SECTION-I

1.0 INSTRUCTIONS TO TENDERERS FOR FILLING TECHNICAL BID

1.1 Bidders are required to give clause wise comments on the technical specifications, confirming compliance/non-compliance with details of deviations if any along with their effect on the performance. Back references to be avoided, offers are likely to be ignored in case of non-compliance of these instructions for furnishing the information.

1.2 Unless otherwise stated, latest alterations/ revisions of specifications/ standards/ drawings shall be applicable. In respect of safety, environmental and energy efficiency standards relevant to the machine, the machine manufacturers shall ensure compliance with international (CE/ISO/DIN/JIS/IEC)/National standards (IS) (wherever applicable).

1.3 Tenderers should offer and quote for all the specified concomitant accessories, as these are considered essential for commissioning and utilization of the machine. Even if bidder does not recommend the purchase any of these accessories, the price must be quoted for comparison purposes and their recommendation/suggestion indicated in the offer.

1.4 Tenderers should also quote for optional accessories, spares and consumable spares as asked in the specifications.

1.5 In case, any item is required in sets, please specify nos./pieces per set. This is essential for proper technical evaluation of the offer. Offers received without this may be considered as incomplete and liable to be rejected.

1.6 The bidder should quote only for the specified make of sub-assemblies and equipment wherever specified. Makes of sub-systems other than the specified ones will normally not be acceptable. In case, some other make is quoted, specific reasons for the same including its features/advantages over specified makes must be brought out in the offer.

1.7 In case there is a contradiction in any information provided (some parametric values given in the specification and those given in the brochure, or some other document enclosed by the tenderer), unless specifically mentioned in the deviation cum confirmation statement the values as given in the specification shall be taken as confirmed by the tenderer and offer evaluated accordingly.

1.8 The Purchaser may accept internationally accepted alternative specifications which ensure equal or higher quality than the specifications mentioned in the Technical Specification. However, the decision of the Purchaser in this regard shall be final.

1.9 Purchaser reserves the right to verify the details submitted by the bidder by actual site visits.

1.10 Bidder is advised to visit the site to comprehensively understand the requirement of Railways.

1.11 Other terms & condition of the contract will be as per Indian Railway Standard conditions of contract.

1.12 Tenderer not submitting the requisite information may note that his offer is liable to be ignored.

1.13 In order to assess the manufacturing capability of OEM and to be assured regarding OEM's manufacturing facility/ facilities in India and hence the ability of its Authorized Distributor to supply the said machine, a self certified Capability Assessment report of the OEM as per Annexure-D must be submitted by the bidder along with their offer. In addition to above, if felt necessary by the Purchaser, an inspection by actual visit to his works/ office can be carried out by representative of Purchaser/ Third party agency as nominated by the purchaser (TPI cost to be borne by the bidder) to verify the details furnished vide Annexure-D. The bidder is bound to comply with the same, without fail.

SECTION-II

1.0	**DESCRIPTION:**
	The equipment should be a combination of hardware and software. System should be capable to find out the fault in circuit and out circuit in different types of Electronic PCB and components. It should be embedded with various independent sections to work separately as well as a part of whole equipment controlled by single software. Sections should be hot swappable and upgradable to increase number of channels/features/capabilities in future by addition of additional sections without affecting the functionalities of other sections. The sum of independent channels of all sections should 400 or above and controlled by **single software**. System must be hassle free in rough environment condition ambient temperature -5 to 50° Celsius & humidity 46 to 96.5 %.
2.0	**HARDWARE – DIAGONOSTIC SYSTEM**
2.1	**System configuration for overall sections operation**
2.1.1	Microprocessor Intel Core i7, 10TH Generation, clock frequency 3.8GHz or advanced.
2.1.2	Small outline RAM 32 GB DDR5.
2.1.3	SATA Hard disk Drive capacity 250GB for WINDOWS & SATA Solid State Drive 1TB for other functions or advanced.
2.1.4	Operating System-Microsoft Window 11 Pro, Office version -2019.This should support to the video, PDFs, and Web pages (HTML) in test procedure. These files must run embedded into Test Flow without the need to open other or advanced technique.
2.1.5	All configurations should be licensed with keys/files.
2.2	**Independent Section with minimum 150 channels for Voltage, Current and frequency Response Signature Analysis**
2.2.1	Signal Analyzing sampling rate minimum 400MHz and Resolution 8 Bits.
2.2.2	Each channel of all 150 should get a simultaneous Voltage-Frequency-Current image generated automatically by the system, within a preset frequency range defined by the user.
2.3	**Independent section with minimum 150 Channels of TTL, ECL, CMOS etc Digital Functional Testing controlled as under**
2.3.1	In-circuit and out circuit digital functional test with minimum 150 channels. Operational voltage +/- 10V, sense voltage +/- 10V or suitable without any involvement of channels of any other section.
2.3.2	*Library driven functional test with circuit compensation technique suitable for all logics & packages ECL- as an example, 100131DC (all Texas Instruments Make), 100EP29MNG (all UTMAL Electronics Limited Make), MC100EL 30DW (ACME Chip technology Co. Limited), 9528DC (nova Technology HK Co Limited) etc.* *TTL- as an example, 74 series, 75 series.* *MOS/CMOS- as an example 40 series, 45 series, 47 series.*
2.3.3	It should be capable testing up to 400MHz signal frequency.
2.4	**Independent Section of minimum 64 channels of EPROM Verifier controlled as under**
2.4.1	IC Identifier Identify unknown, illegible, or house coded ICs.
2.4.2	*Library driven function test as, Read, view, save and verify UV-EPROM/EEPROM's/ROM/FLASH DRIVE In- or out-of-circuit with adapter up to working voltage 14 V. System can test virtually any EPROM (2708 to 27c322), any Bipolar PROM ,CPU ,PAL, GAL, PIC, etc.*
2.5	**Independent Section for minimum 28 Channels Analogue IC Functional Testing controlled as under**

2.5.1	*Library driven Functional test of all Analogue ICs as an example, 555,556,78xx,79xx ,MK484, NE612, U401B, U401BG, 2141B, ZN414, LM13700, LM393, LM386, LM3875 etc.*
2.5.2	V-T test with pulse for gate-activated devices
2.5.3	In-circuit and out circuit test for Analog ICs
2.6	**Independent Section for in circuit testing of Electronic devices & circuits**
2.6.1	System should be capable to in circuit and out circuit test the Thyristor & Transistor families components as, PN Junction diode, Zener diode, Varactor diode, LED, SCR, DIAC, TRIAC, Bipolar Transistor, UJT, FET, MOSFET & IGBT module etc.
2.6.2	Voltage regulator IC, USB to serial converter , Microprocessor (16 Bits) ,Microcontroller (up to 32 Bits), HC05 Blue tooth module, WI-Fi module, Sensors- proximity sensor, capacitive sensors etc.
2.6.3	It should be capable of testing up to 200 MHz signal frequency.
2.7	**Independent Section for at least 4 Channels of Programmable Power Supply controlled as under**
2.7.1	All 4 channels with up to at least Power +/-36V/40W limit for each channel and ripple & noise should be regulated 1- 2%.
2.7.2	Ability to connect the channels in series and in parallel. Includes user-programmable over voltage protection, programmable over current protection and over-temperature protection.
2.7.3	System can be expanded up to 5 or more Power Supply Sections and all channels can be connected in series or parallel combination and all of them can be controlled by the single software
2.8	**Independent Section of Built in Multiple Measuring Instrument controlled by single software as mentioned in point no. 8**
2.8.1	3 channels or more Digital Storage Oscilloscope; Bandwidth minimum 200MHz, Sampling rate minimum 1GS/s or above.
2.8.2	2 channels or more Arbitrary Waveform Generator Bandwidth up to 60 MHz, Sampling rate minimum 125 MS/s and vertical Resolution 14 Bits.
2.8.3	1 Channel of frequency counter Frequency range: from 50MHz to 2.4GHz Sensitivity: 50MHz~1.2GHz≤ 80m Vrms Coupling: AC only Input impedance: 50M Max safety voltage: 3V.
2.8.4	2 channel 4 ½ digits True RMS Ammeter isolated DC, AC independent and together with accuracy 0.5 to 0.025 % (FSD).
2.8.5	2 channels 4 ½ digits True RMS Voltmeter isolated DC, AC independent and together with accuracy 0.5 to 0.025 %.(FSD)
2.8.6	1 channel each 4½ digits, L,C, and R Meter for measure the value analogue components as, Resistance, Continuity and Diode modes up to 10Ω-10MΩ, Inductance up to 0.05mH-1H and Capacitance 2.2 micro Farad 10000 micro Farad with accuracy 5% .
2.9	**Other Integrated Hardware**
2.9.1	All above sections must be assembled in one cabinet; cabinet should high class mechanical & Electrical properties ,System cabinet cuboids dimension length 18-20 Centimeters , Width 35 -38 Centimeters & Height 38 to 40 Centimeters.
2.9.2	System should be customized for fault diagnostics error code for trouble shooting, self calibrate and self test each section when power on the system.
2.9.3	System Should have built-in CPU, external Monitor Min 27", Wireless Keyboard, and mouse (brand Dell/HP or superior) with appropriate configuration to run system software without any interruption.
2.9.4	Fully programmable pedals Switch should be given to trigger actions like Start test, Stop test, Save mask, Clear mask and fully compatible with advance programming.

2.9.5	System should be embedded with JTAG/Boundary scan Technique or higher Technique to in-circuit test of Microcontroller & higher pin configuration packages.
3.0	**INGREGRATD SOFTWARE**
3.1	Integrated Software with lifetime free including future updates, Software multiuser (at least 04 users simultaneously) at many PCs as required without extra charge/ license fee.
3.2	Instruments menu must be customizable according to each user's access level
3.3	The self-test must provide internal fault information and on-line help facility in case of any problem
3.4	Report Generation: Test flow creation must be based on Python language; Software must be capable to data acquisition & analysis. System should be customized for components pass / fail reports generation, data logs, itemized excel format report generation (PCB nomenclature, Individual component identification, component group/sub-group ,pass/fail status) user must be able to add Multi-media information including PDFs, Microsoft Office documents, images, and Web pages (HTML) in test procedure. These files must run embedded
3.5	User Interface Requirement: Python is suitable for GUI development. It provides several libraries and frameworks that make it easy to create graphical user interfaces. Some popular options include Tkinter, PyQt, PySide, Kivy, and wxPython. These libraries offer a wide range of features and functionalities, allowing developers to create interactive and visually appealing GUI applications using Python
3.6	Data Security: Offline data security and control refers to the measures you take to ensure that your data is safe and accessible when using physical devices or media, such as hard drives, USBs .To protect your data, you should encrypt it before storing or transferring it with software or applications that generate secure keys and passwords. Additionally, we should lock our devices or media in a secure location and limit access to authorized personnel only. Moreover, label your devices or media clearly and accurately so that you can identify and locate your data easily
4.0	**ACCESSORIES FOR DIAGONOSTIC SYSTEM**
4.1	Minimum Test clips/cables and probes for testing the different type Packages
4.2	Pen shaped Probe, 3 pins TO72.
4.3	Pen shaped Probe, 3 pins TO 92.
4.4	Pen shaped Probe, 3 pins SOT 23.
4.5	Pen shaped Probe, 3 pins SOT 223.
4.6	Pen shaped Probe, 3 pins SOT 323.
4.7	Pen shaped Probe, 3 pins SOT 363.
4.8	SOIC Package: (1.27MM PITCH) test clip set and cable assembly 8 SOICN, 14 SOICN, 16 SOICN, 16 SOICW, 20 SOICW, 24 SOICW, 28 SOICW, 32 SOICW , 32 SOICW-EP, 54 SOICW & 54 SOICW-EP.
4.9	PLCC Packages: (1.27MM PITCH) all 20 Pins to 84 Pins.
4.10	QFP Package: 80 Pins Ceramic QFP, 80 Pins Thin QFP, 100 Pins Bumpered QSP, 144Pins Low profile QFP and 304 Pins Plastic QFP
4.11	TSOP Packages: Nos. of Pins, Package Length & Width in MM. 28 Pins 11.8 & 8.1 , 28 Pins 18.4 & 8.0 & 32 Pins 18.4 & 8, 40 Pins 18.4 & 10 , 48 Pins 18.4 & 12 and 56 Pins 18. 4& 14
4.12	SIP/SIL Package: Single in Line Package up to 24 Pins 0.03 inch Pitch and typically 64 Pins 1.27 MM. as RAM.
4.13	DIL clip set (0.3" PITCH) Consisting of 8, 14, 16, 18, 20, 22& 24 pins test clips and 0.6" gauge Consisting of 24, 28, 32, 40 pins.

4.14	J TAG /Boundary scan test probes/clips
5.0	**Certifications:**
5.1	Bidder Certification: ISO9001-2015, ISO14001-2015, ISO45001-2018, International Electro technical Commission certification IEC 60445 /Bureau Indian Standards (BIS) for Electrical safely standard & guidelines for Electronic Equipments.
5.2	Bidder should confirm manufacturer profile in reference of 5.1
5.3	Bidder should confirm after sale, service station along with competency of station in north India
5.4	Bidder is required to submit own credentials/installation certificates, where did install such System in Government/PSU Organizations in India
6.0	**Prove out at Firm's Premises**
	A performance test will be conducted at the manufacturer's facility to evaluate the machine's suitability and capability in accordance with the specified purpose and requirements. The test will be conducted to the satisfaction of the appointed inspector (Ultimate Consignee/User).
7.0	**Prove out at consignee's site**
	The machine's performance shall be demonstrated by the supplier or their representative to the complete satisfaction of the consignee at the consignee's facility. This demonstration is essential for proving and successfully commissioning the system. **Proving out means:** *System /Machine has to identify all in circuits defective/unhoused components to repair all types of PCBs as detailed below:* *PCU50, NCU Board, LT Module 25/50/80/160 Amps, Operator Panel 10/12, Simatic S7-200/300, Control Micro Master 420, ER Module, Simo drive 611, Fanuc Power Supply, KUKA Drive (IGM Robot) ,Fanuc Machine Control Panel, Siemens Machine Control Panel, Soft Starter(L & T make) ABB Drive (EOT Crane) etc.*
8.0	**SCOPE OF SUPPLY**
8.1	The scope of supply for the 'Universal PCB Diagnostic & Repair System' encompasses a comprehensive package, including the main diagnostic and repair unit, associated software, hardware components, cables, connectors, probes, and essential accessories. Technical specification details the system's capabilities and performance parameters, adhering to relevant industry standards. The supply shall include training materials and user documentation for seamless utilization, accompanied by warranty coverage and post-purchase support services. Installation services, calibration, and testing are included, while delivery terms encompass packaging and safe handling instructions.
8.2	The Quality assurance processes shall be explicitly defined. Acceptance testing criteria are established, and provisions for dispute resolution and intellectual property rights are outlined, ensuring compliance with applicable laws and regulations."
8.3	Bidder may be called for functional demonstration during technical evaluation if required at RCF Kapurthala
9.0	**CONCOMITANT ACCESSORIES**:
9.1	The machine should be accompanied with the following concomitant accessories. The cost of each of the listed concomitant accessory should be quoted separately. Wherever, for any reason, the cost of any concomitant accessory is included in the basic price of the machine, the same should be specifically mentioned.
9.2	Any other accessory considered essential for the operation of the plant to meet the purpose and capability specified in Clause no.1.1 of Section II
10.0	**OPTIONAL ACCESSORIES**

	Any other accessory/ equipment which in the opinion of the tenderer can contribute to better performance/operation shall be clearly indicated and quoted separately as optional accessory. The advantages should be clearly explained. Its price shall not be included in the basic price of the machine forpurpose of commercial evaluation.
11.0	**EVALUATION CRITERIA**
	The offer from bidder on turnkey basis shall include the following items (i) The cost of basic machines as per this specification including concomitant accessories and conforming to the relevant standard (ii) Cost of any other accessory which in the opinion of supplier is essentially required for making the machine fully functional. (iii) Cost of Turnkey Charges viz. installation & commissioning etc. **(iv)** GST, Duties, taxes, insurance, freight and packing charges and any other charges. **(v)** Cost of Comprehensive AMC for ten years after the warranty as per the warranty clause. **Note:** Cost of CAMC for 10 years to be a part of commercial evaluation. However this will not form a part of contract value.
12.0	**OTHER ITEMS TO BE QUOTED**
	The following items will need to be quoted additionally, though will not be part of commercial evaluation. (i) Optional Accessories with break up of individual items. (ii) Spares with break up of individual items. (iii)Consumables with break up of individual items as applicable (iv)Cost for IoT solution compatible for IoT enabled machines must be quoted mandatorily **(v)** Break up of individual items and additional spares and items
13.0	**ATMOSPHERIC CONDITIONS**
	The ambient temperature at the site at which the machine will be installed may vary from -4°C to +50°C over the year. The relative humidity may be as high as 98%. The atmosphere is expected to be dusty. The machines offered shall be suitably tropicalised to work under these atmospheric conditions without any adverse effect on their performance
14.0	**TECHNICAL LITERATURE**
14.1	One copy of the printed illustrative catalogue showing features of the machine and its elements must be enclosed with each copy of the bid.
14.2	The technical literature shall be provided for the complete machine, including imported and indigenously purchased components / sub- assemblies. The successful tenderer will have to furnish 4 (four) copies each of the following manuals directly to the consignee along with the machine. Out of these 04 sets, the bidder shall be required to submit one set of all documents in best available condition one month prior to the training for the machine. One set of technical literature should cover the following details: i. Operational & Maintenance manual of the machine. ii. Diagnostic & Trouble shooting Guide for Control System (if provided). iii. Machine Software Listing (if provided). iv. Spare part manual including part lists no., hard copies in A-4 size as well as in PDF format in a pendrive. **Note: All manual and literature should be in English/Hindi.**
15.0	**SPECIAL FEATURES:**

	tures incorporated in the machine, if any, shall be indicated separately in the bid clearly indicating the advantages.
16.0	**DEVIATIONS:**
16.1	The tenderer shall certify that the offered machine fully meets the specification. Various design features incorporated in the machine to fulfill different technical performance requirements shall be fully explained in the offer. However, minor deviations from these specifications which do not affect or in any way interfere with the stipulated performance standards or would result in improved safety/ reliability or would reduce recurring maintenance/operating cost of the machine, can be considered for acceptance. The tenderer in such eventuality shall clearly indicate the details of these deviations and their implications in the offer.
16.2	All Deviations shall be clearly indicated in the deviation statement.
17.0	**INSPECTION AND TESTING AT MANUFACTURER'S WORKS:**
17.1	The Quality Assurance Programme shall be submitted along with the bid. The bidder must submit the exhaustive QAP incorporating the tests /stage inspection as followed by them.
17.2	Manufacturers must have suitable facilities at their works for carrying out various performance tests on the sub-assembly/assembly/machine. The tenderer shall clearly confirm that all facilities exist and shall be made available to the inspecting authority.
17.3	A Sample Inspection Chart for inspecting the equipment shall be supplied along with the bid. The inspection chart should indicate all the tests that are carried out during the machine manufacture and also the tests to be offered to inspecting agency. The standard to which this inspection chart conforms should be clearly indicated. Against each test, acceptable limit/ range of values shall be indicated.
18.0	**TRAINING:**
18.1	Product Training and Testing Services: One fully trained qualified engineer should be deputed by bidder for at least one week during office hours to our office for daily technical support, training and preparation of test flow of some important cards.
18.2	Training should cover all the features of operation of software and hardware as well as servicing of equipment if required.
18.3	Free training by the firm shall be imparted in operation and maintenance of the machine. The training to be imparted shall cover operation, troubleshooting and repair of all, electrical & electronics equipments and programming. This training shall be provided to 4 person nominated by the consignee, for a period of 1 week free of cost at the manufacturer's premises. one week training will also be provided to one person free of cost from M&P/RCF in design and construction of the machine. All charges pertaining to travel, boarding and lodging shall be borne by Indian Railways.
18.4	Subsequently, technical experts from the manufacturer will fully and adequately provide training to operators and maintenance staff nominated by the consignee at the time of commissioning of the machine.
18.5	The supplier will be responsible for co-coordinating with the consignee the travel plans of trainees to ensure that the training is imparted on the machine at its assembly and testing stage. The bidder shall also submit training schedule along with the offer. **Note: All training should be imparted in English/Hindi only.**
19.0	**INSTALLATION, COMMISSIONING AND PROVING TESTS: (ON TURNKEY BASIS)**
19.1	**Joint Check** — The contractor or his agent would be required to carry out a joint check at consignee's end, along with the consignee, before unpacking is done, to avoid subsequent complaints regarding short shipment/transit damages. It is necessary that this joint receipt inspection be done immediately on receipt of the machine by consignee & bidder's representative

	to avoid commissioning delays due to shortages/transit damages. After receipt of the machine as above a Joint Receipt Inspection note (JRI) as per Annexure-A shall be prepared by the consignee and the firms representative indicating the tentative time schedule for various activities of installation and commissioning.
19.2	**Responsibilities of Consignee and Bidder** The consignee shall be responsible for- i) Provision of a clear covered site for installation of machine at site. ii) Electricity, water and compressed air for installation and commissioning of machine shall be provided free of cost within one week of arrival of machine at site. iii) Clear covered space for storage of material/equipment required for working/ construction and installation of the machine etc. iv) The consignee shall arrange the raw material for prove out at their end within 15 days of the dry run of the machine (installation, power connection, auxiliary connection like air, water connection) failing which such components will be deemed to have been proved out. The components supplied by the consignee in time will be required to be proved out as per time schedule chart.
19.3	The bidder shall be responsible for- i) Advise consignee in time regarding schedule for requirement of clear site for resources & facilities required which are in the scope of consignee as per above clause. ii) Provision of all tools and equipment, technical and unskilled manpower, material handling accessories/ equipment and material for installation and commissioning. iii) Unloading of the machine on receipt (both imported and indigenous machine) and its movement to the site of installation including provision of road mobile crane.
19.4	The bidder should ensure the proper earthing for the machine and its peripherals/accessories.
19.5	Consignee will provide only 415 V+10%-20%, 3 phase 50 Hz+3°/» AC supply at a single point (mains). All types of cables, connections, circuit breakers etc. required for connecting power supply point to different parts of the machine/control cabinets, shall be the responsibility of the bidder.
19.6	Electrical work like laying of power/electrical cables & earthing wires from mains to machine control panel (upto 20 meters) as well as within the machine, with supply of all materials shall also be carried out by the supplier
19.7	The M&P shall be deemed to be “commissioned” at consignee premises on the date when it is tested and meets with the specified capabilities/functions according to the technical specifications.
19.8	A Joint Commissioning Note (JCN) to this effect shall be made as per the format at Annexure-B.
19.9	If some minor breakdowns are noticed after the issue of JCN, these shall be attended as per warranty obligations and suitable extension of the warranty period, under intimation to M&P/RCF.
19.10	If an assembly/sub-assembly requires to be taken back to the manufacturer’s premises for repair/replacement either before commissioning or during warranty, the manufacturer or his agent would be required to submit BG of suitable amount. In case the entire machine has to be taken back, a Bank Guarantee for the cost of the machine would have to be submitted. The bank guarantee should be of adequate value so as to cover the cost of the assembly/sub-assembly/paid up cost of the machine.
19.11	The performance appraisal report/ Warranty Discharge certificate in the format as per the Annexure-C would be issued by consignee on completion of warranty period should be prepared by the consignee and given to the firm. Copies of this performance appraisal report/ Warranty Discharge certificate should also be sent to PCMM, PFA/RCF and CPE. On getting the performance appraisal report/ Warranty Discharge certificate, the firm will request PCMM for

	release of WBG. If this report is not received within the validity of WBG, the WBG should either be extended for one year or encashed as the case may be as provided under the rules.
20.0	**SERVICE FACILITY IN INDIA AND TECHNICAL SUPPORT**
20.1	*System should be capable to get service support at least 15 years (hardware & software included library update for functional test) without disturbing the existing performance.*
20.2	Bidder should confirm after sale, service station along with competency of station in north India
20.3	The tenderer will clearly spell out in the offer the facilities available with him or his agent for providing adequate after-sales service in India during warranty period. The complete details such as organization for after sales service, availability of technically competent engineers and warehousing facilities for spares should be clearly indicated. Bidders not offering complete servicing/repair facilities in India to ensure quick response to maintenance/ servicing calls are not likely to be considered.
20.4	Tenderer who are OEM, shall undertake to supply spare parts for a period of expected life of machine. Other tenderers shall submit undertaking from OEM for supply of spare parts for a period of expected life of the machine.
20.5	During warranty period, the supplier or his authorized agent shall attend for break down as soon as possible, but in no case later than 72 hours of receipt of intimation of the breakdown.
21.0	**BOUGHT OUT ITEMS**
21.1	The bidder shall furnish along with the offer a list of all critical items/ sub- assemblies which are bought out by the bidder and proposed to be used, along with the manufacturer's name, brand model etc. The successful bidder may be required to produce invoices to ensure genuineness of such products verification by the Inspecting agency.
21.2	The bidder should clearly indicate that in case of components/sub assemblies taken from reputed companies, the parent company has already entered into contract with their Indian units/affiliates for undertakings repairs/after sales service during warranty and post warranty.
22.0	**WARRANTY OBLIGATION**
22.1	The following conditions regarding Maintenance and reliability shall also apply:- Bidder should confirm the warranty of 36 months of the complete System. Tenderer would submit suitable undertaking.
22.2	***The commissioned equipment must deliver all functional outputs in accordance with the above specifications. The system must be capable of in-circuit testing for all electrical, electronic, and programmed components as outlined in Para 7.0. Test results must be absolutely reliable, with no discrepancies. Any controversial results for any component will not be accepted***. Any deficiency or break down for a total of 02 hr. or more for a day would be treated as failure for the day, for the purpose of extending warranty period in terms of clause IRS conditions of contract.
22.3	Maximum permissible down time till it is restored back to the contractual output and accuracy levels, in any quarter of the year during the warranty period, shall be 150 hrs. in case the total breakdown period in any one of year during warranty period, exceeds 500 hrs., penality will be levied on the bidder for breakdown period on working days basis(excluding holidays). Penality will be calculated as %age of Annual Preventive Maintenance charges and will be deducted from the respective annual payments as under:
22.4	**Penalty Clause: Complaint Resolution** a. **Fast Complaint Resolution:** 1. In the event that the Client raises a complaint regarding the quality, performance, or adherence to contract terms by the Service Provider, the Service Provider shall acknowledge to initiate a

	resolution process within 24 hours of receiving the complaint. 2. Failure to initiate the resolution process within the specified timeframe shall result in an immediate penalty equivalent to 1/2% per week of the total contract value for each unresolved complaint. b. **Prompt Rectification:** 1. Upon identification of any issue leading to a complaint, the bidder shall undertake all necessary measures to rectify the issue within 48 hours from the initiation of the resolution process(i.e after completion of first 24 hrs of receiving of complain). 2. Should the Service Provider fail to rectify the issue within the stipulated timeframe, a penalty equivalent to 1/2% per week of the total contract value for each unresolved complaint shall be applied. c. **Calculation and Application of Penalties:** 1. Penalties shall be calculated based on the total contract value specified in this Agreement. 2. The maximum penalty for any breach under this clause shall not exceed 10% of the total contract value. d. **Cumulative Penalties:** The penalties outlined in this clause are cumulative and do not replace other penalties stipulated in this Agreement
22.5	Contractor shall provide regular and scheduled maintenance for all supplied items as per the manufacturer's guidelines and industry standards. Maintenance shall include inspections, cleaning, adjustments, and necessary repairs to ensure the items remain in optimal working condition. The maintenance schedule shall be submitted to the consignee for approval within 15 days after the commissioning.
22.6	In the event of any maintenance-related issues or concerns, OEM/supplier shall have web-based complaint management system to lodge a complaint. The web-based system shall possess the following qualities: a. User-Friendly Interface: The system should be intuitive and easy to navigate, allowing users to submit and track complaints seamlessly. b. Secure Access: Authorized users shall require login credentials to maintain confidentiality and prevent unauthorized access. c. Mobile Compatibility: The system should be accessible on various devices for convenient complaint submission. d. Instant Notifications: Users shall receive automated updates on complaint submission, acknowledgment, and resolution. e. Categorization and Priority Setting: Users should categorize complaints and set priorities for clarity and urgency. f. Attachment Support: Users can attach relevant documents, images, or videos to provide context. g. Timeline Tracking: A built-in timeline or dashboard shall enable real-time tracking of complaint progress. h. Communication History: All interactions related to a complaint shall be documented within the system. i. Multi-Language Support: The system shall accommodate users from diverse linguistic backgrounds. j. Escalation Mechanism: Unresolved complaints shall be escalated through an automated process. k. Data Analytics and Reporting: The system shall generate reports on complaint trends and

	resolution metrics. l. Data Security and Compliance: The system shall adhere to data protection regulations and industry standards.
22.7	The contractor shall acknowledge complaints within 24 hours and provide an estimated resolution timeline. Any unexpected issues or breakdowns shall be addressed within 24 hours.
22.8	Documentation of all maintenance activities and reports, including complaint resolution, shall be submitted to the consignee through the web-based system on a monthly basis. These reports shall detail the maintenance performed, parts replaced, and recommendations.
22.9	The contractor shall ensure that qualified and trained personnel perform maintenance tasks. If a specialized repair is needed, personnel with expertise shall be deployed.
22.10	Should the contractor fail to address maintenance concerns within the agreed-upon timeframe, the consignee reserves the right to engage third-party maintenance services, with costs borne by the contractor.
22.11	Additionally, the contractor shall conduct an annual comprehensive inspection and maintenance review, providing a detailed report on the item's condition, risks, and preventive measures.
22.12	Failure to adhere to the maintenance schedule, timely resolution of complaints, provision of proper documentation, or neglecting the annual comprehensive inspection may result in penalties, deductions, or contract termination."
22.13	**Personnel at consignee premises for service support:** The firm must provide technically skilled manpower, with a minimum qualification of ITI, proficient in all technical aspects related to the machinery, including expertise in IoT implementation. This manpower should be available on a full-time basis throughout the entire warranty period and stationed at the office of Dy.CPE-II/ RCF/KXH. The cost of the machinery as quoted by the bidder should encompass the expenses associated with the aforementioned manpower. Any separate quotation for manpower will not be considered in the commercial evaluation of the bid."
22.14	*In the event that the aforementioned manpower is associated with a Railway employee, particularly an RCF (Rail Coach Factory) employee, the firm is required to submit a formal undertaking before deploying the said manpower to the consignee premises.*
23.0	**ANNUAL MAINTENANCE CONTRACT (OPTIONAL)**
23.1	Tenderers are required to quote for a comprehensive Annual Maintenance Contract for the machine supplied against this specification for a period of ten years on yearly basis giving the rates for each year i.e. first year, second year..so on., which will be inclusive of all spares, material and labour costs. The duties and taxes as applicable should be indicated separately. All consumables spares and materials shall form a part of the scope of comprehensive AMC.
23.2	AMC shall be operated, managed and paid by the Dy. Chief Plant Engineer (Mechanical Maintenance). Dy. Chief Plant Engineer (Mechanical Maintenance) shall indicate the bill payment authority & custodian of the AMC BG. No further agreement is required for operating AMC at consignee end.
23.3	AMC is not a part of scope of supply**.** Cost of CAMC for 10 years to be a part of commercial evaluation. However this will not form a part of contract value.
23.4	The tenderer must provide AMC services at the consignee location without any precondition. The AMC should include complete responsibility for the bought out sub assemblies and components like CNC system, diesel engine, AC unit etc. *AMC Services shall be done by qualified service personals of OEM Only*
23.5	The duration of AMC shall be 10 years from the date of expiry of warranty. Rates for AMC shall be quoted by the tenderer on yearly basis, which will remain applicable during the duration of

AMC and not subject to any variation except any statutory changes in taxes and duties as compared to quoted rates.

23.6 The details of preventive maintenance services including cleaning of machine to be provided under AMC shall be provided by the tenderer in the following format.

S.No	TYPE OF PREVENTIVE SCHEDULE	PERIODICITY	ITEM TOBE CHECKED	ITEMS OF REPLACEMENT	EXPECTED PLANT DOWN TIME

23.7 Preventive maintenance shall preferably be conducted on weekends through mutual agreement with the consignee. Each preventive maintenance schedule normally shall not exceed one day. The total shutdown time for preventive maintenance should be kept as low as possible but not more than 60 hours/month (averaged over the quarter) including time for cleaning, weekly, fortnightly, monthly, quarterly schedules etc. The preventive maintenance regime offered must be aimed at achieving minimum 90% uptime of the plant excluding the plant down time for preventive maintenance schedules.

23.8 Incase preventive maintenance is carried out alongwith breakdown maintenance schedule; preventive maintenance time will be deducted from breakdown time of the plant.

23.9 Penalty Clause: Penalty shall be levied on the tenderer for maintaining plant up time below the limit of 90% calculated on working days basis, after discounting for grace period and preventive maintenance period. Penalty shall be calculated as %age of quarterly payment and will be deducted from the respective quarterly payments. Penalty calculation will be done over quarter

S.No.	Availability Slab	Applicable Penalty
1.	90% to 80%	0.5% for every 1% (or part there of} reduction i availability of plant below 90%.
2.	below80%	1% for every 1% (or part thereof) reduction in availability of plant below 80%.

23.10 A Bank Guarantee equal to 1/4 of annual value (highest of the annual values if the rates offered for various years are different) of AMC subject to a minimum value of 1.25% of the quoted cost of machine including concomitant accessory (in case the annual AMC rate quoted is less than 5% of the cost of machine), will be submitted by the renderer to the consignee 90 days before the expiry of warranty. AMC will have the validity of 10 years 6 months. The bidder can submit multiple BG for lesser duration to cover the period of 10 year 6 months ensuring the uninterrupted validity of the AMC BG for 10 year 6 months. The confirmation for the submission of this BG will be returned on completion of AMC period. In case, the tenderer fails to provide AMC services successfully, the AMC BG will be forfeited. This will be in addition to penalty as per clause 23.9 above. This provision would not be applicable where the advance payment is made.

23.11 Plant up time of less than 60% for two consecutive quarters will constitute complete failure of renderer to provide the AMC services successfully and will result in forfeiture of AMC BG, besides other action like noting adverse performance of the bidder and/or agent for future tenders and their offer in the subsequent tenders will not be considered for placement of any order. This will be in addition to penalty clause above for the period of actual performance.

23.12 Where AMC is part of evaluation of offer, it is the sole responsibility of bidders to stock all spares and materials as required for smoother execution of AMC in order to achieve response time in compliance to machine availability as per stipulated requirements.

23.13	a) In all cases of plant failure except as mentioned in clause 23.13 (b), any other spare part or material necessary to restore the plant to proper working order will be arranged by the tenderer as a part of AMC. b) In case of damage to the machine on account of any external factor, viz., floods, earthquake, fire, arson or sabotage, entire cost of spare parts and material necessary for repair of the plant shall be borne by the railways. However, the tenderer shall provide services of their engineers free of cost as a part of AMC to restore the plant to working order. c) In case of damage to the plant as mentioned in clause 23.13(b), any spare parts and material necessary to restore the plant to proper working order shall be arranged by the tenderer and charged on actual basis duly certified by authorized railway official in the next quarterly bills. The rates charged for such spare parts shall be based upon the spare part rate list provided by tenderer. The tenderer shall furnish documents to support the rates charged for spares used for repair under para 23.14(a).
23.14	Normally quarterly payment (@ 1/4*' of the annual quoted rates) under AMC will be made to the tenderer within 30 days from the end of that quarter subject to submission of the following documents by the tenderer to the paying authority assigned by the consignee: a. Consignee's certificate for work done with calculation of down time and penalty applicable. b. A certificate by consignee that no spare part is due with the tenderer as per clause 23.12 above. c. Bills submitted by the tenderer & accepted by consignee. d. Attested photocopy of the AMC BG.
23.15	The AMC contract can be terminated in following ways: Consignee may terminate the AMC in the event of failure of tenderer to provide AMC services of the AMC agreement in addition to encashing of AMC BG as per clause 23.10. Other general conditions shall be governed by Section-I and II as applicable to respective specification.
24.0	**Payment Terms & Conditions**
24.1	80% of the contract value will be released after Installation, Commissioning & testing of the machine.
24.2	Balance 20 % of the contract value will be released within 60 days after issue of Joint commissioning Note subject to submission of bank guarantee for an amount 10% of contract value, as warranty security & clearance of all pending issues noted in Joint Commissioning Note.

ANNEXURE-A

JOINT RECEIPT INSPECTION NOTE

***Note**: With the issue of JRI, payment is released to the contractor, as per the terms of contract. Consignee shall satisfy themselves that the conditions of contract are met before issue of the JRI.*

Date……..

Sub: Receipt of consignment for machine…….
Ref: RCF/KXH Contract No…….

1.	Name of consignee/Railway	
2.	Machine name	
3.	Quantity	
4.	Name of supplier	
5.	Consignment of the machine received on	
6.	The foundation & associated works essential for "Safe Installation of Machine" are ready (for turnkey contracts only) *	

* *If there are Delays on account of Consignee such as clear site is not given, then the condition 6 will not be a valid ground for holding JRI.*

It is certified that the consignment of the machine has been received complete and in good condition as per specification shown in the contract.

Tentative plan for installation and commissioning of the machine is as under:

1.	Date of clear site provided	
2.	Contract	Turnkey/Non-turnkey
3.	**Status of readiness of foundation:**	
3(a)	Already constructed on	
3(b)	Under construction & likely date of its completion	
3(c)	Construction yet to be started from and likely date of its completion	
4.	Status of availability of electrical power, water and compressed air etc.	Available/Not-available
5.	Number of components to be proved out on the machine	
6.	Likely date for start of erection/installation	
7.	Likely date for switch-on the machine	
8.	Likely date of completion of commissioning of the machine	

Representative of firm
Designation

Representative of consignee
Designation
(Minimum Gazetted level)

ANNEXURE –B

JOINT COMMISSIONING NOTE

Date:……

Sub: Commissioning of (name of machine)…….

Ref: RCF/KXH AT No…….

1.	Name of consignee/Railway	
2.	Machine name	
3.	Quantity	
4.	Name of supplier	
5.	Machine received on	

6. All the parameters of the machine are found okay. The proving test on the machine was conducted from …… to …….. and machine is working satisfactorily.

7. Machine has finally been commissioned on…….. . The machine has been handed over for regular use and kept under one month observation to watch its performance.

8. Following minor deficiencies (if any) found during joint observation trials are to be attended/rectified by the firm during one month observation and before release of balance 20% payment to the firm:

   a.

   b.

   c.

Representative of firm
Designation

Representative of consignee
Designation
(Minimum Gazetted level)

ANNEXURE –C

PERFORMANCE APPRAISAL FORM/ WARRANTY DISCHARGE CERTIFICATE
APPRAISAL ON COMPLETION OF WARRANTY PERIOD

Dated:……

To, M/s. ……

1.	RCF PO No.	
2.	Consignee/Railway	
3.	Name of supplier	
4.	Machine Name	
5.	Machine received on	
6.	Machine commissioned on	
7.	PTC issued on	
8.	Warranty period expired on	
9.	**Performance during warranty period:**	
9(a)	Total number of breakdowns	
9(b)	Total downtime in number of days	
10(a)	Any warranty complaint pending on date	Yes/No
10(b)	If yes, then the date and nature of defect(s)	

11. In case, Reliability clause of the machine during warranty period is also given in, then following details of breakdown hours for preceding eight quarters may also be furnished.

Quarter	Period From -------To--------	Breakdown hours
1		
to		
8		

In view of the foregoing, the successful Warranty Completion, all obligations in respect of Warranty for the said machine on part of _____ (Supplier Name) stand discharged/ not discharged as on ____ (date)

Signature----------
Name----------

Designation: DY.CME (User Shop)
Office Stamp

PCMM/RCF
PFA/RCF
CPE/RCF
Note:
i.) This appraisal may please be sent immediately on completion of warranty period. If any extension of warranty period required, may please also be mentioned with details.

ANNEXURE-D

PROFORMA FOR ASSESSING MANUFACTURING CAPABILITY OF THE OEM TO

UNIVERSAL PCB DIAGNOSTIC & REPAIR SYSTEM

Tender No. ..... Date of Opening.....

1. NAME OF THE OEM/ BIDDER

2. LOCATION & ADDRESS

Postal Address

i) Head Office

ii) Works/Factory

Telephone No. (with STD code)/ Mobile Number

i) Regd. Office

ii) Works/Factory

3. DESCRIPTION OF FACTORY/WORKS

i) Total Land area (in Sq. meters)

ii) Total covered area(in Sq. meters)

iii) Different Sub-units (with details of covered/uncovered area, etc.)

iv) Special features, if any:

4. NO. OF PERSONNEL EMPLOYED (CATEGORY-WISE)

i) Managerial*

ii) Supervisory*

iii) Skilled artisans

iv) Unskilled

* The qualification may also be indicated.

5. GENERAL INFORMATION- TECHNICAL

Description of different departments in the Factory/Works along with an organization chart

Detailed description of machinery and plant in each department (make and year of procurement).

For special type of equipment /machinery, copy of pamphlet/ write-up tobe furnished to support the description.

Details of raw-materials held in stock (state whether imported/indigenous).

Production capacity of the quoted items

i) Per month

ii) Per year

List of other items, which the firm regularly manufactures and corresponding production capacity.

6. DESIGN CAPABILITY

Details of Qualified Personnel (indicating qualification and experience)Other facilities available.

7. MANUFACTURING PROCESS

Level of in-house facilities

Important items for which work done by outside vendors.

Brief details of manufacturing process relevant to the items quoted.

8. QUALITY ASSURANCE

Does the factory have an established Quality Assurance Programme? If yes, please enclose a copy of the write up? If not, what plans are there if any for setting it up?

Details of Quality Assurance Organization. Quality Control Testing Facilities and Laboratory equipment available. In-house facilities available for inspection and QC. Availability of gauges (details to be furnished)

9. AFTER-SALES-SERVICE

Facilities available at works and branch offices/ authorized service centres/ service delivery partners.

Signature.....