

QUESTIONNAIRE REPORT SHEET

iPQ*ACP.V2.0



BEYOND
SMART CITIES

**BCXA'S ASSOCIATE COMMISSIONING PROFESSIONAL
ACP EXAM QUESTION BANK**

iPQ.No	Correct Answer	Points	Explanation
*ACP001	2	10	Answer = 2 Review elevator manufacturer design guidelines. Explanation: Additionally, prior to acceptance and operating tests, the CA is required to review the checklists provided by the equipment manufacturer. Before acceptance and operating tests can begin, the installing contractor is responsible for filling out these lists, and the CA will go through and review them. Evaluation of Acceptance and Operational Readiness The CA will be present for the elevators' acceptance test as well as the operating test. In order to carry out the testing, it will be necessary to have the appropriate contractors and/or a representative from the manufacturer present on the premises. The acceptance and operational tests will be carried out in accordance with the procedures that are recommended by the manufacturer. Before beginning tests, the CA will make a site visit in conjunction with progress meetings in order to verify that the installation has been completed in its entirety.
*ACP002	1	10	Answer =1 Owner of the customer representative Explanation: In most cases, the test is observed by the independent third-party inspector as well as the owner of the customer representative (the purchaser). The FAT is carried out prior to the installation of the system, and a successful conclusion to this step indicates that the system can now be commissioned. Validating the work done during development, design, and preparation is absolutely necessary in order to ensure that the final system functions as it was intended to. Authority to issue licenses or permits

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*ACP003	3	10	Answer = 3 Independent third-party inspector as well as the owner of the customer representative Explanation: An independent inspector and a proprietor representing the buyer are usually present during the trial. Successful completion of the FAT prior to system installation signals that the system may be commissioned. To guarantee the final system performs as intended, it is essential to validate the development, design, and preparation work. Authorization to Proceed
*ACP004	3	10	Answer = 3 Room temp 20 to 26
*ACP005	1	10	Answer = 1 % of designer updated installation progress
*ACP006	1	10	Answer = 1 True Explanation: Building commissioning and energy modeling are two complementary processes that work together to optimize building performance and achieve energy savings.
*ACP007	1	10	Answer = 1 Update the CFR

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*ACP008	4	10	Answer = 4 All of the above Explanation: A commissioning issues log should contain adequate information to help the commissioning and project teams effectively track and resolve issues and observations. Information that would usually be contained would be: Issue ID/Reference: to help track and cross-reference , Date of Issue: Include when the issue was noted and observed, Due Date: note the date by which the issue should be resolved. Date Resolved: note the date when the issue was resolved to track progress. Status: to allow understanding of the overall status of the problems [Open, Ongoing, Closed], Equipment or System ID: to help trace onsite and understand common issues, System Type: useful in case we need to filter for this later on to understand all issues across a particular system [BMS, electrical, fire, mechanical, plumbing, etc.], Description of the issue: used to describe, understand, and identify the problem, Location of the issue: used to help guide the site teams to where the issue is [building, floor, room], Priority Level: Assigning a priority level to each issue can help project teams prioritize their efforts and ensure that the most critical issues are addressed first [high, medium, and low, or P1, P2, and P3]. Responsible party: Identifying the person or team responsible for resolving each issue can help ensure clear accountability for addressing the problem. Notes and comments: Including notes and comments in the commissioning issues log can help provide additional context and detail about the issue and its resolution.

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*ACP009	4	10	Answer = 4 All of the above Explanation: Commissioning Definitions • A person from the CxP leading the Commissioning Team • Authority of the Commissioning Process—not Designor Means and method • Not a member of the design or construction team
*ACP010	4	10	Answer = 4 All of the above Explanation: Commission the Energy Model • Keep the CX agent on board early on to go over the goals (OPR/BOD). • CxA will review the parameters of the model as a component of the design. • Please provide feedback with regards to the energy capacities and efficiencies. • Keep the model up to date with the actual conditions. • a straightforward performance period that takes into account energy consumption for verification of realistic schedules and occupancy levels across the baseline for the energy savings.
*ACP011	4	10	Answer = 4 All of the above Explanation: • Give an owner a more realistic expectation of energy savings • More accurate energy prediction • Decreased liability for energy modelers • Guarantee to building owner and operators
*ACP012	1	10	Answer = 1 True Explanation: Commissioning of existing systems may require the development of new functional criteria in order to address the owner's current systems performance requirements.

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*ACP013	2	10	Answer = 2 The owner's project requirements have been satisfied.
*ACP014	2	10	Answer = 2 Direct contractors on means and methods
*ACP015	1	10	Answer = 1 Process Explanation: "The Commissioning Process is a quality-oriented process for achieving, verifying, and documenting that the performance of facilities, systems, and assemblies meets defined objectives and criteria."
*ACP016	1	10	Answer = 1 True Explanation: The basic purpose of building commissioning is to provide a quality-based process with documented confirmation that building systems are planned, designed, installed, tested, operated, and maintained in compliance with the owner's project requirements (OPR).
*ACP017	1	10	Answer = 1 Throughout the process
*ACP018	2	10	Answer = 2 TAB verification/review Explanation : Review the TAB Report: • Pages are numbered with an index. • All equipment is accounted for in the report. • No extra equipment shown in the report • Performance is per design (XX%). • Problems sufficiently documented in footnotes
*ACP019	1	10	Answer = 1 The primary goals and objectives for the project
*ACP020	3	10	Answer = 3 The level of authority of the commissioning provider
*ACP021	1	10	Answer = 1 Current Facility Requirements (CFR)
*ACP022	3	10	Answer = 3 A tool that helps the benefits of commissioning persist

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*ACP023	1	10	Answer = 1 True Explanation: Each project is commissioned in accordance with a written commissioning plan that is updated as the project progresses.
*ACP024	1	10	Answer = 1 Coordination between contractors
*ACP025	2	10	Answer = 2 Contracted under the Owner
*ACP026	1	10	Answer = 1 True Explanation: Commissioning should be considered an inexpensive insurance policy that is specifically designed to avoid taking over a dysfunctional facility that does not meet the owner's project requirements.
*ACP027	3	10	Answer = 3 Conducting design reviews

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*ACP028	4	10	Answer = 4 The last two are right, but not the request for submission. Explanation: Isolation of the problem Problems sometimes have hidden solutions. A building's exterior doors hold open due to pressurization issues. When security is a major design element, this can be a major issue. The design engineer and CX professional discuss equipment sizing and design intent. At design conditions, the TAB contractor's report is fine. However, the building can have excessive positive pressure. A mixed air sensor signals oddly during control contractor troubleshooting. The faulty sensor impacted many BAS system components. The problem sensor's isolation revealed the solution. To find the root cause, many variables were compared at the same time. Another example: a building area's temperature setpoint cannot be maintained. Temperatures, airflows, and BAS parameters are reviewed. The review found that several variable air volume (VAV) air terminal boxes have a low VAV discharge air temperature. The VAV hot water reheat coil control valves are fully open, but the discharge temperature does not change. After tracing all valves in the hot water piping distribution system, a manual shut-off valve was fully closed due to maintenance.
*ACP029	2	10	Answer = 2 Not a member of the design or construction team.
*ACP030	1	10	Answer = 1 Explanation: Commissioning Authority Qualification • Knowledge of HVAC systems, covering design, common control strategies, installation, operations, and maintenance • Practical field construction background • Demonstrated ability to organize many specific activities into a coherent commissioning plan
*ACP031	4	10	Answer = 4 Throughout CXA process

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*ACP032	1	10	Answer = 1 Explanation: Commissioning Authority • Demonstrated ability to organize many specific activities into a coherent commissioning plan • Experience working with multi-disciplinary teams • Familiarity with testing and balancing
*ACP033	4	10	Answer = 4 Program Manager, Service Contract Providers, BAS Specialists and IT Support Groups Explanation: Potential Team Members: Equipment Vendors, Specialty Trades, Specialty Consultants, Program Manager, Service Contract Providers, BAS Specialists, IT Support Groups
*ACP034	1	10	Answer = 1 Owner / Operator
*ACP035	3	10	Answer = 3 Owner / Operator
*ACP036	1	10	Answer = 1 Functional testing
*ACP037	4	10	Answer = 1 All of the above Explanation: During functional testing • Design intent is verified • Most time-intensive CXA activity • Requires collaboration between the owner, contractor, and CXA provider.
*ACP038	2	10	Answer = 2 Substantial completion

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*ACP039	1	10	Answer = 1 Should provide input to the resolution of problems found during the commissioning process. Explanation: • Should provide "input" to the resolution of problems found during the commissioning process. • CA is not in charge of fixing the problems or even telling other people how to fix them.
*ACP040	2	10	Answer = 2 Design Professional Explanation: • Assign a CX team member and attend meetings. • Coordinate design and changes with the owner and end-users. • Conduct regular site observations. • Assign CX Team Members and attend meetings. Provide the Basis of Design
*ACP041	1	10	Answer = 1 Throughout the construction period
*ACP042	2	10	Answer = 2 Design Professional Explanation: • Review O&M manuals, as-built drawings and other specified documentation
*ACP043	4	10	Answer = 4 Design consultant's contract, construction manager's contract, and General Conditions of the Specification

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*ACP044	3	10	Answer = 3 Commissioning Authority Explanation: Commissioning Authority • Review Design • Provide a commissioning plan and specification. • Conduct regular site observation visits. • Monitor system start-ups. Conduct Functional Performance tests. Review O&M documentation and training.
*ACP045	3	10	Answer = 3 Commissioning Authority Explanation: Commissioning Authority • Provide a commissioning plan and specification. • Monitor system start-ups. • Conduct Functional Performance tests. • Review O&M documentation and training.
*ACP046	4	10	Answer = 4 Construction Manager or General Contractor Explanation: Construction Manager / General Contractor • Implement Commissioning per the specifications. • Project Scheduling • Manage the overall completion of work.

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*ACP047	3	10	Answer = 3 Commissioning Authority Explanation: • Provide a commissioning plan and specification. • Monitor system start-ups. • Conduct Functional Performance tests. • Review O&M documentation and training.
*ACP048	4	10	Answer = 4 Mechanical Contractor (typical of other subs) Explanation: • Coordinate equipment start-up. • Operate systems as required for Functional performance tests. • Plan and deliver O&M staff training. • Provide O&M manuals, as-built drawings, and other specified documentation.
*ACP049	1	10	Answer = 1 Pre-design phase
*ACP050	1	10	Answer = 1 The nature of the conflict and the approach that will be taken to handle the conflict must be documented in writing.
*ACP051	3	10	Answer = 3 Mechanical Contractor (typical of other subs) Explanation: Mechanical Contractor (typical of other subs) • Coordinate equipment start-up. • Operate systems as required for Functional performance tests. • Plan and deliver O&M staff training. • Provide O&M manuals, as-built drawings, and other specified documentation.

iPQ.No	Correct Answer	Points	Explanation
*ACP052	1	10	Answer = 1 Mechanical Contractor (typical of other subs) Explanation: Mechanical Contractor (typical of other subs) • Coordinate equipment start-up. • Operate systems as required for Functional performance tests. • Plan and deliver O&M staff training. • Provide O&M manuals, as-built drawings, and other specified documentation.
*ACP053	4	10	Answer = 4 Mechanical Contractor (typical of other subs) Explanation: Mechanical Contractor (typical of other subs) • Coordinate equipment start-up. • Operate systems as required for Functional performance tests. • Plan and deliver O&M staff training. • Provide O&M manuals, as-built drawings, and other specified documentation.
*ACP054	4	10	Answer = 4 All of the above Explanation: In the majority of instances, the Commissioning Authority assists the Owner in determining which of the following guidelines the facility must adhere to in relation to these types of issues: • Energy conservation • Indoor environment • Staffing training and O&M
*ACP055	3	10	Answer = 3 Vendors / Testing Agencies Explanation: Vendors / Testing Agencies • Perform equipment startup and submit documentation • Provide calibrated equipment • Support commissioning testing as required. • Provide qualified personnel for the owner's training.

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*ACP056	3	10	Answer = 3 Both options are correct. Explanation: CxA and the OPR: • OPR is a critical document • CxA facilitates OPR development through workshops • OPR should be updated throughout the project above
*ACP057	4	10	Answer = 4 Design Professional Explanation: Design professional is responsible for specs
*ACP058	4	10	Answer = 4 All of the above Design reviews • Not a peer or code review • Interaction between CxA and A/E is important for review success. • Conformity to OPR • Full coordination
*ACP059	4	10	Answer = 4 Design intent
*ACP060	3	10	Answer = 3 Document the error and inform the commissioning team.
*ACP061	4	10	Answer = 4 EBCx benefits include energy consumption and environmental emissions reductions, improved indoor environmental quality, risk mitigation, and water conservation.
*ACP062	2	10	Answer = 2 Check the specification to see if the scope of the test and balance includes residential water systems.
*ACP063	1	10	Answer = 1 Development of Existing Buildings Commissioning goals, facility requirements, and a commissioning plan

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*ACP064	3	10	Answer = 3 Both options are correct Explanation: Challenges in implementing ongoing commissioning may include 1. Organizational culture, change management, and training are all involved in the implementation of technology. 2. Initial investment in time, money, and effort to implement tools and technology It is clear that long-term advantages typically outweigh this.
*ACP065	1	10	Answer = 1 Achieve substantial energy savings through the continuous improvement of equipment. Explanation: Ongoing Commissioning (OCx) is becoming the industry's best practice for maintaining the intricate and complex systems found in today's buildings. OCx is the process that helps building management systems be optimized for peak performance and avoid hidden energy consumption. 1. Achieve substantial energy savings through the continuous improvement of equipment. 2. Predictive maintenance reduces energy consumption as opposed to reactive or time-based maintenance. 3. The time taken to fix a problem is drastically reduced due to its standardized format, which is accessible to every member of the energy maintenance team. 4. When combined with advanced analytic tools, it can easily facilitate a smart building solution.
*ACP066	2	10	Answer = 2 Control contractor Explanation: Control contractor OR Testing Contractor All temperature, pressure, and flow measuring components shall be measured and compared to the control system readout; verify and document. If the measurement is not within tolerance, the sensor will be reported to the control contractor for calibration.

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*ACP067	2	10	Answer = 2 Sequences of Operation that do not meet the design intent Explanation: Consequences of not verifying control systems through testing, adjustment, balance, and commissioning: 1. Up to 50% failure rates of control point terminations 2. Sequences of Operation that do not meet the design intent 3. Sensors are set up for incorrect ranges and setpoints. 4. Energy conservation measures were abandoned due to faulty control. installation and occupant discomfort 5. Wasted energy from systems operating outside of design parameters due to control calibration errors 6. Equipment failures from excessive cycling due to a lack of nutrition
*ACP068	4	10	Answer = 4 All of the above Explanation : The following should be conducted by the CxA, EMP, or Owner within the first year of occupancy and regular intervals thereafter as required: • Evaluate Occupancy Schedules vs. Equipment schedules. • Conduct Occupancy Surveys to gauge comfort levels and get feedback for improvement. • Conduct O&M surveys to determine issues and proficiency in training. • Compare energy usage to the design of an energy model using established M&V techniques. • Fine-tune the control system for optimization during all seasons of operation and occupancy patterns.

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*ACP069	1	10	Answer = 1 Commissioning Authority Explanation : The CxA should review the quality of the sessions against the requirements in the project specifications.
*ACP070	2	10	Answer = 2 Design Professional and TAB Team Explanation : The design team and TAB firm should conduct training sessions to give BOD and system performance perspectives and answer questions from the O&M staff.
*ACP071	1	10	Answer = 1 TAB personnel or the Fire Alarm contractor in accordance with the manufacturer's recommendations. Explanation : Acceptance Phase – Functional Performance Testing of Fire Alarm / Smoke Control Sequences. Duct Mounted Smoke Detector differential pressures at minimum airflows should be verified by either the TAB personnel or the Fire Alarm contractor in accordance with the manufacturer's recommendations.
*ACP072	1	10	Answer = 1 Commissioning Authority Explanation : The CxA should write test procedures, facilitate and document testing with assistance from the TAB Firm, Contractor, Controls Vendor and Owner's O&M personnel.
*ACP073	1	10	Answer = 1 Commissioning Issues Log Explanation : During the Acceptance Phase - Functional Performance Testing, any problems or non-standard conditions must be recorded in the Commissioning Issues Log .
*ACP074	4	10	Answer = 4 TAB Team Explanation : The TAB firm should determine appropriate offsets and pressure control setpoints for pressure-dependent spaces (i.e., operating rooms, isolation rooms, laboratories, clean rooms, etc.) based upon actual operating conditions and construction.

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*ACP075	1	10	Answer = 1 TAB Firm Explanation : The TAB company needs to make sure that all of the temperature and pressure sensors are calibrated correctly and should document the testing results in the final TAB report.
*ACP076	2	10	Answer = 2 TAB Firm Explanation : The TAB company needs to verify and document the proper operation of all control dampers, control valves, digital outputs, and digital inputs. Additionally, the point termination should be checked.
*ACP077	4	10	Answer = 4 All of the above Explanation : The final commissioning report should include (but not be limited to) the following: • Copy of the final CX Plan • Copy of the CX Design and Review Reports • Copy of testing and startup Reports, Evaluation Checklists, and testing • Checklists Completed for Commissioned Systems and Assemblies • Copy of all CX Progress Reports • Copy of Issues and Resolution Log
*ACP078	4	10	Answer = 4 Parts lists, Starting and shutdown procedures, diagnostics and Emergency procedures, recommended maintenance, and intervals
*ACP079	1	10	Answer = 1 Commissioning Authority
*ACP080	1	10	Answer = 1 During Acceptance Phase Functional Test Coordination, the BAS contractor performs FPTs WITHOUT CxA to prove readiness.

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*ACP081	4	10	Answer = 4 All of the above Explanation : Establish commissioning in the project schedule: • Define commissioning activities in the schedule. • Time for FPT's schedule, especially for phased projects • Define the frequency of CX meetings. • Critical path of commissioning activities
*ACP082	4	10	Answer = 4 All of the above Explanation : • An evaluation of how well the systems are running at the end of the functional test, • Deficiencies that were discovered and the measures taken to correct them, • Uncorrected operational deficiencies,
*ACP083	3	10	Answer = 3 Construction documents and Designers' contracts.
*ACP084	1	10	Answer = 1 Project documents
*ACP085	1	10	Answer = 1 Convey knowledge and skills required to effectively and efficiently operate the facility.
*ACP086	3	10	Answer = 3 Commissioning plan and Contract documents
*ACP087	1	10	Answer = 1 Commissioning Authority
*ACP088	2	10	Answer = 2 Owner's Project Requirements (OPR) or Current Facility Requirements (CFR) Explanation: The CxP observes construction, checks systems, performs tests, and basically confirms that the commissioned systems achieve the design intent as reflected in the Owner's Project Requirements (OPR) or Current Facility Requirements (CFR).

iPQ.No	Correct Answer	Points	Explanation
*ACP089	1	10	Answer = 1 Architect Explanation: Major responsibilities of the architect during the commissioning process include the following: • Assign qualified members to join the Commissioning Team (Cx Team). • Attend and actively participate in commissioning meetings facilitated by the Commissioning Provider (CxP). • Manage the design and coordinate design changes with the owner, designers, builders, and/or end users.
*ACP090	1	10	Answer = 1 Current conditions and requirements.
*ACP091	1	10	Answer = 1 Deferred tastings Explanation: Deferred Functional Testing : Tests that are performed after substantial completion, due to ambient load or occupancy conditions, not allowing a thorough test during the initial testing period.
*ACP092	1	10	Answer = 1 Design Intent Document - DID Explanation: Design Intent Document (DID) is a common term for design phase narratives that describe how proposed designs respond to the owner's project requirements and how the building is to operate.
*ACP093	1	10	Answer = 1 Peer review Explanation: Peer Review : A formal in-depth review separate from the commissioning review processes. The level of effort and intensity is much greater than a typical commissioning facilitation or extended commissioning review .
*ACP094	1	10	Answer = 1 Sampling Explanation: Sampling : Various strategies that involve testing of a portion of very similar devices, components, or equipment within the same building system.

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*ACP095	4	10	Answer = 4 All of the above Explanation: Systems Manual: should include but not be limited to the following: • Executive Summary, Facility Design and Construction • Buildings, Systems, and Assemblies Information for Cx'ed Systems • Facility Operations, Training, and Final Commissioning Report
*ACP096	2	10	Answer = 2 Develop a Responsibility Matrix and include it in the CX Plan. Explanation: The Systems Manual is a comprehensive collection of documentation that provides detailed guidance and instructions for operating and maintaining the building systems. • The CxP delivers the Systems Manual to the owner during the Occupancy and Operations Phase, but the CxP should begin to prepare it during the Design Phase. • Develop a Responsibility Matrix and include it in the CX Plan. • Manual assembly is NOT solely the responsibility of CxA.
*ACP097	2	10	Answer = 2 Commissioning Plan Explanation: Functional Performance Test Procedures and Checklists. Develop functional performance test procedures or performance criteria verification checklists for each of the systems identified in the commissioning plan.
*ACP098	4	10	Answer = 4 All of the above Explanation: Building commissioning • Is a systematic and designed process coordinated by a commissioning authority or team. • Includes documentation, verification procedures, functional performance tests, validation, and training. • Starts with the conceptual phase and continues through design and construction to a minimum of one year after construction completion.

iPQ.No	Correct Answer	Points	Explanation
*ACP099	2	10	Answer = 2 Field inspections, data gathering, testing, and analysis to accurately assess system performance and identify improvement opportunities.
*ACP100	3	10	Answer = 3 TAB Company Explanation: The TAB company needs to perform tests on all of the mechanical safety devices that are interlocked with the control system and figure out the appropriate safety setpoints, some of which may not be clearly denoted in the project documents (for example, high and low static pressure switches).