

QUESTIONNAIRE REPORT SHEET

iPQ*1CMVP.V2.1



B E Y O N D
S M A R T C I T I E S

**AEE'S CERTIFIED MEASUREMENT & VERIFICATION PROFESSIONAL
CMVP EXAM QUESTION BANK**

iPQ.No	Correct Answer	Points	Explanation
*1CMVP001	4	10	Answer = 4 Adjust baseline model. Explanation: All three activities fall under baseline period except Adjust baseline model. • Plan • Measure and collect data. • Develop a baseline model.
*1CMVP002	4	10	Answer = 4 All of the above Explanation: All three activities fall under Reporting period except Develop a baseline model. • Measure and collect data. • Adjust baseline model. • Report
*1CMVP003	4	10	Answer = 4 Both options 1 and 2 Explanation: During planning M&V activities • Document Baseline Energy • Plan and Coordinate Activities
*1CMVP004	4	10	Answer = 4 All of the above Explanation: Additional expertise is required. • Energy efficiency proposal evaluation • Engineering consulting • Utility rate structures and financial forecasting • Detailed metering systems • Certain forms of data and statistical analysis • Simulation modeling

iPQ.No	Correct Answer	Points	Explanation
*1CMVP005	4	10	Answer = 4 All of the above Explanation: All of the them • Are you an energy manager who wants to verify the effectiveness of your energy savings? • Are you a consultant who specializes in improving your customers' energy efficiency in their buildings and other facilities? • Are you the owner or manager of a building and are interested in learning how money saved on energy can help finance your next project? • Do you participate in the planning of industrial processes or the construction of new buildings?
*1CMVP006	2	10	Answer = 2 FALSE Explanation: Commissioning ensures that systems are designed, installed, functionally tested in all modes of operation, and capable of being operated and maintained in conformity with the design intent.
*1CMVP007	1	10	Answer = 1 Site inspection, data collection, detailed energy modeling, planning, installation, reporting, remote monitoring, and troubleshooting. Explanation: Measurement and verification are a formal and systematic process to quantify the impact and savings delivered by energy service products. M&V services can include site inspection, data collection, detailed energy modeling, planning, installation, reporting, remote monitoring, and troubleshooting.
*1CMVP008	4	10	Answer = 4 All of the above Explanation: • Without M&V services, it can be difficult to determine if your project is producing the power output and savings it is expected to. • Improves engineering and operations • Enhances the value of emission-reduction credits

iPQ.No	Correct Answer	Points	Explanation
*1CMVP009	4	10	Answer = 4 All of the above Explanation: M&V activities consist of some or all of the following: • Meter installation, calibration, and maintenance, • Data gathering and screening, • Development of a computation method and acceptable estimates, • Computations with measured data, and • Reporting, quality assurance, and third-party verification of reports.
*1CMVP010	3	10	Answer = 3 Both options 1 and 2 Explanation: Savings cannot be directly measured since they represent the absence of energy use. Instead, savings are determined by comparing measured use before and after the implementation of ECMs and making appropriate adjustments for changes in conditions.
*1CMVP011	3	10	Answer = 3 Both options 1 and 2 Explanation: M&V is very important since it: • Provides accurate feedback over time to ensure savings are sustained and highlights opportunities for improvement. • Aids facility managers in ensuring efficient maintenance and operations. • Documents the financial aspects of energy conservation improvements. • Provides the ability to weigh and reduce the risks of EPCs. • Is required when reporting energy savings for regulatory compliance or to participate in emissions trading.
*1CMVP012	1	10	Answer = 1 TRUE Explanation: Utility-sector energy efficiency programs save electricity and natural gas at less than half the cost of new energy supplies. —a America Council to ran Energy-Efficient Economy

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*1CMVP013	3	10	Answer = 3 Both options 1 and 2 Explanation: It is typically less expensive to source energy through efficiency measures than through the generation of new energy. Efficiency measures allow utilities to continue to meet customers' needs during periods of low demand. Some national and subnational (e.g., state or municipal) governments require utilities to sponsor energy efficiency programs.
*1CMVP014	4	10	Answer = 4 ISO 45001:2018 Explanation: ISO. 45001:2018 is HSE Standard There are numerous guidelines, standards, and protocols issued by governmental and professional organizations that define M&V and describe it as a process and set of concepts. For example: ISO 50015:2014 ASHRAE Guideline 14 FEMP's M&V Guidelines Abu Dhabi M&V Protocol Guidance Document SANS 50010:2018
*1CMVP015	3	10	Answer = 3 Both options 1 and 2 Explanation: Statistical models are probability models, and physical models are causal, deterministic, or mixed causal-deterministic-probability models applied to observable propositions. It is observations that turn probability into statistics. Statistical models attempt to identify correlations and other patterns in actual measured data. Physical models, also known as simulations, causal, physics-based, or first-principles models, try to represent the dynamics of underlying systems.

iPQ.No	Correct Answer	Points	Explanation
*1CMVP016	1	10	Answer = 1 TRUE Explanation: An assessment of a project's impact should be made to assure its energy-saving benefits are reasonable and conservative with due consideration to the level of statistical confidence in the estimation.
*1CMVP017	4	10	Answer = 4 All of the above Explanation: The M&V methodology's accuracy and cost should be evaluated as part of the project's development. Increased conservatism and an increase in the use of estimated values and assumptions based on sound engineering judgment should go hand in hand with accuracy trade-offs. Consideration of all reasonable factors that affect accuracy is a guiding principle of IPMVP.
*1CMVP018	1	10	Answer = 1 Option A: Retrofit Isolation Explanation: A measurement boundary should be drawn around equipment affected by the energy efficiency project to verify savings. Then, measurement requirements for the equipment within the boundary can be determined. Directly measuring key variables can reliably calculate demand or energy consumption. Option A: Retrofit Isolation, Key Parameter(s) Measurement is used.
*1CMVP019	2	10	Answer = 2 Option C: Whole Facility Explanation: If the purpose of reporting is to verify and/or help manage total facility energy performance or verify the savings from multiple EEMs with interactive effects, the meters measuring the supply of energy to the whole facility can be used to assess performance and savings. The measurement boundary, in this case, encompasses the whole facility. The approach used is Option C: Whole Facility

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*1CMVP020	3	10	Answer = 3 Option D: Calibrated Simulation Explanation: If the baseline or reporting period data are unreliable or unavailable (e.g., new construction), energy data from a calibrated simulation model can be applied for either a portion or all of the facility. The measurement boundary can be drawn accordingly. The approach used is Option D: Calibrated Simulation.
*1CMVP021	4	10	Answer = 4 All of the above Explanation: Baseline energy data consideration • Weather conditions can have a big impact on whole-building energy demand and consumption. Typically, a full year of monthly data is required to define a full operating cycle. If interval data (hourly or daily) are used, a full operating cycle may be captured in less than a year if the full range of weather conditions is included. • The energy consumption and demand of a compressed air system may only be governed by plant production levels, which vary on a weekly cycle. In this case, several weeks' worth of data may be all that is needed to define baseline performance across a full range of operating conditions. • The collection and documentation of static factors such as scheduled hours of operation can be critical to applying adjustments in the M&V reporting period.

iPQ.No	Correct Answer	Points	Explanation
*1CMVP022	4	10	Answer = 3 All of the above Explanation: Simulation programs acceptable for Option D should have the following characteristics: • Commercially available, supported, and documented. • Able to adequately model the project site and ECMs. • Able to be calibrated to an acceptable level of accuracy.
*1CMVP023	1	10	Answer = 1 TRUE Explanation: Option D is especially useful where a baseline does not exist (e.g., new construction or major building modification) or the factors responsible for savings are not easily measured (e.g., reduced solar gain and heat loss through new windows).
*1CMVP024	4	10	Answer = 4 All of the above Explanation: Many issues must be considered and addressed in developing a project-specific M&V plan using Option D. What are the common steps involved? • Use an experienced building modeling professional. • Determine the availability of utility bill data. • Determine whether hourly or monthly billing data are available and whether meters can be installed to collect hourly data.
*1CMVP025	4	10	Answer = 4 All of the above

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*1CMVP026	2	10	Answer = 2 FALSE Explanation: Even so, all parties to an energy savings performance contract (ESPC) must regard the baseline model as sensible or "accurate." This is the basic goal of M&V: that reasonable people can agree that the M&V process has been conducted with sound judgment.
*1CMVP027	4	10	Answer = 4 All of the above Explanation: • Use actual equipment performance data in the simulation models. • Specify spot measurements and short-term monitoring of key parameters for both the baseline and performance period models. • Use trend data to determine actual controls. • Specify the simulation program and version and the source of weather data used. • Obtaining weather data for the appropriate location and time period is an important step in calibrating any simulation model.
*1CMVP028	3	10	Answer = 3 Both options 1 and 2 Explanation: After the first year of performance there are two options to calculate verified savings: (1) calibrate the performance period model and subtract the results from the baseline model using the same conditions or (2) subtract measured utility data for the performance period from the results of the baseline model that was updated to actual conditions.
*1CMVP029	4	10	Answer = 4 All of the above Explanation: Site survey data may be needed beyond audit data: • Summarize major and typical plug loads for zone values. • Walls, windows, building orientation, and shading from nearby objects Infiltration rates are crucial but hard to measure. • Ventilation airflow rates affect energy use significantly.

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*1CMVP030	3	10	Answer = 3 Both options 1 and 2 Explanation: Simulation programs acceptable for Option D should have the following characteristics: • Commercially available, supported, and documented. • Able to adequately model the project site and ECMs. • Able to be calibrated to an acceptable level of accuracy. • Able to use actual weather data in hourly format.
*1CMVP031	2	10	Answer = 2 Contractor Explanation: The report documents the execution and results of the activities prescribed in the M&V plan (measurements, savings calculations) and reports the verified annual energy and cost savings. The report also describes operations and maintenance activities conducted during that performance period and identifies any items that may require additional follow-up. Each year during the performance period, typically one year after the anniversary of the project's acceptance, the contractor submits an annual report.
*1CMVP032	1	10	Answer = 1 After the commissioning activities have been completed, Explanation: After the commissioning activities have been completed, the post-installation verification activities defined in the M&V plan are conducted
*1CMVP033	1	10	Answer = 1 Commissioning Plan Explanation: The commissioning plan finalizes the commissioning approach outlined in the final proposal and addresses each ECM with specific steps that will be taken during the commissioning process.

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*1CMVP034	4	10	Answer = 4 All of the above Explanation: • The commissioning approach for each ECM is included in the ECM performance measurement section of the final proposal. • The commissioning approach outlines the expected commissioning activities and identifies the roles and responsibilities of the ESCO and the federal agency. • The project-specific commissioning plan is developed after the engineering design is finalized and the design and construction package have been approved by the agency.
*1CMVP035	1	10	Answer = 1 Option A:Retrofit Isolation with Key Parameter Measurement Explanation: Option A (Retrofit Isolation with Key Parameter Measurement) will be used to quantify the energy consumption savings associated with the lighting upgrades.
*1CMVP036	1	10	Answer = 1 Option A:Retrofit Isolation with Key Parameter Measurement Explanation: Option A (Retrofit Isolation with Key Parameter Measurement) will be used to quantify the energy consumption savings associated with the lighting controls.
*1CMVP037	4	10	Answer = 4 Option D: Calibrated Computer Simulation Explanation: Option D (Calibrated Simulation) will be used to quantify the energy consumption savings associated with improved building envelope. Option A will be used during the performance period of the contract.

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*1CMVP038	1	10	Answer = 1 Option A:Retrofit Isolation with Key Parameter Measurement Explanation: Option A is recommended for ongoing verification of the performance of this ECM.
*1CMVP039	4	10	Answer = 4 Option D: Calibrated Computer Simulation Explanation: Option D (calibrated simulation) will be used to quantify the energy consumption savings associated with the energy management control system (EMCS) controls. Option D is recommended due to the interactions between energy-consuming equipment when controls are implemented.
*1CMVP040	1	10	Answer = 1 Option A:Retrofit Isolation with Key Parameter Measurement Explanation: Option A will be used to validate ECM performance during the performance period through continuous measurement of selected key parameters.
*1CMVP041	1	10	Answer = 1 Option D is recommended due to the interactions between energy-consuming equipment when controls are implemented. Explanation: Option D is recommended due to the interactions between energy consuming equipment when controls are implemented.
*1CMVP042	1	10	Answer = 1 Option A:Retrofit Isolation with Key Parameter Measurement Explanation: Option A (Retrofit Isolation with Key Parameter Measurement) will be used to quantify the energy consumption savings associated with premium-efficiency motors. Option A is recommended for verification of the performance this ECM. Savings will be based on kilowatt reduction by installing a more efficient motor.
*1CMVP043	4	10	Answer = 4 Option D: Calibrated Computer Simulation Explanation: Option D (calibrated simulation) will be used to quantify the energy consumption savings associated with VAV measures. Option D is recommended due to the interactions between HVAC equipment and building loads.

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*1CMVP044	1	10	Answer = 1 Option A:Retrofit Isolation with Key Parameter Measurement Explanation: Option A will be used to validate ECM performance during the performance period through continuous measurement of selected key parameters.
*1CMVP045	1	10	Answer = 1 Option A:Retrofit Isolation with Key Parameter Measurement Explanation: Option A (Retrofit Isolation with Key Parameter Measurement) will be used to quantify the energy consumption savings associated with variable speed pumping. Option A is recommended due to the low number of parameters to be collected.
*1CMVP046	1	10	Answer = 1 Professional judgment Explanation: What distinguishes a CMVP is that a CMVP must exercise skilled professional judgment when conducting M&V.
*1CMVP047	1	10	Answer = 1 Option A:Retrofit Isolation with Key Parameter Measurement Explanation: Option A (Retrofit Isolation with Key Parameter Measurement) will be used to quantify the energy consumption savings associated with steam trap replacement.
*1CMVP048	3	10	Answer= 3 Both options 1 and 2 Explanation: The choice of M&V approach depends on various factors, including the type and number of retrofits being made, the complexity of the facility, and the availability of data.
*1CMVP049	4	10	Answer = 4 Option D: Calibrated Computer Simulation Explanation: Option D will be used to quantify the energy consumption savings associated with improved plant efficiency. Option A will be used to validate ECM performance during the performance period through continuous measurement of selected key parameters.

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*1CMVP050	1	10	Answer = 1 Option A:Retrofit Isolation with Key Parameter Measurement Explanation: Option A will be used to validate ECM performance during the performance period through continuous measurement of selected key parameters.
*1CMVP051	4	10	Answer = 4 All of the above Explanation: • An energy conservation measure (ECM) is put in place at a building by an energy service company (ESCO). • The building's energy efficiency gets better, which saves money for the building's owner. • The facility owner pays back the ESCO with the money saved on costs.
*1CMVP052	3	3	Answer = 3 Both options 1 and 2 Explanation: • This method compares actual performance observed during the reporting period to a prediction of "what would have happened" had the project not been implemented. • All Commissioning techniques rely on an approach called the counterfactual method.
*1CMVP053	1	10	Answer = 1 Which are typically 2–5% of projected annual savings. Explanation: Whether they are suggested or required, measurement and verification processes are worth much more than they cost.which usually make up 2–5% of the amount saved each year.

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*1CMVP054	4	10	Answer = 4 All of the above Explanation: Whether recommended or required, measurement and verification processes provide which of the following benefits well beyond their costs. • Allocate risks between the contractor and the customer. • Accurately assess energy savings and the persistence of savings for a project. • Reduce uncertainties to reasonable levels. • Aid in monitoring equipment performance • Identify additional savings. • Improve operations and maintenance (O&M)
*1CMVP055	3	10	Answer = 3 Both options 1 and 2 Explanation: A performance contract for a project in Dubai needs to adhere to the regulations of the local government while also taking into account financial factors like the cost of capital and the rates charged by local utilities. Additionally, it needs to take into account the region's technical characteristics, such as what kinds of energy resources are utilized there and what kinds of limitations are imposed by the local climate and geography.
*1CMVP056	1	10	Answer = 1 An energy efficiency program sponsored by a utility. Explanation: A program that is run by a utility company to promote energy efficiency.

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*1CMVP057	4	10	Answer = 4 All of the above Explanation: Utilities sponsor many energy efficiency programs for several reasons. • It is typically less expensive to source energy through efficiency measures than through the generation of new energy. • Efficiency measures allow utilities to continue to meet customers' needs during periods of high demand. • Some national and subnational (e.g., state or municipal) governments require utilities to sponsor energy efficiency programs.
*1CMVP058	4	10	Answer = 4 All of the above Explanation: • A utility or government agency may sponsor an initiative using funds that come from ratepayers or taxpayers. • An implementer is someone who helps get programs up and running to generate savings for end users. • The utility reports the savings to the regulating body and compensates the implementer for their work if the project is deemed a success.
*1CMVP059	1	10	Answer = 1 Generate end-use savings. Explanation: An implementer is someone who helps get programs up and running to generate savings for end users.
*1CMVP060	4	10	Answer = 4 All of the above Explanation: Common reasons for non-routine adjustments include: • Expansion or renovation of the facility • Addition or removal of equipment • Changes in usage

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*1CMVP061	1	10	Answer = 1 Professional judgment Explanation: In light of the fact that there is no single "right answer" for any given M&V project and that some degree of professional judgment is always required, guiding principles rather than technical rules have been developed.
*1CMVP062	1	10	Answer = 1 Deemed savings are predetermined estimates of the avoided energy use achieved by energy conservation measures. Explanation: Estimates that have been made beforehand of the amount of energy that will be saved as a result of the implementation of energy-saving measures are known as deemed savings.
*1CMVP063	1	10	Answer = 1 Operational Verification Explanation: Operational verification: the process of periodically verifying that the ECM is operating as intended through equipment inspection, review of operational logs, or other means.
*1CMVP064	1	10	Answer = 1 Whole Facility Explanation: Facility type is an important contextual consideration and can play a major role in determining the most appropriate approach.
*1CMVP065	4	10	Answer = 4 All of the above Explanation: Analyzing data samples to make predictions or inferences about a statistical population constitutes inferential statistics. Inferential statistics is a branch of statistics that employs analytical tools to draw conclusions about a population based on random samples. Inferential statistics is a branch of statistics that employs analytical tools to draw conclusions about a population based on random samples. The purpose of inferential statistics is to make population-wide generalizations. In inferential statistics, a sample statistic (e.g., the sample mean) is used to make inferences about a population parameter.

iPQ.No	Correct Answer	Points	Explanation
*1CMVP066	1	10	Answer = 1 Retrofit isolation and the whole facility Explanation: The application of the counterfactual method in most energy efficiency and energy management contexts can be divided into two primary approaches: retrofit isolation and whole facility
*1CMVP067	3	10	Answer = 3 Both options 1 and 2 Explanation: Options A–D are IPMVP and FEMP's M&V approaches.
*1CMVP068	3	10	Answer = 3 Both options 1 and 2 Explanation: Reasons that are commonly given for making adjustments that are not routine: • The facility is undergoing either an expansion or a renovation. • Alterations to or elimination of existing apparatus • Changes in usage
*1CMVP069	1	10	Answer = 1 Confidence interval and Value of the error at a certain confidence level. Explanation: The confidence interval, often known as the value of the error at a particular level of confidence, can be represented by the standard deviation.
*1CMVP070	1	10	Answer = 1 It is representative of the range of expected operating conditions. Explanation: The baseline period should be extensive enough that it is representative of the range of expected operating conditions.

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*1CMVP071	3	10	Answer = 3 Both options 1 and 2 Explanation: The objective of energy management is to achieve and maintain optimum energy procurement and utilization throughout the organization and to: - To minimize energy costs and waste without affecting production and quality. - To minimize environmental effects.
*1CMVP072	1		Answer = 1 \$13.30/GJ Explanation: $(\\$0.06/\text{kWh}) \times (277.8 \text{ kWh/GJ}) = (\\$16.67/\text{GJ})$ $= (\\$ X/\text{GJ}) \times (1/0.8)$ $X = \\$13.30/\text{GJ}.$
*1CMVP073	1	10	Answer = 1 375,000 J/s Explanation: Input = 300 kW x (1/0.8) = 375 kW = 375,000 J/s
*1CMVP074	4	10	Answer = 4 2.65% Explanation: From combustion chart EffOLD = 80.5% EffNEW = 82.7% % savings = (EffNEW – EffOLD)/EffNEW = (82.7 – 80.5)/82.7 = 2.65%
*1CMVP075	2	10	Answer =2 \$0.584/m² yr Explanation: $Q = UA \times 24 \times DD$ $= (1/2.64) \text{ W/m}^2.\text{C} \times 24 \text{ h/day} \times 2,500 \text{ C-day/yr}$ $\times 1/0.7 \times 0.0036 \text{ MJ/Wh} \times \\$0.005/\text{MJ}$ $= \\$0.584/\text{m}^2 \text{ yr}$

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*1CMVP076	4	10	Answer = 4 \$3,240/yr Explanation: kW saved = 196 fix x (0.285 kW/fix) - 140 fix x (0.185 kW/fix) = 30 kW Heating effect (30 kW) x (24 h/day) x (1/0.8) x (200 days/yr) x (3.6MJ/kWh) = 648,000 MJ/yr = 648 GJ/yr Added cost = (648 GJ/yr)(\$5/GJ) = \$3,240/yr
*1CMVP077	3	10	Answer = 3 Both Explanation: M&V is not just a collection of tasks conducted to help a project meet IPMVP requirements. Properly integrated, each M&V task serves to enhance and improve facility operation and maintenance of savings.
*1CMVP078	4	10	Answer = 4 IPMVP Option D Explanation: IPMVP Option D is useful in this case, because there is no energy performance data on the new part of the building. Option D allows for a simulation to be done so we can estimate the baseline and “avoided costs” from doing energy improvements.
*1CMVP079	1	10	Answer = 1 \$0.09000 per kWh. Explanation: A utility rate is an example of an exact number. If a local power company charges \$0.09 per kWh and Company X uses 725,691.0 kWh in one month, the utility bill would be \$43,541.46, not \$40,000, according to the rounding rule. This is due to the fact that the utility rate is precise; it can be represented as \$0.09000 per kWh.
*1CMVP080	3	10	Answer = 3 Both options 1 and 2

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*1CMVP081	1	10	Answer = 1 263 kWh Explanation: Adjusted baseline energy use (kWh) = $45 \times 90 \times 65/1000 = 263$ kWh																																																
*1CMVP082	1	10	Answer = 1 194 kWh Explanation: Post-retrofit energy use (kWh) = $45 \times 90 \times 48 / 1000 = 194$ kWh																																																
*1CMVP083	4	10	Answer = 4 All of the above																																																
*1CMVP084	3	10	Answer = 3 Both options 1 and 2																																																
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*1CMVP086	1	10	Answer = 1 20,000 Explanation: The cash flow detail for ten year duration is given below. <table border="1"> <thead> <tr> <th>Year</th><th>Retrofit cost</th><th>Cost of Energy & demand savings-Computed</th><th>Maintenance savings</th></tr> </thead> <tbody> <tr><td>0</td><td>32500</td><td>0</td><td>0</td></tr> <tr><td>1</td><td>0</td><td>21800</td><td>+2000</td></tr> <tr><td>2</td><td>0</td><td>21800</td><td>+2000</td></tr> <tr><td>3</td><td>0</td><td>21800</td><td>+2000</td></tr> <tr><td>4</td><td>0</td><td>21800</td><td>+2000</td></tr> <tr><td>5</td><td>0</td><td>21800</td><td>+2000</td></tr> <tr><td>6</td><td>0</td><td>21800</td><td>+2000</td></tr> <tr><td>7</td><td>0</td><td>21800</td><td>+2000</td></tr> <tr><td>8</td><td>0</td><td>21800</td><td>+2000</td></tr> <tr><td>9</td><td>0</td><td>21800</td><td>+2000</td></tr> <tr><td>10</td><td>0</td><td>21800</td><td>+2000</td></tr> </tbody> </table> The estimated savings in maintenance saving at the end of life of LED signs is Rs 20,000/-	Year	Retrofit cost	Cost of Energy & demand savings-Computed	Maintenance savings	0	32500	0	0	1	0	21800	+2000	2	0	21800	+2000	3	0	21800	+2000	4	0	21800	+2000	5	0	21800	+2000	6	0	21800	+2000	7	0	21800	+2000	8	0	21800	+2000	9	0	21800	+2000	10	0	21800	+2000
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*1CMVP087	1	10	Answer = 1 The basic aim of energy security for a nation is to reduce its dependency on the imported energy sources for its economic growth. Explanation: The primary objective of an energy security program for a country is to lessen that country's reliance on external energy sources for the expansion of its economy.
*1CMVP088	3	10	Answer =3 Both options 1 and 2
*1CMVP089	4	10	Answer = 4 All of the above.
*1CMVP090	2	10	Answer = 2 Shared savings performance contract
*1CMVP091	1	10	Answer = 1 Monitoring & Verification
*1CMVP092	3	10	Answer = 3 Both options 1 and 2 Explanation: An international qualification program for professionals developed by the AEE in cooperation with the Efficiency Valuation Organization (EVO)—the International Performance Measurement & Verification Protocol (IPMVP)—to develop and promote the use of standardized protocols, methods, and tools to quantify and manage performance risks and benefits associated with end-use energy efficiency, renewable energy, and water efficiency transactions. For people who desire to give trustworthy, accurate, and reliable measurement and verification reports accepted by government, industry, and accrediting authorities, the program provides a complete learning forum.
*1CMVP093	3	10	Answer = 3 Options A, B, or D

iPQ.No	Correct Answer	Points	Explanation
*1CMVP094	3	10	Answer = 3 Both options 1 and 2 Explanation: • There is a large interaction between the selected ECMs/ • Energy savings from the ECMs represent a large percentage of the building's total energy costs.
*1CMVP095	3	10	Answer = 3 Before any work was started on the ECM in any capacity. Explanation: Before any work was started on the ECM in any capacity.
*1CMVP096	3	10	Answer = 3 By adjusting both the baseline and the reporting period to a reference data set Explanation: By adjusting both the baseline and the reporting period to a reference data set.
*1CMVP097	4	10	Answer = 4 All of the above Explanation: Additional expertise is required. But a CMVP likely won't be an expert in all the skills necessary to perform every kind of M&V. Know when to bring in experts in areas such as... • Energy efficiency proposal evaluation • Engineering consulting • Utility rate structures and financial forecasting • Detailed metering systems • Certain forms of data and statistical analysis • Simulation modeling
*1CMVP098	1	10	Answer = 1 Baseline Model Explanation: Without a baseline model, a CMVP can't calculate avoided energy use.

iPQ.No	Correct Answer	Points	Explanation
*1CMVP099	4	10	Answer = 4 All of the above Explanation: M&V activities during maintenance period • Gather Data • Verify Savings • Report
*1CMVP100	4	10	Answer = 4 Verify Operations Explanation: Verify Operations is the only M&V activity during the installation of EEMs or ECMs