract), cables, anti-vibration pads etc. as are necessary.
- (v) All electrical work and neutral earthing, body earthing, required for engine & alternator, main board/ control panels, and control wiring including loop earthing, if specified in Schedule of Work

All pipes, bus trunking and/ or cable connections.

- (vi) POL i.e. HSD oil and lub. oil for diesel engine for testing & commissioning for 12 hours i/c 1hr of 10% overloading at OEA/ OEM works shall be arranged by the contractor. POL i.e. HSD oil and lub. oil for trial run of 4 Hrs. at site at available load shall be arranged by the department.
- (vii) Painting of all exposed metal surfaces of equipments and components with appropriate colour.
- (viii) Clearance/ Approval of the complete installation from CPCB/ State Pollution Control Board, Central Electricity Authority (CEA)/ Local Bodies and other licensing authorities, wherever required.

1.5 *RATES*

1.6.1 The rates quoted by the tenderer, shall be firm and inclusive of all taxes (including works contract tax), duties and levies and all charges for packing, forwarding, insurance, freight and delivery, installation, testing, commissioning etc. at site including temporary constructional storage, risks, overhead charges, general liabilities/ obligations etc. but exclusive of Service Tax, which shall be reimbursed on production of documentary proof of actual payment against this contract/ work.

1.6.2 Octroi exemption certificate will be issued by the department if required by the contractor. However, the department is not liable to reimburse the octroi duty in case exemption certificates are not honoured by the concerned authorities.

1.6.3 The contractor has to carry out routine and preventive maintenance as per manufacturer's standards for a period of 12 months from the date of handing over. However, all consumables (fuel/ lube oil etc.) including filters will be supplied by the department.

1.7 *POWER SUPPLY AND WATER SUPPLY*

1.7.1 **Power Supply**

- (i) Unless otherwise specified, 3 phase, 415 volts, 50 Hz power supply shall be provided by the department free of charge to the contractor at one point for installation at site suitable for 10 KW load. Termination switchgear however, shall be provided by the contractor. Further extension if required shall be done by the contractor.
- (ii) The contractor shall not use the power supply for any other purpose than that for which it is intended for. No major fabrication work shall be done at site. Power shall be used only for welding/ cutting works. The power supply shall be disconnected in case of such default and the contractor shall then have to arrange the required power supply at his cost.

1.7.2 *Water Supply*

Water supply shall be made available to the contractor by the Department free of charge at one point

MACHINERY FOR ERECTION

All tools and tackles required for unloading / handling of equipments and materials at site, their assembly, erection, testing and commissioning shall be the responsibility of the contractor.

1.8 *COMPLETENESS OF THE TENDER, SUBMISSION OF PROGRAMME, APPROVAL OF DRAWINGS AND COMMENCEMENT OF WORK*

(i) Completeness of the tender

All sundry equipments, fittings, assemblies, accessories, hardware items, foundation bolts, supports, termination lugs for electrical connections, cable glands, junction boxes and all other sundry items for proper assembly and installation of the various equipments and components of the work shall be deemed to have been included in the tender, irrespective of the fact that whether such items are specifically mentioned in tender documents or not.

(ii) Submission of programme

Within fifteen days from the date of receipt of the letter of acceptance, the successful tenderer shall submit his programme for submission of drawings, supply of equipment, installation, testing, commissioning and handing over of the installation to the Engineer-in-Charge. This programme shall be framed keeping in view the building progress.

(iii) Submission of Drawings

The contractor shall submit the drawings to the Engineer-in-Charge as per clause 1.19 of this specification for approval before start of work.

(iv) Commencement of Work

The contractor shall commence work as soon as the drawings submitted by him are approved. The drawings are to be submitted by the contractor within 15 days of stipulated date of start, and shall be approved by the Engineer-in-Charge within 10 days of receipt in his office.

1.9 *DISPATCH OF MATERIALS TO SITE AND THEIR SAFE CUSTODY*

The contractor shall dispatch materials to site in consultation with the Engineer-in-Charge. Suitable lockable storage accommodation shall be made available free of charge temporarily. Watch & ward however, shall be the responsibility of contractor.

Programme of dispatch of material shall be framed keeping in view the building progress. Safe custody of all equipment/ items supplied by the contractor shall be the responsibility of the contractor till final taking over by the department.

1.10 *CO-ORDINATION WITH OTHER AGENCIES*

The contractor shall co-ordinate with all other agencies involved in the work so that the work of other agencies is not hampered due to delay in his work.

1.11 *INDEMNITY*

The successful tenderer shall at all times indemnify the department, consequent on this works contract. The successful tenderer shall be liable, in accordance with the Indian Law and Regulations for any accident occurring due to any cause and the contractor shall be responsible for any accident or damage incurred or claims arising there from on the department during the period of erection, construction and putting into operation the equipments and ancillary equipment under the supervision of the successful tenderer in so far as the latter is responsible. The successful tenderer shall also provide all insurance including third party insurance as may be necessary to cover the risk. No extra payment would be made to the successful tenderer on account of the above.

1.12 *QUALITY OF MATERIALS AND WORKMANSHIP*

- (i) The components of the installation shall be of such design so as to satisfactorily function under all conditions of operation.
- (ii) The entire work of manufacture/fabrication, assembly and installation shall conform to sound engineering practice. The entire installation shall be such as to cause minimum transmission of noise and vibration to the building structure.
- (iii) All equipment and materials to be used in work shall be manufactured in factories of good repute having excellent track record of quality manufacturing, performance and proper after sales service.

1.13 *CARE OF THE BUILDING*

Care shall be taken by the contractor during execution of the work to avoid damage to the building. He shall be responsible for repairing all such damages and restoring the same to the original finish at his cost. He shall also remove all unwanted and waste materials arising out of the installation from the site of work from time to time.

1.14 *INSPECTION AND TESTING*

1.14.1 The successful tenderer will arrange staff/fuel/POL for test run at his cost.

1.14.2 *Inspection and Testing of DG sets of capacity more than 200 KVA*

1.15.2.1 For DG sets of capacity more than 200 KVA, testing shall necessarily be carried out at factory/ manufacturer premises in presence of representative of the Department.

1.15.2.2 For testing, following procedure will be followed: All major items/ equipments i.e. engine & alternator in assembled condition, associated electrical control panels etc. shall be offered for inspection and testing at factory/ manufacturers works. The successful tenderer shall give a notice of minimum two weeks for carrying out such tests. The Engineer-in-charge/ or his authorized representative shall witness such inspection & testing at mutually agreed date. The cost of the representative's visit to the factory will be borne by the Department.

1.15.2.3 The department also reserves the right to inspect the fabrication job at factory and the successful tenderer has to make arrangements for the same.

1.15.2.4 DG set will be tested on load of unity power factor for the rated KW rating. During testing, each of the D.G. sets covered under scope of work, shall be operated for a period of 12 hours on the rated KW at DG set's KW rating including one hour on 10% overload after continuous run of the 12 Hours. During testing all controls/ operations safeties will be checked and proper record will be maintained. Any defect/ abnormality noticed during testing shall be rectified. The testing will be declared successful only when no abnormality/ failure is noticed during the testing. The DG set will be cleared for dispatch to site only when the testing is declared successful by authorised representative/ Engineer-in-Charge.

1.15.4 *Trial Run/ Running-in-Period*

After successful testing of the DG Set, a trial run at available load will be carried out for 120 Hours or 15 Days whichever is earlier. The DG Set will be operated and a log of all relevant parameters will be maintained during this period. The arrangement of staff for trial run/ running in period will be made by the successful tenderer. However, diesel shall be provided by Department. The contractor will be free to carry out necessary adjustments. The DG Set will be said to have successfully completed the trial run, if no break-down or abnormal/ unsatisfactory operation of any component of the entire installation included in the scope of work of the contract, occurs during this period. After this the DG Set will be made available for beneficial use. After the DG Set has operated without any major break-down/ trouble, it shall be taken over by the department subject to guarantee clause of the contract. This date of taking over of the DG Set, after trouble free operation during the trial run/ running-in period, shall be the date of acceptance/ taking over.

1.15.5 ***Safety measures:- All equipments shall incorporate suitable safety provisions to ensure safety of the operating personnel as per manufacturers' standard practice.***

1.16 *STATUTORY CLEARANCE(S)*

Approval/ clearance of the complete installation shall be obtained by the contractor from CPCB/ State Pollution Control Boards/ Local Bodies/ Central Electricity Authority (CEA)/ other licensing authorities wherever required. However, application shall be made by Department and any statutory fee, as applicable, shall be paid by Department directly to the govt. authorities concerned.

1.17 *GUARANTEE*

All equipments shall be guaranteed, against unsatisfactory performance and/ or break down due to defective design, workmanship or material, for a period of 60 months from the date of taking over the installation by the department. The equipments or components, or any part thereof, so found defective during guarantee period shall be forthwith repaired or replaced free of cost, to the satisfaction of the Engineer-in- Charge. In case it is felt by the department that undue delay is being caused by the contractor in attending the defect/ fault removed, the same will be got done by the department at the risk and cost of the contractor. The decision of the Engineer-in- charge in this regard shall be final.

1.18 **Comprehensive Annual Maintenance Contract (CMC) /Annual Maintenance Contract (AMC)**

Rate should be quoted for CMC/AMC for a period of 5 years after post warranty/Guarantee. In case it is AMC the rate for various spare parts should also be provided. The engineer of the CPWD electrical will conduct the onsite load testing.

1.19 *TENDER DRAWINGS, DRAWINGS FOR APPROVAL & COMPLETION DRAWINGS*

1.19.1 **Tender Drawings**

The drawings appended with the tender documents are intended to show space allotted for various equipments. The equipments offered shall be suitable for installation in the spaces shown in these drawings.

1.19.2 *Drawings for Approval on Award of the work*

The contractor shall prepare & submit three sets of following drawings and get them approved from the Engineer-in-charge before the start of the work. The approval of drawings however does not absolve the contractor not to supply the equipments/ materials as per agreement, if there is any contradiction between the approved drawings and agreement.

Lay out drawings of the equipments to be installed including control cables, fuel/ lube oil pipes and supports/ structure for exhaust piping, Chimney and bus ducts/ cable trays.

- (a) Drawings including section, showing the details of erection of entire equipments.
- (b) Electrical wiring diagrams from engine-alternator set to Electrical control panel, Electrical control panel to essential LT board including the sizes and capacities of the various electrical/ control cables and equipment.
- (c) Dimensioned drawings of Acoustic enclosure/ Engine-Alternator set and Electrical control panel.
- (d) Drawings showing details of supports for pipes, chimney cable trays, ductsetc.
- (e) Any other drawings relevant to the work.

1.19.2.1

Drawings/Documents to be furnished on completion of Installation

Two sets of the following laminated drawings shall be submitted by the contractor while handing over the installation to the Department. One set shall be laminated on a hard base for display in the DG set room/room where AMF panel is installed and another set shall be displayed in Junior Engineer's room. In addition, drawings will be given on Compact Disc (CD):

- (a) DG set installation drawings giving complete details of all the equipments, including their foundations.
- (b) Line diagram and layout of all electrical control/AMF panels giving switchgear ratings and their disposition, cable feeder sizes and their layout.
- (c) Control wiring drawings with all control components and sequence of operations to explain the operation of control circuits in AMF panel/PCC.

1.19.2.2

- (i) Manufacturer's technical catalogues of all equipments and accessories.
- (ii) Operation and maintenance manual of all major equipments, detailing all adjustments, operation and maintenance procedure.

1.20

AFTER SALES SERVICES

The contractor shall ensure adequate and prompt after sales service free of cost during guarantee period, and against payment after the guarantee period is over, in the form of maintenance, spares and personnel as and when required during normal life span of the equipments and shall minimize the breakdown period. In case of equipment supplied by other manufacturers the firm shall furnish a guarantee from the manufacturer for the same before the DG Set installation is taken over.

ACCEPTABLE MAKES OF EQUIPMENTS

Sl. No.	Materials		Acceptable makes
1.	Engine	:	Cummins / MTU / Perkins / Mitsubishi / Caterpillar / Kirloskar / Aschok Leyland
2.	Alternator	:	Cummins / Kirloskar / Crompton / Stamford / Leroy Somer / NGET / Jyoti
3.	Relays	:	As per standard practice of manufacturer
4.	Contactors	:	As per standard practice of manufacturer
5.	M.S Pipes	:	Tata, Jindal
6.	Anti Vibrations Mountings	:	Dunlop, Polybond
7.	Batteries	:	Exide, Faruken, Standard, Amco
8.	Ammeter / Voltmeter (Digital)	:	Conserve, L&T, AE or as per standard practice of manufacturer
9.	Current transformer	:	As per Manufacturer design.
10.	AMF PANEL	:	Manufactured by OEM only.
11.	Acoustic Enclosure	:	Manufactured by OEM only.
12.	LT Cable	:	Polycab / Havells / RR Kabel / KEI

SIGNATURE OF CONTRACTOR

TECHNICAL DATA SHEET**SCHEDULE OF TECHNICAL PARTICULARS TO BE FURNISHED BY THE TENDERER**

NAME OF AGENCY		
	Parameter Description	500 KVA DG Set
Engine	Make	
	Model / ISS reference	
	No. of cylinders	
	Rated R.P.M.	
	Method of Starting	
	Aspiration Method	
	BHP	
	Specific Fuel oil consumption (gm / BHP /hr.)	
	Lub. Oil recommended	
	Lub. Oil pressure	
	Qty. of Lub. Oil required	
	Time required for starting	
	Lub. Oil sump capacity	
	Nos. of exhaust pipe required	
	Dia. Of exhaust pipe	
	Whether meets CPCB norms for Emission	
	Fuel Consumption at Full load	
	Type of Governor	
	Any other data	
Alternator	Make	
	Enclosure Details	
	Full Load output in KVA	
	Full Load output in KW at 0.8 PF	
	Designed over load capacity at max. Ambient t emp.	

	Efficiency at full load.	
	Class of Insulation of rotor	
General	Overall Length of DG set LxWxH	
	Overall Weight of DG set	
	Noise level of DG set at one Metre with Acoustic Enclosure	
AMF Panel	Make	
	Type (Floor / Wall mounted)	
	Overall dimensions (LxBxH)	
	Finish	
	Microprocessor based or relay based	
	Circuit diagram	
Generator Control Panel	Make	
Acoustic Enclosure	Make	
	Size	
	Details of Acoustic lining Material & Make	

SIGNATURE OF CONTRACTOR

SCHEDULE OF WORK For 500 KVA DG set

Name of Work: SITC of 500 KVA silent type DG Set with AMF Panel at CIP , Kanke , Ranchi						
SLNo	Description	Qty	Rate	Unit	Amount	Remarks
	SH-A (Equipments)					
1.1	Providing, Installation, testing and commissioning of 'Silent type' diesel generating set having prime power rating of 500 KVA, 415 Volts at 1500 rpm, 0.8 lagging power factor suitable for 50 Hz., 3 phase system and for 0.85 load factor and consisting of the following:					
(a)	Diesel Engine:					
	Diesel engine 4 stroke liquid cooled, electric start, of suitable BHP at 1500 rpm suitable for above output of alternator at 40 degree C, 50% RH & at 1000 meter MSL and conforming to BS 5514, BS 469, IS 10000, capable of taking 10% over loading for one hours after 12 hours of continuous operation. The engine will be fitted complete all the required accessories including required size and length of control cable from DG set to AMF panel.					
(b)	Engine mounted instrument panel fitted with and having digital display for following					
	i) Start-Stop switch with Key ii) Water temperature indication iii) Lubrication oil pressure indication iv) Battery charging indication v) RPM indication vi) Over speed indication vii) Low lubrication oil trip indication viii) Engine hours indication					
©	Alternator:					
	Synchronous alternator rated at 500 KVA, 415 volts at 1500 RPM 3 phase 50 Hz. AC supply with 0.8 lagging power factor. at 40 degree C, 50% RH & 1000 meter MSL. The alternator shall be having SPDP enclosure, brushless, continuous duty, self-excited and self-regulated through AVR conforming to IS 4722/BS 2613 suitable for tropical conditions and with class F/H insulation.					
(d)	Base frame and foundation:					
	Both the engine and the alternator shall be mounted on suitable base frame made of MS channel with necessary reinforcement which shall be installed on cement concrete foundation suitable size with 1:2:4 cement concrete at 20cm below ground and 30cm above ground level , vibration isolation arrangement as per the recommendations of the manufacturer.					

(e)	Fuel tank					
	Daily service fuel tank shall be of minimum 1000 Ltrs.Capacity fabricated out of 3 mm thick M.S sheet with all standard accessories and fuel piping between fuel tank and diesel engine with MS, of suitable dia., complete with valves, level indications & accessories as required as per Specifications.					
(F)	Exhaust System					
	Dry exhaust manifold with residential exhaust silencer and catalytic convertor.					
(g)	Starting System					
	24 V DC starting system comprising of starter motors: voltage regulator and arrangement for initial excitation complete with 2nos. 12 V, batteries (25 Plates180 AH Capacity Lead acid type) as required as per specifications.					
(h)	Acoustic and weather proof enclosure:					
	Acoustic and weather proof enclosure with arrangement for fresh air intake for cooling of the engine & alternator, extraction, discharging hot air into the atmosphere as per specifications.	1		Set		
1.2	Supply, installation, testing and commissioning of Automatic Mains Failure control panel with By pass arrangement , suitable for500 KVA silent type DG set complete with relays, timers and protection against overload, short circuit, restricted earth fault, under frequency complete with electrical interlocking including the following accessories. The panel shall have channel iron base frame and installed on required size brick masonry pedestals as required.					
	(i) 2 nos 800 Amps 4 pole MCCB, Microprocessor based having over load and short circuit protection (Ics=Icu) (Breaking capacity=50 KA),Earth fault and shunt trip					
	(ii) Auto/Manual/Test/Off selector switch					
	(iii) 2 nos over voltage relay, 2 nos Reverse power relay and 2 nos. Under voltage relay					
	(iv) 3 sets of current transformers					
	(v) Energy analyzer unit to indicate current voltage frequency, power factor and KWH					
	(vi) Indicating lamps for load on mains and load on set					
	(vii) Fuse for instruments					
	(viii) Battery charger, complete with ammeter, selector switch for trickle, off and boost and current adjustment					

	(ix) Main supply failure monitor				
	(x) Supply failure timer				
	(xi) Restoration timer				
	(xii) Control unit with three impulse automatic engine start/stop and failure to start lockout				
	(xiii) Impulse counter with locking and reset facility				
	(xiv) ON/OFF/Control circuit switch with indicator				
	(xv) Audio /Video annunciation for				
	(i) High Water temperature				
	(ii) Low Lubrication oil pressure				
	(iii) Engine over speed				
	(iv) Engine Fails to start				
	(v) Full load /Maximum load warning	1		Set	
	Sub- Head – B (Cabling)				
2.1	Supplying and laying of aluminium on number PVC insulated and PVC sheathed/XLPE power cable of 1.1 KV grade of following size direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc. as required and cable should be ISI marked & confirming to IS: 7098 (part-I) /1988 with amdt. upto date of following size.				
a)	3½ x 400 Sq.mm	50		Metre	
2.2	Supplying and laying of one number PVC insulated and PVC sheathed/ XLPE power cable of 1.1 KV grade of following size in the existing masonry open duct as required and cable should be ISI marked & confirming to IS: 7098 (part-I) /1988 with amdt. upto date of following size.				
a)	3½ x 400 Sq.mm	20		Metre	
2.3	Supplying and Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required. and cable should be ISI marked & confirming to IS: 7098 (part-I) /1988 with amdt. upto date of following size.				
a)	3½ x 400 Sq.mm	12		Metre	

2.4	Supplying and making end termination with brass compression gland and aluminium lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required.					
a)	3½ x 400 Sq.mm (82mm)	12		Each		
2.5	Providing, laying and fixing following dia G.I. pipe (medium class) in ground complete with G.I. fittings including trenching (75 cm deep)and re-filling etc as required					
	150 mm dia	12		Metre		
	Sub-Head - C (Earthing)					
3.1	Earthing with G.I. earth plate 600 mm X 600 mm X 6 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.	2		Set		
3.2	Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.	2		Set		
3.3	Providing and fixing 25 mm X 5 mm G.I. strip in 40 mm dia G.I. pipe from earth electrode including connection with G.I. nut, bolt, spring, washer excavation and re-filling etc. as required.	15		Metre		
3.4	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	10		Metre		
3.5	Providing and fixing 25 mm X 5 mm copper strip in 40 mm dia G.I. pipe from earth electrode including connection with brass nut, bolt, spring, washer excavation and re-filling etc. as required.	15		Metre		
3.6	Providing and fixing 25 mm X 5 mm copper strip on surface or in recess for connections etc. as required.	10		Metre		

Section-V

Technical Specification of 100 Hz Repetitive Transcranial Magnetic Stimulator (rTMS) Compatible with H Coil (Under Buyback scheme of existing 100 Hz rTMS system; Magstim Rapid2)

Tender No CCN/01/18-19/ M&E.

1. It should be an All-in-one stand-alone system without separate units.
2. It should be capable of utilizing 3-phase power source.
3. It should be a highly effective non-invasive repetitive biphasic magnetic stimulator for bilateral cortical or peripheral and central nerve pathways stimulation.
4. The system should have theta burst stimulation with advanced burst sequencing.
5. It should have both:
 - a. Burst mode at 100 Hz (upgradable up to 2000 Hz in future)
 - b. Train Mode with at least 100 Hz (upgradable up to 250 Hz in future)
6. The system should at least have maximum frequency of 100 Hz and minimum frequency 0.1 Hz.
7. It should be able to provide high power delivery at very high frequency.
8. The system should be able to deliver output power as per the following:
 - a. Should deliver 100% power output at 30 Hz,
 - b. Should deliver 90% power output at 30 Hz to 50 Hz.
 - c. Should deliver at least 80% power output at 50 Hz to 100 Hz
9. The system should have pulse duration 160 μ s at 100 % power and facility to modify the pulse width from 100-400 μ s.
10. Should be supplied with wireless at least 2 channels MEP with upgrade up to 06 channels and built in artifact rejection..
11. Should be supplied with dual PC -interface and Application Software for TMS interface and EMG/MEP interface.
12. Application software should be able to control pulse intensity, duration of the pulse, pulse shape, pulse polarity.
13. It should have multiple TTL BNC triggers IN and OUT for controlling external equipment's.
14. The system should be CE/ ISO certified.
15. The system should be compatible with H Coil Manufactured by Brainsway, Inc.
16. The system should also be compatible with existing robot guided 3-D Neuronavigated Coil Positioning System (Visor; ANT make)
17. Should have facility to connect both standard coil and H Coil.
18. The system should be supplied with following Accessories :
 - a. 70mm double cone, Static fluid Cooled Coil – 1 no. The coil should be able to deliver at least 5000 pulses continuously before heating.
 - b. 70mm double cone sham Coil– 1 no.
19. Should be supplied with Comfortable therapy chair with following features:
 - a. It should be mobile & motorized. It should have height adjustment facility, backrest adjustment, and Leg rest adjustment. Should be supplied with one pair arm rest.
 - b. It should be supplied with head rest having facility for contralateral head support to ensure continuous coil to patient contact.
 - c. Should be supplied with wired remote for all function control.
 - d. The Chair should be fitted with coil stand & coil stand should have multi-movement articulated arm for offering strong fixation & precise coil positioning.
 - e. Should allow bilateral treatment without the need to disconnect anything.
20. Should be supplied with cart.
 - a. The cart should be mobile with locking swivel wheels.
 - b. Should be able to house the magnetic stimulator at the back on the shelf & should have a storage drawer.
 - c. The stand should have a coil support function which should hold the coil & coil movement should be weightless.
 - d. The support arm should have zero gravity coil support.

21. Should have facility to connect system to any External PC and will be provided with monitoring software to view physiological monitoring. The data can be stored with all the treatment parameters on the PC or can be converted in to text format.
22. Should have facility of Comprehensive database to store the complete patient information and can be configured according to user needs.
23. Should be supplied with one high performance desktop computer with latest processor with high processing speed at least 3.0 GHz, Memory (RAM) of minimum 16 GB, Hard drive capacity of at least 2 TB, 2 Tb of external HDD, All data transfer ports including high speed Ethernet port, USB 3.0, and high end color laser printer.
24. The CD/DVD/Bluray writer should be able to archive EEG data on a CD/DVD/Blu-ray, which should have the capability to be read on any Windows, based PC without any additional software. Similar archiving should be available with Pen drives or any other removable storage media.
25. Only vendor who is able to quote and deliver all equipment/machines will be considered.
26. The equipment should be tested and certified by International agencies and should have ISO 9001 certification with CE or TUV approved.
27. The system should comply with CE and IEC standards and quality. The system delivery should include installation on turnkey basis with dedicated onsite training to end users by the representatives from the principal manufacturers only.
28. Warranty must be 5 years and Installation on turnkey basis.
29. You should also quote your rates for CMC/AMC of the machine for the next five years after expiry of 05 years warranty period. A firm assurance of manufacturer to be given regarding the supply of spares/ accessories for 5 years after the warranty period.

Section – V

Technical Specifications of Dry electrode EEG Cap with Software for Usage with existing 128-Channel

HEEG System (eego mylab; ANT Make)

Tender No CCN/02/18-19/ M&E.

1. It should be a dry electrode EEG cap, incorporating the latest developments in dry electrode technology.
2. It should have Ag/AgCl coated soft polymer electrodes to provide stable, research-grade EEG signals while maintaining subject comfort.
3. Electrode wires should be integrated into a double layered cap fabric which is safe for human usage.
4. Various electrode heights for homogeneous contact and pressure distribution.
5. It should have soft, multi-pin electrode design (touch design) to ensure consistent contact quality, even though hair.
6. Active shielding technology and eego software artefact correction for clean EEG signals.
7. Complete analysis of EEG / ERP and MEG data including features like (pre) processing of data, co-registration of multimodal images (MRI, fMRI, CT) and visualization of results to head model creation and various source localization methods.
8. Allow users to process complete studies in batch mode and exchange data with MATLAB[®] for further analysis.
9. Highly advanced 3D display of single channel coherence.
10. Being able to calculate coherence between a single channel and all other channels.
11. Display of results in a 3D map in both online and offline mode.
12. When reading LORETA and sLORETA data, dipoles at local maxima should be activated.
13. Enhanced Spike and Seizure detection.
14. Additional rendering properties for TMS response objects.
15. Enhanced artifact detection feature.
16. MRI images with inverse solutions can be fused with fMRI, CT and SPECT images.
17. Channel interpolation feature to select the nearest number of neighboring electrodes used for the spline interpolation calculation to generate illustrative data representation.
18. New display filters: FFT display
19. It should come with facility for setting up experiment
20. Experiment Manager for straightforward analysis for a complete group of measurements and possibility to import .eeg files
21. Personalized scripting
22. Updated user manual and online help
23. Coherence view properties: threshold freely adjustable to 3 decimal digits
24. Enhanced license handling
25. Case study data now installed in all users directory: Can be used without changing the permissions of the directory
26. Should be supplied with 64-channel, 03 dry electrodes Cap in different sizes (one child, one small and 01 medium).
27. Should be supplied with 8 channel eegomini system with one dry electrode cap (medium size).

Section –V

Technical Specifications for Signal Processing Software for rTMS & Bistim (Magstim make)

Tender No CCN/03/18-19/ M&E.

1. Waveform analysis Software with versatile data acquisition unit with 3 high performance laboratory interface system including 2 meter screened data cable with USB host interface.
2. Waveform Input/output features should include:
 - a. Waveform input: 4 channels on base unit
 - b. Total of 16, 28, 64 or 128 waveform inputs via expansion units
 - c. ADC: 16-bit, 500 kHz maximum aggregate sampling rate
 - d. Waveform output: 2 channels
 - e. DACs: 16-bit, 5 microsecond settling time
 - f. Waveform I/O software selectable $\pm 5V$, or $\pm 10V$
 - g. System accuracy and noise: 0.05% of full scale ± 1.5 bits RMS
3. Digital Input/output features should include:
 - a. Digital inputs and outputs 5V TTL compatible, inputs over-voltage protected
 - b. 16 digital inputs, 8 with change-of-state detection to micro-second accuracy
 - c. 16 digital outputs, 8 clocked for microsecond accurate switching
 - d. Handshake lines for byte input and output
4. It should have BNC socket for clock inputs and event (clock start) connections.
5. Rack mount for standard 19 inch laboratory racks
6. External 110-240V 50-60 Hz auto-sensing power supply, 15W approx.
7. 12 Volt DC power option for mobile, trolley or remote applications
8. Regular Firmware upgrades via authorized Principal web site for a period of at least 05 years.
9. Desktop Computer:
 - a. CPU: Intel Core i7 (latest configuration) with high processing speed at least 3.0 GHz
 - b. RAM: 16GB DDR or higher
 - c. Storage: at least 04 TB
 - d. OS: Windows 10 professional with regular updates
 - e. Display: 32" LED 4K Monitor
 - f. Graphic card
 - g. Antivirus software (latest with updates)
 - h. Microsoft Office Professional (2016)
 - i. Laser Color Printer, Copier and Scanner
 - j. All data transfer ports including high speed Ethernet port, USB 3.0
 - k. Hard drive capacity of at least 2 TB
10. Only vendor who is able to quote and deliver all equipment/machines will be considered.
11. The hardware of the system should comply with International CE and IEC standards and quality.

Section-V

Technical Specifications for Integration Software with existing QuadriPulse Stimulator (PoweMag make; Mag & More, GmbH)

Tender No CCN/04/18-19/ M&E.

1. PC Interface at least 1 channel (upgradable up to 04 channels) for connection, of one PoweMag to a PC, Connection to PC via USB interface.
2. It should be supplied with Application Software PowerMag Control (with facility for regular online/offline updates for at least period of 05 years)
 - a) It should enable a quick and clear treatment setup, with patient related information.
 - b) With integrated standard protocols for depression treatment, custom protocols should set up very easily using the intuitive user interface.
 - c) Individual motor threshold, stimulation protocol and the stimulation site should be assigned to individual patients and stored individually.
 - d) Free text fields should be available which allow entering additional information about the subject/ patient.
3. It should provide control of PoweMag devices via analog and TTL pulses
4. It should be supplied with Control Splitter Box
5. There should be easy Access to all external controllable parameters
6. It can be used with Standard BNC connectors.
7. It should be supplied with Connection cable for Control Splitter Box for connecting to one PoweMag standard length 1,5 m length which can be customized up to 20 meters.
8. It should be supplied with external triggering.
9. It should be supplied with MEP option EMG Bluetooth device
10. It should include optical isolated trigger cable with accessories like bag, electrodes, cables, etc.
11. It should be supplied with application software
 - a) Automatic motor threshold determination software for wireless MEP option - Fully automated, closed loop solution for motor threshold determination (no user interaction necessary)
 - b) Determines motor threshold swiftly and with great precisio
 - c) Uses the maximum likelihood strategy (an adaptive PEST method)
 - d) Includes EMG plot of last pulse and waterfall plots of previous three pulses
 - e) It should have MEP option and a PC- Interface (x1 or x4)
 - f) Trigger cable 3m, BNC to BNC TMS field probe - for measuring the magnetic field of the coil - with BNC connector
12. It should include movable, Imported and principal approved deigned trolley for PoweMag Stimulator system - incl. VESA monitor holder
13. It should come with Coil holding arm easy coil positioning and fixation - for easy one-hand-operation
14. TMS treatment chair, electrical with 4 motors 4 motors (back, foot, seat and height adjustable) Sitting/lying height 56-78 cm Shortened back part (74,5 cm) which allows for a better accessibility to the patient Special arm rests in padding colors (panable, foldable and removable)
 - a) Hand switch with comfort function Central locking mechanism including full under frame
 - b) Enclosure Wheel diameter of 10 cm Transparent, washable protective cover for the foot part Freely selectable colors (12) for paddings and arm rests as well as for applications (30)
15. Should be supplied with one circular coil PMR 110, one double PMD 70 pCool Sham Coil & One Double PMD45 coil which should be compatible with existing 100 Hz TMS system.

Special Requirements:

- 1 Should be supplied with one high performance desktop/laptop computer with 32" LED 4K Monitor, latest processor with high processing speed at least 3.0 GHz, Memory (RAM) of minimum 16 GB, Hard drive capacity of at least 2 TB, 4 Tb of external HDD, all data transfer ports including high speed ethernet port, USB 3.0, and high-end color laser printer. 4 TB of additional HDD also to be provided.
- 2 The CD/DVD/Bluray writer should be able to archive EEG data on a CD/DVD/Blu-ray, which should have the capability to be read on any Windows/Mac, based PC without any additional software. Similar archiving should be available with Pen drives or any other removable storage media.
- 3 Only vendor who is able to quote and deliver all equipment/machines will be considered.
- 4 The hardware of the system should comply with International CE and IEC standards and quality.
- 5 The system delivery should include installation on turnkey basis with dedicated onsite training to end users by the representatives from the principal manufacturers.

Section-V

Technical Specification of Helmet based Coil for Deep Brain Structure Transcranial Magnetic Stimulation (dTMS) Tender No CCN/05/18-19/ M&E.

1. Helmet based Coil/Hesed Coil (H-Coil) particularly designed to target deep brain structures like Inferior Parietal Lobe, Medial Prefrontal Cortex, etc. by virtue of its unique design in psychiatric disorders including Obsessive Compulsive Disorder and Depression.
2. The electric field induced by the H-coil should be able to stimulate a larger volume of gray matter in the brain.
3. The coil should be fitted into a helmet, which is secured snugly to the patient's head during the treatment.
4. It should have facility for Convergence of numerous electric pulses from various directions.
5. Coil elements should be parallel to target bundles.
6. It should be approved by FDA and CE for use in treatment of various neuropsychiatric and neurological ailments.
7. The coil base should be flexible to fit any head size.
8. It may be customized as per the locations and stimulation types. It should be able to give sham stimulation as well.
9. The interface should be available which would help determining whether the sham or active coil in the helmet should be used for that specific treatment.
10. The coil should be able to deliver at least 3000-4000 pulses at one time at 100% motor threshold.
11. It should come with:
 - a. Modular Positioning device
 - b. In-built cooling system
 - c. At least 02 or more 5-20 A outlets and one 15 A outlet for plugging the machine.
12. The coil should be compatible with existing Mag and More rTMS System and/or Magstim rTMS system.
13. The coil should have facility to be used along with dry electrode caps and may be used under MRI environment in future.
14. Only vendor who is able to quote and deliver all equipment/machines will be considered.
15. Warranty must be 5 years and Installation on turnkey basis.
16. You should also quote your rates for CMC/AMC of the machine for the next five years after expiry of 05 years warranty period. A firm assurance of manufacturer to be given regarding the supply of spares/ accessories for 5 years after the warranty period.

Section-V
Technical Specification of Upgradation of existing tDCS system (HPC Kit; Magstim make)
Tender No CCN/06/18-19/ M&E.

1. It should consist of two Programmers and Six Stimulators.
2. The programmer and stimulator should be two separate units. The system should have facility to attach at least 10 numbers of Stimulators.
3. The programmer should have the following specification:
 - a. It should have easy to use touch screen LCD display.
 - b. It should be able to set tDCS protocol in the stimulator by defining no of stimulation, intensity, ramp time, minimum and maximum duration of treatment and interval between two stimulations
 - c. Should have report interface program in which the programmer should be able to generate report for evaluation of stimulation administered.
 - i. Should deliver following programs
 - ii. Maximum No of stimulations 95 or more with at least Increment of 1 stimulation
 - iii. Current intensity: 500- 3000 micro amp
 - iv. Stimulation duration: 1-40min increment 1 min
 - d. Should be supplied with medical certified AC/ DC adapter
4. The Direct current stimulator should have following specifications:
 - a. The stimulator should be programmable and battery operated
 - b. Once program is set by the programmer the device should not have facility to adjust the parameters.
 - c. The stimulator should have facility to deliver no of prescribed stimulation with set time interval between two consecutive stimulations
 - d. Should have facility to record all activity for later analysis on programmer.
 - e. The stimulator should be Compact, light weight and portable.
 - f. Internal battery operated power: batteries Of AA type
 - g. Should have following stimulation
 - i. 1 Ch. stimulation one anode and one cathode stimulation
 - ii. Bichannel anodal stimulation two anode and one cathode stimulation
 - iii. Sham Stimulation.
 - h. Current output: 500- 3000 micro amp
 - i. Output voltage should not exceed 28 V DC per channel
 - j. Treatment duration of 1-40min with 1 min resolution
5. Should have CE certification and safety certifications.
6. Should be supplied with high end Neurofeedback system which should have following Technical Specification
 - a. Should Have Auditory and visual feedback with adjustable thresholds
 - b. Should have Specialized 3D games for neurofeedback
 - c. Should have Multi-parameter DVD Feedback
 - d. Should have Multi-channel custom protocol constructor
 - e. Should have Customizable threshold bins
 - f. Should have FFT spectral display
 - g. Should have Z-Score based protocol
 - h. Should have Customizable trend graphs of session data
 - i. Should have Pause and continue ability during training
 - j. Should have Unipolar, bipolar and coherence protocol support
 - k. Should have Easy to use pre-set protocols

7. Should be supplied with following accessories:
 - a. Electrodes in Conductive Silicone small 5 cm X 5 cm – 20 Nos.
 - b. Spontex 50x50 (Pack of 5)- 20 Pack
 - c. Red cable for HDCel- 12 No
 - d. Black Cable for HDCel- 6 No
 - e. 3 pole jack – 6 no.
 - f. Mesh Cap(Pack of 10)- 5 Pack
 - g. Mind CAP_R – cap for tDCS with 10/20 position
 - h. MindCAP_6p – cap for tDCS with 6 positions.
 - i. High current cable adaptor for HDCstim
 - j. High current cable adaptor for Mind CAP
 - k. Red cable for Mind CAP- 3 No.
 - l. Black cable for Mind CAP- 3 NO
8. The system delivery should include installation on turnkey basis with dedicated onsite training to end users by the representatives from the principal manufacturers.
9. Warranty must be 5 years and Installation on turnkey basis.
10. You should also quote your rates for CMC/AMC of the machine for the next five years after expiry of 05 years warranty period. A firm assurance of manufacturer to be given regarding the supply of spares/ accessories for 5 years after the warranty period.