CORRIGENDUM

In the light of pre-bid meeting held on 09-12-2016 with prospective bidders, JREDA has decided to make following amendment in the NIB No. 38/JREDA/SCHOOL/LEDSSL/16-17.

<table>
<tr><th>Section/ Annexure</th><th>Original Criteria</th><th>Read as/ Amendment</th></tr>
<tr><td>e-procurement notice</td><td>Last date & time for receipt of online bids: 26.12.2016 (Monday) up to 05:00 PM
Submission of original copies of Bid fee & EMD (Offline) :26.12.2016 and 27.12.2016 up to 5.00 P.M
Date & Time for Technical Bid Opening :28.12.2016 (Wednesday) at 03:00 PM</td><td>Last date & time for receipt of online bids: 10.01.2017 (Tuesday) up to 05:00 PM
Submission of original copies of Bid fee & EMD (Offline) :10.01.2017 and 11.01.2017 up to 5.00 P.M
Date & Time for Technical Bid Opening :12.01.2017 (Thursday) at 03:00 PM</td></tr>
<tr><td>Section-6</td><td>Page no. 24 of the NIB, Broad Performance Parameters of Technical Specifications:

Light Output : The light output of the solar study lamp should show the minimum levels of illumination as shown below:
<table><tr><th>S.No.</th><th>Distance</th><th>When detector is horizontal to center point of bottom of light source</th><th>When detector is at right to center point of bottom of light source</th></tr><tr><td>1</td><td>1 feet</td><td>95 Lux</td><td>230Lux</td></tr><tr><td>2</td><td>2 feet</td><td>16 Lux</td><td>85 Lux</td></tr><tr><td>3</td><td>3 feet</td><td>4.5 Lux</td><td>40 Lux</td></tr><tr><td>4</td><td>4 feet</td><td>1.5 Lux</td><td>20 Lux</td></tr><tr><td>5</td><td>5 feet</td><td>0.5 Lux</td><td>12 Lux</td></tr></table></td><td>Page no. 24 of the NIB, Broad Performance Parameters of Technical Specifications:

Light Output : The light output of the solar study lamp should show the minimum levels of illumination as shown below:
<table><tr><th>S.No.</th><th>Distance</th><th>When detector is horizontal to center point of bottom of light source</th><th>When detector is at right to center point of bottom of light source</th></tr><tr><td>1</td><td>1 feet</td><td>95 Lux</td><td>230Lux</td></tr><tr><td>2</td><td>2 feet</td><td>16 Lux</td><td>85 Lux</td></tr><tr><td>3</td><td>3 feet</td><td>4.5 Lux</td><td>40 Lux</td></tr><tr><td>4</td><td>4 feet</td><td>1.5 Lux</td><td>20 Lux</td></tr><tr><td>5</td><td>5 feet</td><td>0.5 Lux</td><td>12 Lux</td></tr></table>or
Study lamp should deliver minimum of 150 Lux at over an area of 1.5 feet Diameter. (Minimum 150 Lux when measured at the periphery of 45 centimeters diameter from a height of 30 centimeters.)</td></tr>
<tr><td>Section-6</td><td>Page no. 24 of the NIB, Broad Performance Parameters of Technical Specifications:

<table><tr><td>1. Lamp look</td><td>Smart and Handy look</td></tr><tr><td>2. PV Module</td><td>≥2Wp under STC</td></tr><tr><td>3. Wattage of LED</td><td>≥1 W</td></tr></table></td><td>Page no. 24 of the NIB, Broad Performance Parameters of Technical Specifications:

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<td></td>
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<tr><td>4. Battery</td><td>Lithium Ion with not less than 2.2 Ah capacity an working voltage up to 3.7V to meet desired working hours.</td></tr>
<tr><td>5. DoD</td><td>90%</td></tr>
<tr><td>6. Electronics</td><td>Min 85% total efficiency</td></tr>
<tr><td>7. Average duty cycle</td><td>4 hours a day</td></tr>
<tr><td>8. Light Uniformity</td><td>The light on the edges of the entire 140 degree spread should not reduce more than 30 % of the light as specified above.</td></tr>
<tr><td>9. Autonomy</td><td>Minimum of 2 days (Minimum 8 operating hours per Permissible discharge).</td></tr>
<tr><td>10. Illumination levels</td><td>Two levels of illumination with 100% and 50% of the illumination levels shown in the table above.</td></tr>
<tr><td>11. Make of LED</td><td>Nichia/Osram/Philips/Lumileds/Cree/ Seoul / Everlite.</td></tr>
<tr><td>12. Make of battery</td><td>Samsung/LG/Panasonic/Green power/Sony Duracell</td></tr>
<tr><td>13. Body of Solar Study Lamp</td><td>Aesthetically designed made of good quality ABS plastic with metal finish.</td></tr>
<tr><td>14. Ingress Protection (IP)</td><td>IP 33</td></tr>
</table>
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<table>
<tr><td></td><td>soothing to eyes with the use of proper optics and diffuser.</td></tr>
<tr><td>4. Battery</td><td>(i) Lithium-Ferro Phosphate of 3.2 V, 2000 mAh (or of requisite capacity)
OR
NiMH OR Lithium Ion with not less than 2.2 Ah capacity an working voltage up to 3.7V to meet desired working hours (or of requisite capacity)
(ii) Battery should conform to the latest BIS.</td></tr>
<tr><td>5. DoD</td><td>90%</td></tr>
<tr><td>6. Electronics</td><td>Min 85% total efficiency</td></tr>
<tr><td>7. Average duty cycle</td><td>4 hours a day under average daily insolation of 4.5 kWh/sq.m on a horizontal surface.</td></tr>
<tr><td>8. Light Uniformity</td><td>The light on the edges of the entire 140 degree spread should not reduce more than 30 % of the light as specified above.</td></tr>
<tr><td>9. Autonomy</td><td>Minimum of 2 days (Minimum 8 operating hours per Permissible discharge).</td></tr>
<tr><td>10.Illumination levels</td><td>Two levels of illumination with 100% and 50% of the illumination levels shown in the table above.</td></tr>
<tr><td>11. Make of LED</td><td>Nichia/Osram/Philips/Lumileds/Cree/Seoul/ Everlite.</td></tr>
<tr><td>12. Make of battery</td><td>Latest BIS approved make.</td></tr>
<tr><td>13. Body of Solar Study Lamp</td><td>Aesthetically designed made of good quality ABS plastic with metal finish.</td></tr>
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</tr>
<tr>
<td>Section-6</td>
<td>Page no. 25 of the NIB, Specific Details of Technical Specifications:

DUTY CYCLE:

The LED based Solar Study Lamp system should be designed to operate for average 4 hours a day with 100% illumination, under average daily insolation of 5.0 kWh /sq.m on the module surface.</td>
<td>Page no. 25 of the NIB, Specific Details of Technical Specifications:

DUTY CYCLE:

The LED based Solar Study Lamp system should be designed to operate for average 4 hours a day with 100% illumination, under average daily insolation of 4.5 kWh /sq.m on the module surface.</td>
</tr>
</table>

Section-6	**Page no. 25 of the NIB, Specific Details of Technical Specifications:** **LIGHT SOURCE:** • The light source will be of white LED type. Single LED or multiple LEDs can be used. • Only Nichia/Osram/Philips Lumileds/Cree/Seoul/Everlite make LED's shall be used for light. • The colour temperature of white LEDs used in the system should be in the range of 5500o K – 6500o K. • Use of LEDs which emit ultraviolet light is not permitted. • The light output from the white LED light source should be constant though out the duty cycle. • In case of power LEDs the LEDs light should be housed in an assembly with metal PCB with appropriate heat sink. • In case of Low wattage LEDs FR PCB should be used. • The make, model number, country of origin and technical characteristics (including IESNA LM-80 report) of white LEDs used in the lighting system must be furnished. In absence of this data the LED based Solar Study Lamp will not be qualified.	**Page no. 25 of the NIB, Specific Details of Technical Specifications:** **LIGHT SOURCE:** • The light source will be of white LED type. Single LED or multiple LEDs can be used. • **It should be dispersed beam, soothing to eyes with the use of proper optics and diffuser.** • Only Nichia/Osram/Philips Lumileds/Cree/Seoul/Everlite make LED's shall be used for light. • The colour temperature of white LEDs used in the system should be in the range of 5500o K – 6500o K. • Use of LEDs which emit ultraviolet light is not permitted. • The light output from the white LED light source should be constant though out the duty cycle. • In case of power LEDs the LEDs light should be housed in an assembly with metal PCB with appropriate heat sink. • In case of Low wattage LEDs FR PCB should be used. • The make, model number, country of origin and technical characteristics (including IESNA LM-80 report) of white LEDs used in the lighting system must be furnished. In absence of this data the LED based Solar Study Lamp will not be qualified.
Section-6	**Page no. 25 of the NIB, Specific Details of Technical Specifications:** **ELECTRONICS :** • The efficiency of the electronic circuit used should be at least 85%. · The total operating power should not exceed 1.2 W. · Electronics should operate at suitable battery voltage. · The light output should remain constant with variations in the battery voltages. · Necessary lengths of wires / cables, switches suitable for DC use and other protections should be provided. · Two levels of operation of the study lamp should be provided to prolong the operating hours. • Level 1. 100% capacity with 4 hours operation per day	**Page no. 25 of the NIB, Specific Details of Technical Specifications:** **ELECTRONICS :** • The efficiency of the electronic circuit used should be at least 85%. · The total operating power should not exceed 1.2 W. · **Electronics should have temperature compensation for proper charging of the battery throughout the year.** · **The idle current should be less than 1mA.** · **The PCB containing the electronics should be capable of solder free installation and replacement.** · **The system should have a USB port for mobile charging.** · Electronics should operate at suitable battery voltage. · The light output should remain constant with variations in the battery

	• Level 2. 50% capacity with 8 hours of operation per day.	voltages. · Necessary lengths of wires / cables, switches suitable for DC use and other protections should be provided. · Two levels of operation of the study lamp should be provided to prolong the operating hours. • Level 1. 100% capacity with 4 hours operation per day • Level 2. 50% capacity with 8 hours of operation per day.
Section-6	**Page no. 26 of the NIB, Specific Details of Technical Specifications:** **ELECTRONIC PROTECTIONS:** · Adequate protection is to be incorporated under no load conditions. e.g. when the lamps are removed and the system is switched ON. · The system should have protection against battery overcharge and deep discharge conditions. The numerical values of the cut off limits must be specified. · Proper protection should be provided to protect against short circuit conditions. · A blocking diode should be provided as part of the electronics, to prevent reverse flow of current through the PV module(s), in case such a diode is not provided with the PV module. · Full protection against reverse polarity should be provided.	**Page no. 26 of the NIB, Specific Details of Technical Specifications:** **ELECTRONIC PROTECTIONS:** · Adequate protection is to be incorporated under no load conditions. e.g. when the lamps are removed and the system is switched ON. · The system should have protection against battery overcharge and deep discharge conditions. The numerical values of the cut off limits must be specified. · Proper protection should be provided to protect against short circuit conditions. · A blocking diode should be provided as part of the electronics, to prevent reverse flow of current through the PV module(s), in case such a diode is not provided with the PV module. · Full protection against reverse polarity should be provided. · **The load reconnect should be provided at around 80% of the battery capacity status.**
Section-6	**Page no. 26 & 27 of the NIB, Specific Details of Technical Specifications:** **DOCUMENTATION:** • An Operation, Instruction and Maintenance Manual, in English and the local language, should be provided with the Solar Study Lamp. The following minimum details must be provided in the Manual: i. About White LED Solar Study Lamp system - its components and expected performance. ii. About PV module. In case of imported modules it is mandatory to provide a copy of the international product qualification certificate	**Page no. 26 & 27 of the NIB, Specific Details of Technical Specifications:** **OPERATION AND MAINTENANCE MANUAL:** An Operation, Instruction and Maintenance Manual, in English and the local language, should be provided with the Solar Study Lamp. The following minimum details must be provided in the Manual: **i. Small write up (with a block diagram) on Solar Study Lamp-its components, PV module, battery, electronics and luminaire and expected performance.** **ii. Basic principles of Photovoltaics.** iii. About White LED Lights. The make, model number, country of origin

	to the test centre. iii. About White LED Lights. The make, model number, country of origin and technical characteristics of LEDs should be stated in the product data sheet. iv. Clear instructions about mounting of PV module v. About electronics vi. About charging and significance of indicators vii. DO's and DONT's viii. Clear instructions on regular maintenance and trouble shooting of Solar Study Lamp. ix. Name and address of the person or service centre to be contacted case of failure or complaint	and technical characteristics of LEDs should be stated in the product data sheet. **iv. Type, Model number, Voltage capacity of battery, used in the system.** **v. Instructions on replacement of battery.** vi. Clear instructions about mounting of PV module vii. About electronics viii. About charging and significance of indicators ix. DO's and DONT's x. Clear instructions on regular maintenance and trouble shooting of Solar Study Lamp. xi. Name and address of the person or service centre to be contacted case of failure or complaint
Section-6	**Page no. 27 of the NIB, Specific Details of Technical Specifications:** **TESTING:** Bidder shall submit test certificate conforming to the approved design and specification of NIB of LED Solar Study Lamps (complete system) before opening of the price bid from any test centers approved by MNRE or from UL or CPRI or any other NABL accredited labs. The bidders, who are technically qualified, shall be required to make presentation on the designs with sample/s and after approval of the design, the bidder shall submit the test certificate 21 days but before the date of opening of Price Bids. The bidders who fails to submit the systems test certificate of the JREDA approved design based LED solar study lamp within stipulated time, the price bids shall be not be opened and their bids shall be rejected. **JREDA also will check the performance on random samples from the lots and will reject the lots for any noncompliance.**	**Page no. 27 of the NIB, Specific Details of Technical Specifications:** **TESTING:** Bidder shall submit test certificate conforming to the approved design and specification of NIB of LED Solar Study Lamps (complete system) before opening of the price bid from any test centers approved by MNRE or from UL or CPRI or any other NABL accredited labs. The bidders, who are technically qualified, shall be required to make presentation on the designs with sample/s and after approval of the design, the bidder shall submit the test certificate before the date of opening of Price Bids as directed by JREDA . The bidders who fails to submit the systems test certificate of the JREDA approved design based LED solar study lamp within stipulated time, the price bids shall be not be opened and their bids shall be rejected. **JREDA also will check the performance on random samples from the lots and will reject the lots for any noncompliance.**

2. Changes made as above in NIB may be read accordingly for similar changes in related technical specification.

3. The Corrigendum shall form the integral part of the NIB.

Sd/-

Director
JREDA, Ranchi