

## Sant Longowal Institute of Engineering & Technology, Longowal

**Preamble:** The present situation has forced most of us to work from home. In such a scenario it will not be possible for students to conduct training / Project in normal fashion. So, in view of giving our student to complete course requirement, SLIET, Longowal has thought to give suitable exercise to cover the said aspect of course. In this exercise, each student is expected to write a report in given format for the given exercise. The report should be submitted in PDF format to designated email id in case submission does not fall in the period of institute working, otherwise a bounded report is to be submitted to respective faculty co-ordinator.

### Exercise in lieu of In-house Training ICD First Year Students: CMEE- DEE

| Sr, No.   | Exercise  | How to write  |
|---|---|---|
| 1. A.   | List the following for an Electrical Technician<br>i. Skills required.<br>ii. Tools likely to be used.<br>iii. Components likely to be used.<br>iv. Instruments likely to be used.  | <p><b>Suggested Sources of Information-</b></p> <ul style="list-style-type: none"> <li>a. CITS-Electrician-NSQF-6.pdf</li> <li>b. Curriculum for Electrician and Lineman Trade by Skill Development ministry, Government of India</li> <li>c. <a href="https://youtu.be/6Maq5IyHSuc">https://youtu.be/6Maq5IyHSuc</a></li> <li>d. <a href="https://www.youtube.com/embed/Duru2oGpdC0">https://www.youtube.com/embed/Duru2oGpdC0</a></li> </ul> <p><b>Report Writing –</b><br/>Give bullet points for each with possible applications of Tools, Components and Instruments</p> |
| B.  | Explain any one Electrical/ Electronic instrument/tools used, how to identify fault in live circuit, house wiring,<br><br>For example, Ammeter for current measurement, Voltmeter for voltage measurement, Wattmeter for Power measurement etc. | <p><b>Suggested Sources of Information-</b></p> <ul style="list-style-type: none"> <li>a. <a href="https://en.wikipedia.org/wiki/Ammeter">https://en.wikipedia.org/wiki/Ammeter</a></li> <li>b. <a href="https://www.youtube.com/embed/PcFGoKecTYU">https://www.youtube.com/embed/PcFGoKecTYU</a></li> <li>c. Textbooks</li> </ul> <p><b>Report Writing –</b><br/>Definition, Symbol, how to connect in circuit?<br/>Different Types, Applications, Important specifications, Different Types of faults, Fault Diagnosis</p>  |
| C.  | Your idea of maintaining physical distance in a triple seated Hostel.   | <p><b>Suggested Sources of Information-</b></p> <ul style="list-style-type: none"> <li>a. <a href="https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/social-distancing.html">https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/social-distancing.html</a></li> </ul> <p><b>Report Writing –</b><br/>Identify touch points in room, corridor, Mess, Common Places<br/>Suggest methods to minimize the touch at least at five places</p>  |
| <p><b>Guidelines for Report-</b></p> <p><b>Front page</b> : Project Name, Student Name, Course, Registration No, Institute Logo, Department Name, Institute Name and address,</p> <p><b>Second Page:</b> Certificate,</p> <p><b>Third Page</b> : Dedication/Acknowledgement, followed by – Contents, Followed BY –Report on 1A, B &amp; C as suggested above, each section to start with New page,</p> <p><b>In the End</b> : References and Appendix (if Required).</p> <p><b>Format</b> : Font-12 Pt Arial, 1.5 line spacing, Both Side printing, Main Heading 14 Bold, Sub Heading 12 Bold</p> |   |   |

**Exercise in lieu of In-house Training**

**BE First Year Students (GEE)**

| Sr, No. | Exercise   | How to write   |
|---------|--|--|
| 1. A.   | List the following for an Electrical Technician<br>i. Skills required.<br>ii. Tools likely to be used.<br>iii. Components likely to be used.<br>iv. Instruments likely to be used.   | <b>Suggested Sources of Information-</b><br>a. CITS-Electrician-NSQF-6.pdf<br>b. Curriculum for Electrician Trade by Skill Development ministry, Government of India<br>c. <a href="https://youtu.be/6Maq5IyHSuc">https://youtu.be/6Maq5IyHSuc</a><br>d. <a href="https://www.coursera.org/learn/electric-utilities">https://www.coursera.org/learn/electric-utilities</a><br><b>Report Writing –</b><br>Give bullet points for each with possible applications of Tools, Components and Instruments   |
| B.      | Write a report on any two of following-<br>• How to use digital multimeter?<br>• How to Test Capacitors with and without using Multimeter?<br>• How to identify the resistor wattage (Both fixed & variable resistors)?<br>• How to test diode using digital multimeter?<br>• How to Test the Voltage of Zener Diode without variable DC power supply?<br>• How to Check Earthing is Provided or Not with Test Lamp and Multimeter?<br>• How to Test MOSFET transistor using Multimeter by some easy methods?<br>• How to test Transistor with Digital Multimeter -Identify base emitter collector & PNP NPN transistor?<br>• How to Connect Multiple LEDs in Series Parallel Circuit   LED wiring basics with calculation?<br>• How to test a Transformer using digital multimeter? | <b>Suggested Sources of Information-</b><br><a href="https://youtu.be/zyT5EPqFQXs">https://youtu.be/zyT5EPqFQXs</a><br><a href="https://youtu.be/NqvL7Cyemiw">https://youtu.be/NqvL7Cyemiw</a><br><a href="https://youtu.be/b4X0wWfXr7o">https://youtu.be/b4X0wWfXr7o</a><br><a href="https://youtu.be/mL_xU3Gd-K4">https://youtu.be/mL_xU3Gd-K4</a><br><a href="https://youtu.be/75H9p-eJQVA">https://youtu.be/75H9p-eJQVA</a><br><a href="https://youtu.be/3JEZ4vYVEqM">https://youtu.be/3JEZ4vYVEqM</a><br><a href="https://youtu.be/IF740E5bm84">https://youtu.be/IF740E5bm84</a><br><a href="https://youtu.be/3MSeDI3Bjd4">https://youtu.be/3MSeDI3Bjd4</a><br><a href="https://youtu.be/z4nMBDDC9zw">https://youtu.be/z4nMBDDC9zw</a><br><a href="https://youtu.be/D00Qvuux6CE">https://youtu.be/D00Qvuux6CE</a><br><b>Report Writing –</b><br>Objective, Apparatus Required, Key specification of Apparatus, Connection Diagram, Method, Conclusion |
| C.      | Your idea of maintaining physical distance in a triple seated Hostel.  | <b>Suggested Sources of Information-</b><br>a. <a href="https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/social-distancing.html">https://www.cdc.gov/coronavirus/2019-ncov/prevent-getting-sick/social-distancing.html</a><br><b>Report Writing –</b><br>Identify touch points in room, corridor, Mess, Common Places<br>Suggest methods to minimize the touch at least at five places   |

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**Exercise in lieu of Industrial Training**

**ICD second Year Students (CMEE-DEE)**

| Sr, No. | Exercise   | How to write   |
|---------|--|--|
| 1. A.   | Identify the suitable opportunities for ICD (Electrician) in<br><br>i. Employment (Industry/service sector)<br>ii. Self-Employment (Start-up/business opportunity/ setting up of small plant)<br>iii. Higher studies   | <b>Suggested Sources of Information-</b><br>a. CITS-Electrician-NSQF-6.pdf<br>b. Curriculum for Electrician and control technician Trade By Skill Development ministry, Government of India<br><br><b>Report Writing –</b><br>Give names of industries along with application of Electrical Engineering, Self-employment opportunities, Options for Higher studies   |
| B.      | Write a report on one of the following- <ul style="list-style-type: none"> <li>• Construction of Power transformer</li> <li>• Electrical sub-station</li> <li>• Thermal power plant</li> <li>• Electrical wiring of small industrial unit</li> <li>• Identifying Electrical and electronic components and tools</li> </ul> | <b>Suggested Sources of Information-</b> <ul style="list-style-type: none"> <li>• <a href="https://www.usbr.gov/tsc/techreferences/mands/mands-pdfs/Trnsfrmr.pdf">https://www.usbr.gov/tsc/techreferences/mands/mands-pdfs/Trnsfrmr.pdf</a></li> <li>• <a href="http://www.123seminaronly.com/Seminar-Reports/035/34452968-Training-Report-on-220-to-132KV-Substation.pdf">http://www.123seminaronly.com/Seminar-Reports/035/34452968-Training-Report-on-220-to-132KV-Substation.pdf</a></li> <li>• <a href="https://sommec.files.wordpress.com/2015/10/thermal-plant-report-mechatronics.pdf">https://sommec.files.wordpress.com/2015/10/thermal-plant-report-mechatronics.pdf</a></li> <li>• <a href="https://youtu.be/6Maq5lyHSuc">https://youtu.be/6Maq5lyHSuc</a></li> <li>• <a href="http://twentyonecelsius.com.au/blog/everything-you-need-to-know-about-hvac-systems/">http://twentyonecelsius.com.au/blog/everything-you-need-to-know-about-hvac-systems/</a></li> </ul> <b>Report Writing –</b><br>Explain the process/processes, methodologies, Find out three sensors/transducer and measurement system along with range of parameters and specification of the instruments/tools used in the Process |
| C.      | If you were asked to automate an existing manual procedure from our daily lives for COVID-19 situation, what would you choose to automate? Give reasons for choosing the particular procedure. How would you do it?  | <b>Suggested Sources of Information-</b><br><a href="https://nevonprojects.com/motion-based-automatic-door-opener-project/">https://nevonprojects.com/motion-based-automatic-door-opener-project/</a><br><b>Report Writing –</b><br>Name the process to be automated, Reason for choosing the process, Explain how to automate   |

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**Exercise in lieu of Industrial Training**

**Degree Second Year Students (GEE)**

| Sr, No. | Exercise   | How to write   |
|---------|--|--|
| 1. A.   | Identify the following for BE (Electrical) in<br><br>i. Skill set<br>ii. Personality Trait's   | <b>Suggested Sources of Information-</b><br><a href="https://www.zippia.com/electrical-engineer-jobs/skills/">https://www.zippia.com/electrical-engineer-jobs/skills/</a><br><a href="https://www.bestsampleresume.com/job-descriptions/engineer/electrical-engineer.html">https://www.bestsampleresume.com/job-descriptions/engineer/electrical-engineer.html</a><br><b>Report Writing –</b><br>List out skill set and personality traits for Electrical Engineer and put up your plan for next one year to acquire these skills and traits.  |
| B.      | Write a report on one of the following-<br>• Construction of Power transformer<br>• Electrical sub-station<br>• Thermal power plant<br>• Electrical wiring of small industrial unit<br>• Identifying Electrical and electronic components and tools<br>• Energy Auditing | <ul style="list-style-type: none"> <li>• <b>Suggested Sources of Information-</b><br/><a href="https://www.usbr.gov/tsc/techreferences/mands/mands-pdfs/Trnsfrmr.pdf">https://www.usbr.gov/tsc/techreferences/mands/mands-pdfs/Trnsfrmr.pdf</a></li> <li>• <a href="http://www.123seminaronly.com/Seminar-Reports/035/34452968-Training-Report-on-220-to-132KV-Substation.pdf">http://www.123seminaronly.com/Seminar-Reports/035/34452968-Training-Report-on-220-to-132KV-Substation.pdf</a></li> <li>• <a href="https://sommec.files.wordpress.com/2015/10/thermal-plant-report-mechatronics.pdf">https://sommec.files.wordpress.com/2015/10/thermal-plant-report-mechatronics.pdf</a></li> <li>• <a href="https://youtu.be/6Maq5lyHSuc">https://youtu.be/6Maq5lyHSuc</a></li> <li>• <a href="http://twentyonecelsius.com.au/blog/everything-you-need-to-know-about-hvac-systems/">http://twentyonecelsius.com.au/blog/everything-you-need-to-know-about-hvac-systems/</a></li> <li>• <a href="http://www.beeindia.gov.in">www.beeindia.gov.in</a></li> </ul> <b>Report Writing –</b><br>complete layout of the plant, process flow drawings of each section, instrumentation studied in each section of the plant. Identify the sensors, controllers, actuators used and their specifications, instruments installed in the plant from the safety and environment pollution point of view, Energy conservation steps |
| C.      | Automation reduces manpower, thus some people lose their jobs to machines. Is it justified to automate a factory to improve productivity and while the workers and their families suffer? Support your answer with COVID-19 situation.                                   | <b>Suggested Sources of Information-</b><br><a href="https://www.mckinsey.com/featured-insights/future-of-work/how-will-automation-affect-jobs-skills-and-wages">https://www.mckinsey.com/featured-insights/future-of-work/how-will-automation-affect-jobs-skills-and-wages</a><br><a href="https://www.washingtonpost.com/politics/2019/10/17/are-jobs-lost-due-bad-trade-policy-or-automation/">https://www.washingtonpost.com/politics/2019/10/17/are-jobs-lost-due-bad-trade-policy-or-automation/</a><br><b>Report Writing –</b><br>Self Explanatory  |

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**Exercise in lieu of Industrial Training**  
**Degree Third Year Students (GEE)**

| Sr, No. | Exercise  | How to write  |
|---------|---|---|
| 2. A.   | Identify the suitable opportunities for BE(Electrical) in<br><br>iii. Employment (Industry/service sector)<br>iv. Self-Employment (Start-up/business opportunity/ setting up of small plant)<br>v. Higher studies   | <b>Suggested Sources of Information-</b><br>a. <a href="https://www.careeraddict.com/top-10-skills-needed-for-a-job-in-electrical-engineering">https://www.careeraddict.com/top-10-skills-needed-for-a-job-in-electrical-engineering</a><br>b. <a href="https://engineering.gwu.edu/electrical-engineering-skills/">https://engineering.gwu.edu/electrical-engineering-skills/</a><br><br><b>Report Writing –</b><br>Give names of industries along with role of Electrical Engineer, Self-employment opportunities, Options for Higher studies. Identify five Indian firms suitable for placement of SLIET student of GEE along with the details of HR personnel   |
| B.      | Write a report on one of the following- <ul style="list-style-type: none"> <li>• Construction of Power transformer</li> <li>• Electrical sub-station</li> <li>• Thermal power plant</li> <li>• Electrical wiring of small industrial unit</li> <li>• Identifying Electrical and electronic components and tools</li> <li>• Energy Auditing</li> </ul> | <ul style="list-style-type: none"> <li>• <b>Suggested Sources of Information- Suggested Sources of Information-</b><br/> <a href="https://www.usbr.gov/tsc/techreferences/mands/mands-pdfs/Trnsfrmr.pdf">https://www.usbr.gov/tsc/techreferences/mands/mands-pdfs/Trnsfrmr.pdf</a></li> <li>• <a href="http://www.123seminaronly.com/Seminar-Reports/035/34452968-Training-Report-on-220-to-132KV-Substation.pdf">http://www.123seminaronly.com/Seminar-Reports/035/34452968-Training-Report-on-220-to-132KV-Substation.pdf</a></li> <li>• <a href="https://sommec.files.wordpress.com/2015/10/thermal-plant-report-mechatronics.pdf">https://sommec.files.wordpress.com/2015/10/thermal-plant-report-mechatronics.pdf</a></li> <li>• <a href="https://youtu.be/6Maq5lyHSuc">https://youtu.be/6Maq5lyHSuc</a></li> <li>• <a href="http://twentyonecelsius.com.au/blog/everything-you-need-to-know-about-hvac-systems/">http://twentyonecelsius.com.au/blog/everything-you-need-to-know-about-hvac-systems/</a></li> <li>• <a href="http://www.beeindia.gov.in">www.beeindia.gov.in</a></li> </ul> <b>Report Writing –</b><br>complete layout of the plant, process flow drawings of each section, instrumentation studied in each section of the plant. All the specifications of the sensors, controllers, actuators, P & I Drawings, logic diagrams of PLC, relay wiring, describe control systems like DCS, PLC, PID controllers, calibration of the transmitters and wiring of the control panels etc, instruments installed in the plant from the safety and environment pollution point of view |
| C.      | What are the differences between AI, Strong AI, and Automation? What are their similarities? Which do you think would be more helpful to humanity, AI or Automation, and why? Justify your answer in view of COVID-19 situation.  | <b>Suggested Sources of Information-</b><br><a href="https://www.researchgate.net/publication/336085049_Artificial_Intelligence_in_Automation">https://www.researchgate.net/publication/336085049_Artificial_Intelligence_in_Automation</a><br><br><b>Report Writing –</b><br>Self-Explanatory  |

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Exercise in lieu of Project

ICD Third Year Students (CMEE-DEE)

| Sr, No. | Exercise  | How to write   |
|---------|---|--|
| 1.      | <p>Learn about the aurdino-</p> <ul style="list-style-type: none"> <li>• Arduino: Hardware Overview</li> <li>• Download and install the Arduino IDE</li> <li>• Arduino IDE and Sketch Overview</li> <li>• Understanding Arduino Syntax</li> <li>• Arduino: Understanding Variables</li> </ul> <p>And<br/>Work for any one of the following project reports-</p> <ul style="list-style-type: none"> <li>• Arduino: How to Blink an LED</li> <li>• Automatic Alcohol Dispenser</li> </ul> <p style="text-align: center;"><b>OR</b></p> <p>Study the daily routine of the following essential workers to find out probable risks of contracting the COVID-19 virus. Also list precautionary measures to reduce risk of contracting the virus for each of the following categories.</p> <ol style="list-style-type: none"> <li>a. Doctors</li> <li>b. Nurses</li> <li>c. Police personnel</li> <li>d. Municipal workers</li> <li>e. Bank employees</li> <li>f. Shopkeepers</li> </ol> <p>Suggest some innovative technological interventions that can help the aforementioned essential workers.</p> <p style="text-align: center;"><b>OR</b></p> <p>Any Other technological solution for handling the COVID 19</p> | <p><b>Suggested Sources of Information-</b><br/> <a href="https://youtu.be/09zfRaLEasY">https://youtu.be/09zfRaLEasY</a><br/> <a href="https://youtu.be/w55Pd4dU5-w">https://youtu.be/w55Pd4dU5-w</a><br/> <a href="https://youtu.be/YDkdVZ7e3OY">https://youtu.be/YDkdVZ7e3OY</a><br/> <a href="https://youtu.be/AJkEQ9t4WfY">https://youtu.be/AJkEQ9t4WfY</a><br/> <a href="https://youtu.be/QNTaQ5qiniE">https://youtu.be/QNTaQ5qiniE</a></p> <p><b>Report Writing –</b><br/>Write introduction to aurdino hardware and software</p> <p><a href="https://youtu.be/33sNhlekRV8">https://youtu.be/33sNhlekRV8</a><br/> <a href="https://youtu.be/5vojb3vL-go">https://youtu.be/5vojb3vL-go</a></p> <p><b>Report Writing –</b><br/>Objective, Motivation, Project details, Circuit diagram or layout, Components with specifications</p> |

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**Exercise in lieu of Project**

**Degree Fourth Year Students (GEE)**

| Sr, No. | Exercise   | How to write   |
|---------|--|--|
| 1. A.   | <p>Learn about the aurdino-</p> <ul style="list-style-type: none"> <li>• Arduino: Hardware Overview</li> <li>• Download and install the Arduino IDE</li> <li>• Arduino IDE and Sketch Overview</li> <li>• Understanding Arduino Syntax</li> <li>• Arduino: Understanding Variables</li> </ul> <p>And<br/>Work for any one of the following project reports-<br/>Touchless bell for home applications</p> <p align="center"><b>OR</b></p> <p>Study the daily routine of the following essential workers to find out probable risks of contracting the COVID-19 virus. Also list precautionary measures to reduce risk of contracting the virus for each of the following categories.</p> <ol style="list-style-type: none"> <li>a. Doctors</li> <li>b. Nurses</li> <li>c. Police personnel</li> <li>d. Municipal workers</li> <li>e. Bank employees</li> <li>f. Shopkeepers</li> </ol> <p>Suggest some innovative technological interventions that can help the aforementioned essential workers.</p> <p align="center"><b>OR</b></p> <p>Any Other technological solution for handling the COVID 19</p> | <p><b>Suggested Sources of Information-</b><br/> <a href="https://youtu.be/09zfRaLEasY">https://youtu.be/09zfRaLEasY</a><br/> <a href="https://youtu.be/w55Pd4dU5-w">https://youtu.be/w55Pd4dU5-w</a><br/> <a href="https://youtu.be/YDkdVZ7e3OY">https://youtu.be/YDkdVZ7e3OY</a><br/> <a href="https://youtu.be/AJkEQ9t4WfY">https://youtu.be/AJkEQ9t4WfY</a><br/> <a href="https://youtu.be/QNTaQ5qiniE">https://youtu.be/QNTaQ5qiniE</a></p> <p><b>Report Writing –</b><br/>Write introduction to aurdino hardware and software</p> <p><b>Report Writing –</b><br/>Objective, Motivation, Project details, Circuit diagram or layout, Components with specifications</p> |

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