**LMS Questions for DLBROEIRA2\_E Automation Technology**

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| **Unit/**  **Question Number** | **Section** | **Question** | **Correct answer** | **Incorrect answer** | **Incorrect answer** | **Incorrect answer** |
| 1/1 | 1.1 | The float regulator was invented by … | … Ctesibius. | … Philon. | … Archimedes. | … Heron. |
| 1/2 | 1.1 | When ends the contribution of the Alexandrian School? | the 1st century CE | the 3rd century BCE | the 2nd century CE | the 4th century BCE |
| 1/3 | 1.2 | What is the latest industrial revolution called? | Industry 4.0 | Information Revolution | Computer Integrated Manufacturing | Cyber-Physical Revolution |
| 1/4 | 1.3 | What computer system collects and analyzes real-time data to monitor, control, and optimize industrial plants? | SCADA | MES | ERP | DCS |
| 1/5 | 1.4 | What is the current state of Industry 4.0, according to the author? | it has not yet been consolidated | it is in its beginnings | it is completely consolidated | it is mostly outdated |
| **Unit/**  **Question Number** | **Section** | **Question** | **Correct answer** | **Incorrect answer** | **Incorrect answer** | **Incorrect answer** |
| 2/1 | 2.1 | How many components does the CPU of a PLC comprise? | two | one | four | three |
| 2/2 | 2.2 | Which bus contains the locations to access different stored data in a PLC handle? | address bus | I/O bus | data bus | control bus |
| 2/3 | 2.3 | Which category of actuators includes contactors? | electromagnetic actuators | electronic actuators | electro-mechanical actuators | none |
| 2/4 | 2.4 | What is the other name given to the disjunction function? | OR function | AND function | NOR function | NOT function |
| 2/5 | 2.5 | To minimize errors, how many steps must be carried out before beginning to solve an automation problem? | two | one | four | three |
| **Unit/**  **Question Number** | **Section** | **Question** | **Correct answer** | **Incorrect answer** | **Incorrect answer** | **Incorrect answer** |
| 3/1 | 3.1 | How many categories of processes exist, according to the coursebook? | four | three | two | five |
| 3/2 | 3.1 | What type of process is characterized by maintaining an output of products by units? | discrete process | continuous process | batch process | semi-batch process |
| 3/3 | 3.2 | Which of the ideal chemical reactors is unmixed? | the plug flow reactor | the continuous stirred tank reactor | the batch reactor | none |
| 3/4 | 3.2 | Where does the mixture enter the column in distillation with batch rectification? | at the bottom | in the middle | at the top | anywhere |
| 3/5 | 3.2 | In continuous reactors, the process operates …  **Answer** **Option 1**: … dynamically.  **Answer Option 2**: … steady state conditions. | only answer option 2 is correct | both answer option 1 and answer option 2 are correct | only answer option 1 is correct | neither answer option 1 nor answer option 2 is correct |

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| 4/1 | 4.1 | In SCADA systems, showing an operator (at a central location) an overview of an entire plant is a task performed by ... | … the data presentation function. | … the data acquisition function. | … the data communication function. | … the system control function. |
| 4/2 | 4.2 | What is the name given to the second generation SCADA systems? | distributed SCADA systems | monolitic SCADA systems | networked SCADA systems | SCADA based on the internet of things |
| 4/3 | 4.3 | When does Distributed Network Protocol (DNP3) enter the public domain? | 1993 | 1994 | 1990 | 1991 |
| 4/4 | 4.4 | How many connection architectures does actuator sensor interface (AS-Interface) have? | two | one | four | three |
| 4/5 | 4.4 | HCI, HMI, or MMI are names given to SCADA ... | … user interfaces. | … device interfaces. | … field interfaces. | … data transmission interfaces. |
| **Unit/**  **Question Number** | **Section** | **Question** | **Correct answer** | **Incorrect answer** | **Incorrect answer** | **Incorrect answer** |
| 5/1 | 5.1 | What is the information collected by sensor devices used to assess the status of plant equipment called? | supervisory information | control information | safety information | critical information |
| 5/2 | 5.2 | When was the Highway Addressable Remote Transducer (HART) developed? | 1985 | 1988 | 1987 | 1984 |

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| 5/3 | 5.3 | What is the name of the OSI model’s eighth layer for the PROFIBUS communication protocol? | user layer | application layer | session layer | network layer |
| 5/4 | 5.4 | How many classifications of wireless-networks are there? | four | one | two | three |
| 5/5 | 5.5 | What is the oldest OPC specification? | OPC Data Access Specification | OPC Historical Data Access Specification | OPC Unified Architecture Specification | OPC Alarms & Events  Specification |
| **Unit/**  **Question Number** | **Section** | **Question** | **Correct answer** | **Incorrect answer** | **Incorrect answer** | **Incorrect answer** |
| 6/1 | 6.1 | What kind of communication networks do SCADA systems use? | wide area networks (WANs) | local area networks (lans) | metropolitan area networks (mans) | personal area networks (PANs) |
| 6/2 | 6.1 | How many level of automation are there, according to García? | three | two | five | four |
| 6/3 | 6.2 | At what level of visualization do details of tasks classified as non-routine correspond? | level three | level four | level one | level two |
| 6/4 | 6.2 | Why does it seem easy to build a functional DCS based on today's PLCs?  **Answer Option #1:** Due to the architecture that the DCS presents.  **Answer Option #2:** Because of how flexible and cheap current PLCs are. | both answer option 1 and answer option 2 are correct | only answer option 1 is correct | neither answer option 1 nor answer option 2 is correct | only answer option 2 is correct |
| 6/5 | 6.2 | Which DCS hardware element is responsible for managing the history module data? | central operator station | communication infrastructure | field control station | direct control elements |

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| 7/1 | 7.1 | How many types of remote terminal units are there, typically? | two | one | four | three |
| 7/2 | 7.2 | … are defined as deliberate actions to cause damage to the system or its production.  **Answer Option #1:** Threats ...  **Answer Option #2:** Attacks ... | only answer option 2 is correct | Both answer option 1 and answer option 2 are correct | only answer option 1 is correct | neither answer option 1 nor answer option 2 is correct |
| 7/3 | 7.3 | Cross-Site Request Forgery belongs to which category of the ICS software weaknesses? | insufficient verification of data authenticity | incorrect input validation | improper authentication | cryptographic issues |
| 7/4 | 7.3 | How many common weaknesses are there in the Poor Code Quality Indicator category of ICS software weaknesses? | two | one | four | three |
| 7/5 | 7.3 | Database-driven websites often allow …  **Answer Option #1:** ... SQL command injection.  **Answer Option #2:** ... OS command injection. | only answer option 1 is correct | neither answer option 1 nor answer option 2 is correct | only answer option 2 is correct | both answer option 1 and answer option 2 are correct |