



*Entertainment Technician
Certification Program*

**ENTERTAINMENT TECHNICIAN CERTIFICATION PROGRAM
CANDIDATE HANDBOOK**

**CERTIFIED
ENTERTAINMENT ELECTRICIAN
PROGRAM**

EFFECTIVE FEBRUARY 2016

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The ETCP [and AMP] reserves the right to modify or revise, at any time and from time to time without notice, any and all aspects of the Entertainment Technician Certification Program including, without limitation, any policies, procedures, deadlines, charges and fees.

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All questions and requests for information about scheduling examinations should be directed to:

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*Entertainment Technician
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BECOME ETCP CERTIFIED

Become a standout in your craft and demonstrate your dedication to professional growth by becoming ETCP Certified. Show employers that you have the qualifications and skills that they require. ETCP certification promotes safety for technicians, performers and audiences, and provides validation and public recognition of your skills.

Personnel certification is the voluntary process by which a nongovernmental organization grants recognition to an individual who has demonstrated a high level of knowledge, skills, and abilities. Certification means that one has met specific eligibility requirements including training, experience and education, and passed a rigorous, comprehensive examination. Certification indicates a substantial professional commitment to the field and documents this expertise to employers, colleagues, and professional organizations.

Feasibility surveys of employers show seventy-nine percent would encourage employees or personnel working in their venues to seek certification in entertainment electrical skills. Establish your credibility and gain the confidence of employers and coworkers by achieving ETCP certification.

INTRODUCTION

This handbook provides information about the examination and application process to become an ETCP Certified Entertainment Electrician. It outlines the design and content of the examination and guides candidates through the entire process from application to examination. For your convenience, this handbook may also be downloaded from the ETCP website at <http://etcp.esta.org>.

ABOUT THE ETCP

ETCP is an industry-wide program of ESTA. Participating in the governance of the program are: ACTSAFE, Alliance of Motion Picture and Television Producers (AMPTP), Broadway Across America, The Broadway League, Canadian Institute for Theatre Technology (CITT), Cirque du Soleil, Disney Theatrical Productions, International Alliance of Theatrical Stage Employees (IATSE), International Association of Venue Managers (IAVM), InfoComm International, Live Nation, NBC Universal, Production Resource Group (PRG), TEA, United States Institute for Theatre Technology (USITT), and Walt Disney Parks and Resorts. For more ETCP information, please visit <http://etcp.esta.org>.

VISION STATEMENT

ETCP was created to develop a personnel certification program to the highest standards which recognizes those individuals who have demonstrated knowledge, skills and abilities in specific disciplines within the entertainment technology field. By providing a thorough, independent assessment of knowledge, skills, and abilities for entertainment technology disciplines, the Program seeks to enhance safety, reduce workplace risk, improve performance, stimulate training, and give due recognition to the professional skills of entertainment technicians.

INDEPENDENT TESTING AGENCY

ETCP has contracted with Applied Measurement Professionals, Inc. (AMP) to assist in the development, administration, scoring, and analysis of ETCP's certification examinations. AMP, located in the greater Kansas City area, is a leading provider of licensing and certification examinations for professional organizations.

NON-DISCRIMINATION POLICY

ETCP and AMP do not discriminate among candidates on the basis of race, color, creed, gender, religion, national origin, ancestry, disability, military discharge status, sexual orientation, or marital status.

ETCP CERTIFIED ENTERTAINMENT ELECTRICIAN

The intent of this Certified Entertainment Electrician Examination is to evaluate the competency of the upper third of electricians working in the entertainment industry. These positions typically involve liability issues, the health and safety of workers and audiences, and compliance with the electrical and other laws of the local area, including laws requiring performance by Qualified Personnel. They are the leads, supervisors, and managers of entertainment electrical work.

This person may perform work in locations such as (but not limited to): theatres, film/TV studios and on location, arenas/stadiums/sporting events, carnivals/fairs/festivals, circuses, cruise ships, industrial/corporate events, religious events/houses of worship, theme parks, touring concerts/theatre, and other places of public assembly throughout the United States and Canada.

This certification encompasses the installation, interconnection, safe use, and repair of all portable distribution; utilization of entertainment-industry-related electrical equip-

ment; and the safe use of all venue electrical equipment. Additionally, this certification encompasses the design, layout, and interconnection of portable electrical distribution equipment, including generation if necessary, as well as the safe connection of portable distribution feeders to fixed power sources. Applicants will be expected to know electrical theory and the safe installation and use of entertainment industry electrical equipment.

ABOUT THE EXAMINATIONS

The ETCP Certified Entertainment Electrician Examination is designed to test a well-defined body of knowledge representative of current professional practice in electrical work. Successful completion of a certification examination verifies broad-based knowledge in the discipline being tested.

The content of the ETCP Certified Entertainment Electrician Examination has been defined by a national job analysis study. The study involved surveying practitioners in the field to identify tasks that are performed routinely and are considered important to competent practice. The examination has been developed through a combined effort of qualified subject matter experts and testing professionals who have constructed the examination in accordance with the ETCP Certified Entertainment Electrician Examination content outline.

The ETCP Certified Entertainment Electrician Examination consists of 150 multiple-choice questions. Each question has four alternative answers (A, B, C, D), with one of those being the correct response. Candidates will be permitted three (3) hours to complete the examination. Those who are approved by the ETCP to sit for the examination and achieve a passing score will be awarded the designation of:

ETCP Certified Entertainment Electrician

This handbook provides specific information related to this examination. To apply, complete the application and send it along with all required supporting documents and the examination fee to ETCP. ETCP recommends that you keep copies of all materials and send all documentation by certified mail or other trackable delivery service. The handbook and all application forms can also be printed at <http://etcpesta.org>.

PREPARING FOR THE EXAMINATION

Your primary objective in preparing for the examination is to pass. Other objectives such as learning new material and reviewing old material are critical to this objective. Begin your study by developing a strategy for success.

A good study strategy includes preparation. To prepare, determine first what you need to learn, choose your study materials, and select a quiet, comfortable place that allows you to focus. Before you begin, check to make sure you have everything you need. Try to avoid interruptions for any reason.

Developing a study plan will allow you to learn the most as you study. Include setting goals in your study plan. Review what you have studied as often as possible. The more you review, the more you will retain.

WEB-BASED PRACTICE EXAMS

Fifty question web-based practice exams are available to provide candidates with a low cost, valuable tool for self-assessment. There is no application process for the practice exams; so any interested candidate can take the exam privately at home, at the office or on the road whenever it is most convenient. Score reports are provided to help candidates focus their studies. The exams are available for \$35 at www.goamp.com. Go to “Candidates” and then follow the menu to ETCP to choose one of the three exams.

EXAMINATION FEE

The fee for going through the application process and taking the examination for this qualification is:

ETCP Certified Entertainment Electrician \$650

Member Discount

A discount of \$100 is available to candidates who are either members or employees of a member of one of the following organizations:

Alliance of Motion Picture and
Television Producers (AMPTP)

Canadian Institute for Theatre
Technology (CITT)

International Alliance of Theatrical
Stage Employees (IATSE)

International Association of Venue
Managers (IAVM)

InfoComm International

The League of American Theatres
and Producers

ESTA

TEA

United States Institute for Theatre
Technology (USITT)

Note: You may not use multiple member discounts, a maximum of one \$100 discount may be used per examination. The applicant must provide verifiable documentary evidence of current membership such as a copy of the current membership certificate or card with the application.

Examination Fees Summary

	Non-Member	Member
Electrical Examination (U.S. & Canada)	\$650	\$550
Electrical Examination (outside U.S. & Canada)	\$700	\$600
2nd ETCP Exam within 1 Year (U.S. & Canada)	\$450	\$350
2nd ETCP Exam within 1 Year (outside U.S. & Canada)	\$500	\$400
Retake Fee Within 2 Years (U.S. & Canada)	\$225	\$175
Retake Fee Within 2 Years (outside U.S. & Canada)	\$275	\$225

ELIGIBILITY REQUIREMENTS

A candidate must be at least 21 years of age. ETCP uses a point system to determine eligibility to sit for examinations. A candidate must have 30 points to apply for the ETCP Entertainment Electrician Examination. This table lists the points awarded for various work experience, training (i.e., internships or apprenticeships), licensure, and education. Points can be earned through work experience alone or through a combination of the above. If you have any questions concerning your eligibility to sit for the exam, contact etcp@esta.org or call 212-244-1505.

Qualification Points Table

Type of Experience	Points	Documentation Required
Entertainment Electrical Work Experience	1 for each 100 hours (100 hour min. increment) 1000 hours (10 points) in a year is equivalent to 20 hours per week	A completed Employment History form containing contact information sufficiently detailed to allow verification by ETCP. (Experience related to an academic degree cannot be used as professional work experience.)
Internship	1 for each 200 hours with a maximum of 5 points.	A completed Applicant Evaluation form by the official representative of the internship is required.
Apprenticeship	1 for each 100 hours with a maximum of 10 points	A completed Applicant Evaluation form by the official representative of the apprenticeship is required.
<i>Notes: Licensure credits may contribute a maximum of 10 points.</i>		
Journeyman Electrician's License	7	Verifiable documentary evidence such as a copy of the current license is required.
Master Electrician's License	10	Verifiable documentary evidence such as a copy of the current license is required.
<i>Notes: Education credits may contribute a maximum of 10 points. All degrees must be achieved from an accredited institution.</i>		
Associates Degree	2	An official transcript is required from the granting institution, photocopies are not accepted.
Associates Degree in entertainment technology field	3	An official transcript is required from the granting institution, photocopies are not accepted.
Undergraduate Degree	3	An official transcript is required from the granting institution, photocopies are not accepted.
Undergraduate Degree in entertainment technology field	7	An official transcript is required from the granting institution, photocopies are not accepted.
Graduate Degree	1	An official transcript is required from the granting institution, photocopies are not accepted.
Graduate Degree in entertainment technology field	3	An official transcript is required from the granting institution, photocopies are not accepted.

APPLICATION

Your completed application form and all necessary supporting documentation should be submitted to ETCP (*not* to AMP) and will be evaluated to confirm that your qualifications meet or exceed the requirements to take the examination. If your application is rejected for any reason, including, without limitation, incomplete, inaccurate, or unverifiable information then your application fee, less a \$200 administration fee, will be refunded.

EXAMINATION ADMINISTRATION

The examinations are delivered by computer at over 190 AMP Assessment Centers geographically located throughout the United States, Canada, and select international sites. There are no application deadlines for computer based testing and a candidate may submit an application and fee at any time. The examinations are administered by appointment only, Monday through Friday at 9:00 am and 1:30 pm. Candidates are scheduled on a first-come, first-served basis.

HOLIDAYS

The examinations are not offered on the following holidays:

- New Year's Day**
- Martin Luther King Day**
- Presidents' Day**
- Good Friday**
- Memorial Day**
- Independence Day (July 4)**
- Labor Day**
- Columbus Day**
- Veterans Day**
- Thanksgiving (and following Friday)**
- Christmas Eve Day**
- Christmas Day**
- New Year's Eve Day**

REGISTERING FOR AN EXAMINATION

Candidates should ensure that the ETCP Examination application has been properly completed and that the information provided is accurate. Your careful attention will enable prompt and efficient processing. Candidates will not be able to schedule an examination time with AMP until receiving written notification that the application has been accepted by ETCP. ETCP will send written notification to registered candidates with examination scheduling procedures. Examinations must be scheduled within one year of the date of the notification letter.

REFUNDS

Candidates must submit the appropriate fee with the ETCP application. Payment may be made by credit card (Visa, MasterCard, or American Express), check, or money order made payable to ETCP. Examination fees are not transferable.

Candidates requesting to withdraw from an examination after submitting an application, must do so within one year of the date of acceptance of the application. The examination fee will be refunded less the \$200 administration charge

Credit card transactions or checks that are declined will be subject to a \$25 handling fee.

SCHEDULING AN EXAMINATION

Upon acceptance, candidates have one year to schedule and complete their initial examination. Should a candidate need an extension due to extenuating circumstances, he/she must submit a written request to the ETCP Appeals Committee 60 days before the deadline stated in the acceptance letter. There are two ways to schedule an appointment for the examination.

Schedule Online:

The candidate may schedule a testing appointment online at any time by using AMP’s online application/scheduling service. To use this service, follow these easy steps:

Navigate in your browser to www.goAMP.com and select “Candidates.”

Follow the simple, step-by-step instructions to select your examination program and register for an examination.

OR

Telephone Scheduling:

Call AMP at (888) 519-9901 to schedule a testing appointment. This toll-free number is answered from 7:00 am to 9:00 pm (Central Time) Monday through Thursday, 7:00 am to 5:00 pm on Friday, and 8:30 am to 5:00 pm on Saturday.

When scheduling an examination, be prepared to confirm a location and a preferred date and time for testing. When you contact AMP to schedule an examination appointment, you will be notified of the time to report to the center. Please make a note of it because you will NOT receive an admission letter.

If you contact AMP by 3:00 pm Central Time on...	Depending on availability, your examination may be scheduled as early as...
Monday	Thursday
Tuesday	Friday
Wednesday	Monday
Thursday	Tuesday
Friday	Wednesday

If special accommodations are being requested, submit the Request for Special Examination Accommodations form included in this handbook prior to contacting AMP. To schedule your examination, contact AMP at (888) 519-9901.

ASSESSMENT CENTER LOCATIONS

AMP Assessment Centers have been selected to provide easiest accessibility to the most candidates in all states and major metropolitan areas. AMP Assessment Centers are typically located in H&R Block offices. A current listing of AMP Assessment Centers, including addresses and driving directions, may be viewed at AMP’s website located at www.goAMP.com. Specific address information will be provided when a candidate schedules an examination appointment.

SPECIAL ARRANGEMENTS FOR CANDIDATES WITH DISABILITIES

ETCP and AMP comply with the Americans with Disabilities Act and strive to ensure that no individual with a disability is deprived of the opportunity to take the examination solely by reason of that disability. AMP will provide reasonable accommodations for candidates with disabilities.

Wheelchair access is available at all Assessment Centers. Candidates with visual, sensory or physical disabilities that would prevent them from taking the examination under standard conditions may request special accommodations and arrangements. To request special accommodations, complete the Request For Special Examination Accommodations form, provide documentation from a medical professional dated within the last five years, and submit with your application and fee at least 45 business days prior to your desired testing date. Please inform AMP of your need for special accommodations when calling to schedule your examination.

TELECOMMUNICATION DEVICES FOR THE DEAF

AMP is equipped with Telecommunication Devices for the Deaf (TDD) to assist deaf and hearing-impaired candidates. TDD calling is available 8:30 am to 5:00 pm (CST) Monday through Friday at (913) 895-4637. This TDD phone option is for individuals equipped with compatible TDD machinery.

EXAMINATION APPOINTMENT CHANGES

A candidate may reschedule an examination appointment at no charge once by calling AMP at (888) 519-9901 at least two business days prior to the scheduled testing session. (See table below.)

See page 10 for observed holidays.

If the examination is scheduled on...	To reschedule the examination AMP must be contacted by 3:00pm Central Time the previous...
Monday	Thursday
Tuesday	Friday
Wednesday	Monday
Thursday	Tuesday
Friday	Wednesday

FAILING TO REPORT FOR AN EXAMINATION OR CANCELLATIONS

Unless an Emergency Waiver (see below) is granted, a candidate will incur an additional \$150 cancellation and rescheduling fee under any of the following circumstances:

The candidate wishes to reschedule an examination but fails to contact AMP at least two business days prior to the scheduled testing session;

The candidate wishes to reschedule a second time;

The candidate appears more than 15 minutes late for an examination; or

The candidate fails to report for an examination appointment.

The candidate must pay the \$150 fee and reschedule the examination within one year or all fees will be forfeited and the application will be cancelled.

EMERGENCY WAIVER

Candidates who are unable to take the examination on the scheduled date may request an emergency waiver from ETCP. This waiver will allow the candidate to reschedule the examination appointment to a future date without penalty. Waivers may be granted for the following reasons:

Disaster resulting in an officially declared “state of emergency;”

Death of an immediate family member within 14 calendar days prior to the examination date. Copy of death certificate or obituary must be provided in order for the cancellation and rescheduling fee to be waived; or

Illness or injury. A doctor’s verification may be required.

Please contact ETCP if you have questions or concerns about obtaining an emergency waiver.

INCLEMENT WEATHER, POWER FAILURE OR EMERGENCY

In the event of inclement weather or unforeseen emergencies on the day of an examination, AMP will determine whether circumstances warrant the cancellation, and subsequent rescheduling, of an examination. The examination will usually not be rescheduled if the Assessment Center personnel are able to open the Assessment Center. If power to a testing center is temporarily interrupted during an administration, your examination will restart where you left off and you may continue the examination.

Candidates may contact AMP's Weather Hotline at (913) 895-4618 (24 hours/day) prior to the examination to determine if AMP has been advised that any Assessment Centers are closed. Every attempt is made to administer the examination as scheduled; however, should an examination be cancelled at an Assessment Center, all scheduled candidates will receive notification following the examination regarding rescheduling procedures.

TEST CONTENT

The three-hour 150 question examination is designed to assess the candidate's knowledge of electrical practice. The examination is developed by ETCP. A group of experts drawn from a wide variety of work environments and geographical areas write the examination questions. For a list of these Subject Matter Experts see page 25. The examination consists of four-option, multiple-choice questions written at three different cognitive levels: recall, application, and analysis (see following table).

These levels represent an organized way to identify the processes that practitioners utilize on the job. A description of the examination content follows on page 14.

1 Recall: The ability to recall or recognize specific information is required.

2 Application: The ability to comprehend, relate or apply knowledge to new or changing situations is required.

3 Analysis: The ability to analyze and synthesize information, determine solutions and/or evaluate the usefulness of a solution is required.

NON-SCORED ITEMS

The examination contains 15 non-scored extra questions that are being pretested for use in future versions of the examinations. Pretesting questions allows examination committees to collect meaningful statistics about new questions that may appear as scored questions on future examinations. With pretesting methodology, examinees are ensured their scores are the result of sound measurement practices and that scored questions are reflective of current practice.

To keep the credentialing examinations secure and reflective of current practice, new questions must continuously be developed and introduced in versions of the examination. Pretesting is an accepted psychometric practice and it assures candidates receive immediate scores using only previously used questions.

EXAMINATION CONTENT OUTLINE

Examination Topic

Number of Questions

1. ELECTRICAL SKILLS	70
A. APPLY ELECTRICAL THEORY	10
1. Calculate formulas using electrical principles (e.g., Ohm's law, power formula, horsepower to amperage calculations, mathematical use to find unknown values)	
2. Calculate formulas using alternating current theory and application (e.g., three-phase systems, power factor, harmonics, phase cancellation)	
3. Apply operational theory of dimmers (e.g., forward/reverse phase-controlled, transistorized, sine wave)	
4. Apply operational theory of basic electronics (e.g., fuse identification, stepper motor, transistors, capacitors)	
5. Apply operational theory of power supplies (e.g., linear, switch-mode)	
6. Perform operations and procedures with electrical metering tools - multimeter (e.g., Volts, Amps, Ohms), ground tester	
7. Perform operations and procedures with electrical metering tools - DMX512 tester, network/Ethernet tester	
B. HANG/RIG OVERHEAD EQUIPMENT	8
1. Calculate weight distributions of electrical equipment (e.g., luminaires, dimmers, projectors/video, special effects, cable)	
2. Specify equipment hanging techniques (e.g., ropes, motors, clamps, chain, trusses, counterweight systems, lifts, safety systems)	
C. SET UP ELECTRICAL SYSTEMS	15
1. Portable power distribution systems (e.g., dimmer and relay racks, power distribution units, motor control centers, audio, projection/video systems)	
2. Portable power generators/transformers	
3. Utilization equipment (e.g., luminaires, video projection, audio, automation, special effects)	
4. Branch circuit wiring	
5. Feeder wiring (e.g., feeder cables: bare-end; single-pole locking connector)	
6. Safety ground/bonding connections	
7. Set piece wiring (e.g., practical fixtures)	
8. Specialized environmental applications (e.g., weather protection, damp/wet locations, GFCI protection)	
D. SET UP CONTROL SYSTEMS	10
1. Consoles, preset boards, and computers	
2. Equipment addressing (e.g., scrollers, dimmers, moving lights)	
3. Network systems equipment (e.g., ethernet switches and routers, nodes, POE devices, wireless network security)	
4. DMX512/RDM distribution systems (e.g., opto-splitters, mergers, terminators, RDM)	
5. Wireless data transmission systems (e.g., DMX512, Ethernet)	
6. Other advanced protocols (e.g., sACN, Artnet, RDM)	
E. ASSEMBLE/INSTALL ELECTRICAL EQUIPMENT	10
1. Power connectors	
2. Control cables (e.g., Ethernet, DMX512, audio)	
3. Terminals (e.g., screw, spring-loaded, crimp)	

4.	Portable extension cords	
5.	Portable power feeder cables	
6.	Multi-cables (e.g., 19-pin connectors)	
7.	Distribution equipment	
8.	Utilization equipment (e.g., luminaires, video/projection, audio, automation/motion control, special effects, data/networks systems)	
F.	OPERATE ENTERTAINMENT ELECTRICAL EQUIPMENT	7
1.	Consoles, conventional and moving lights	
2.	Followspot	
3.	Effects machine (e.g., hazer, bubble, fans)	
4.	Motor controls	
5.	Luminaire focusing	
6.	Luminaire accessories	
G.	MAINTAIN/TROUBLESHOOT ELECTRICAL EQUIPMENT	10
1.	Luminaires and accessories	
2.	Dimming and relay equipment	
3.	Power distribution equipment	
4.	Electronic equipment (e.g., moving lights, consoles, network systems)	
5.	Special effects (e.g., fog/haze, water, snow, strobes)	
6.	Re-lamp/optimize luminaires (e.g., incandescent, sealed arc lamps, xenon)	
2.	REGULATIONS, CODES, AND LIFE SAFETY	35
A.	ENSURE COMPLIANCE WITH LOCAL, STATE/PROVINCIAL, AND NATIONAL LAWS, CODES, STANDARDS, AND PERMITS	15
1.	NFPA 70 National Electrical Code (US) / Canadian Electrical Code (Canada)	
2.	NFPA 70E Standard for Electrical Safety in the Workplace (US) / CSA Z-462 (Canada)	
3.	OSHA (US) / OHSA (Canada)	
4.	ESTA/ANSI standards	
5.	ESTA and Equity fog/smoke guidelines	
6.	Listings (e.g., UL and UL White Book, ETL, CSA)	
7.	Others by Authority Having Jurisdiction (AHJ) (e.g., Life Safety Code - NFPA 101, building codes)	
B.	FOLLOW SAFETY PROCEDURES	20
1.	Electrical Safety	
a.	Shock prevention	
b.	Systems start up/shut down	
c.	Lock-out/tag-out	
d.	Working with “live” power	
e.	Arc blast/flash safety	
f.	Fire prevention and flammability mitigation	
g.	HazMat procedures (e.g., handling and documentation of asbestos insulation, mercury lamps and switches, and other)	
2.	Use personal protective equipment	
a.	Electrical (e.g., voltage rated gloves, arc rated clothing)	

- b. Fall protection (e.g., harness, rope grab, lifeline, anchor points)
 - c. Hearing (e.g., earplugs, noise-cancelling headsets)
 - d. Sight (e.g., facemask, safety goggles)
 - e. Respiratory (e.g., particle mask, respirator)
3. Emergency safety
- a. Perform basic fire fighting skills (e.g., fire extinguisher usage)
 - b. Perform basic first aid procedures
 - c. Perform basic CPR/AED procedures
 - d. Develop emergency evacuation plan (e.g., exits, EMS, emergency lighting)

3. ENTERTAINMENT ELECTRICAL SYSTEMS PLANNING 45

A. DETERMINE POWER REQUIREMENTS 15

- 1. Nature of loads (e.g., lighting, audio, video/projection, critical safety equipment, motors, harmonics, inrush current, power factor, automation equipment)
- 2. Voltage and frequency
- 3. AC/DC
- 4. Amperage and balancing of phase/loads
- 5. Required load diversity
- 6. Tap rules
- 7. Phase (e.g., single, three-phase)
- 8. Grounding (e.g., isolated, equipment, technical, bonding)
- 9. Means of disconnect
- 10. UPS and backup power systems
- 11. GFCI
- 12. Overcurrent protection
- 13. Fault current coordination (e.g., SCCR)

B. DETERMINE THE SUITABILITY OF EXISTING PERMANENT POWER SUPPLY SOURCES 10

- 1. Service capacity (e.g., building service, overcurrent protection, company switch, available fault current)
- 2. Physical adequacy of proposed tie-in panel(s) - temporary tie-in means (e.g., lugs, bus bars, sister lugs)
- 3. Physical adequacy of proposed tie-in panel(s) - permanent connection means (e.g., locking single pole connectors, pin and sleeve connectors, power lock style connectors)

C. DETERMINE SPECIFICATIONS 12

- 1. Transformers (e.g., K-Ratings, harmonic-mitigating)
- 2. Portable power generators (e.g., capacity, voltage)
- 3. Portable power feeder cable systems
- 4. Branch circuit wiring
- 5. Overcurrent protection
- 6. GFCI protection
- 7. Bonding and ground schemes
- 8. Lower voltage power wiring (e.g., LED fixtures, color changers)
- 9. Control, communication, and data distribution (e.g., DMX512, Ethernet, analog, wireless)

- 10. Systems to suspend equipment/cables (e.g., rigging, strain reliefs, safeties, weight loads)
- 11. Cable management systems (e.g., reels, trays, picks, pantographs)
- 12. Special procedures/safety protocols/risk analysis documents

D. DOCUMENTATION

8

- 1. Interpret diagrams/plans (e.g., lighting plots/maps, control/riser, electrical single-line, electronic schematics)
- 2. Create equipment lists (e.g., shop orders, hookups)
- 3. Administer budget, inventory, crew schedules

TOTAL QUESTIONS

150

SAMPLE EXAMINATION QUESTIONS

Following are sample questions in the same style and similar content as will be on your examination. Use the sample questions to verify your understanding of the topics in the examination. Answers are provided below for the sample questions.

- 1. Four 50W, 12V MR16 lamps are to be connected to a 48V transformer. Which of the following best describes the current required from the transformer?**

(Content Outline 1.A.1)

- A. 1A
- B. 4A
- C. 8A
- D. 16A

- 2. Why does the voltage across two 120V legs on the secondary side of a delta/wye transformer equal 208V?**

(Content Outline 1.A.2)

- A. voltage drop
- B. phase offset
- C. eddy currents
- D. transformer derating

- 3. It is necessary to open a piece of electrical equipment and work on it. Appropriate Personal Protective Equipment is not available. Which of the following procedures is required by OSHA/OHSA electrical codes?**

(Content Outline 2.A.2)

- A. take extra care when working on a live open panel by being careful not to touch any live parts
- B. lock-out and tag-out just the circuit being worked on so as to not disrupt the operation of the rest of the circuitry in the panel
- C. make sure the circuit breaker is off and tape a sign to the panel telling others not to turn the circuit on until you are done
- D. lock-out and tag-out all sources of energy to the panel before the equipment is opened

Answers: 1:B, 2:B, 3:D

TAKING THE EXAMINATION

Your examination will be given by computer at an AMP Assessment Center. You do not need any computer experience or typing skills to take your examination. On the day of your examination appointment, report to the Assessment Center no later than your scheduled examination time. Look for the signs indicating AMP Assessment Center Check-in. **A CANDIDATE WHO ARRIVES MORE THAN 15 MINUTES AFTER THE SCHEDULED TESTING TIME WILL NOT BE ADMITTED.**

IDENTIFICATION

To gain admission to the Assessment Center, you need to present two forms of identification, one with a current photograph. Both forms of identification must be current and include the candidate's current name and signature. The candidate will be required to sign a roster for verification of identity.

Acceptable forms of photo identification include a current driver's license with photograph, a current state identification card with photograph, a current passport, or a current military identification card with photograph. Employment ID cards, student ID cards and any type of temporary identification are NOT acceptable as the primary form of identification.

YOU MUST PRESENT THE PROPER IDENTIFICATION TO GAIN ADMISSION TO THE ASSESSMENT CENTER. Failure to provide appropriate identification at the time of the examination is considered a missed appointment. There will be no refund of your testing fee.

ITEM TO BRING

In addition to the identification mentioned above you will need to bring the following item with you for the examination:

Calculator

Calculations may be required on some examination questions. Only silent, non-programmable calculators without paper-tape printing capability are permitted during testing. Calculators will be checked for conformance with this regulation before candidates are allowed admission to the Assessment Center.

SECURITY

ETCP and AMP maintain examination administration and security standards that are designed to assure that all candidates are provided the same opportunity to demonstrate their abilities. The Assessment Center is continuously monitored by audio and video surveillance equipment for security purposes.

The following security procedures apply during the examination:

Examinations are proprietary. No cameras, notes, tape recorders, personal digital assistants (PDAs), pagers, or cellular phones are allowed in the examination room.

No guests, visitors, or family members are allowed in the examination room or reception areas.

No personal items, valuables, or weapons should be brought to the Assessment Center. Only keys and wallets may be taken into the examination room and AMP is not responsible for items left in the reception area.

EXAMINATION TIME LIMIT

A maximum of three (3) hours is allocated for candidates to take the examination. Candidates may wear a watch to help pace themselves if they so desire. The examination will be given only on the published examination date and time for which you registered.

Please inform the examination proctor if you need to leave the room for any reason during the examination. You will not be allowed additional time to make up any time lost while you are out of the room.

EXAMINATION RESTRICTIONS

The following rules will be strictly applied during your examination.

No personal belongings except calculator and scale rule will be allowed in the Assessment Center. Pencils will be provided during check-in.

You will be provided with scratch paper to use during the examination. You must return the scratch paper to the supervisor at the completion of testing, or you will not receive a score report. No documents or notes of any kind may be removed from the examination room.

No questions concerning the content of the examination may be asked during the examination.

Eating, drinking or smoking will not be permitted in the Assessment Center.

You may take a break whenever you wish, but you will not be allowed additional time to make up for time lost during breaks.

MISCONDUCT

Individuals who engage in any of the following conduct may be dismissed from the examination; their scores will not be reported and examination fees will not be refunded. Examples of misconduct are when a candidate:

Creates a disturbance, is abusive, or otherwise uncooperative;

Uses electronic communications equipment such as pagers, cellular phones, or PDAs;

Gives or receives help or is suspected of doing so;

Attempts to record examination questions or make notes;

Attempts to take the examination for someone else; or

Is observed with notes, books, or other aids.

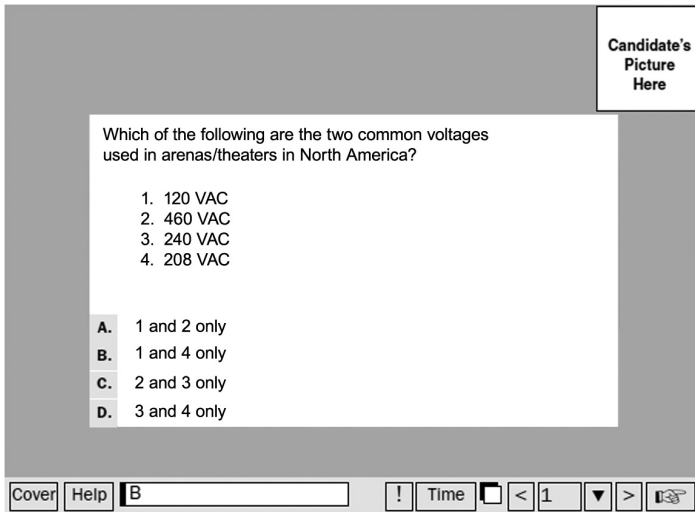
COPYRIGHTED EXAMINATION QUESTIONS

All examination questions are the copyrighted property of ESTA. It is forbidden under federal copyright law to copy, reproduce, record, distribute, or display these examination questions by any means, in whole or in part. Doing so may subject you to severe civil and criminal penalties.

PRE-EXAMINATION

After your identification has been confirmed, you will be directed to a testing station. You will be instructed on-screen to enter your identification number. Your photograph will be taken and will remain on screen throughout your examination session. This photograph will also print on your score report.

Example Question on Screen



Prior to attempting the examination, you will be given the opportunity to practice taking an examination on the computer. When you are comfortable with the computer testing process, you may quit the practice session and begin the timed examination.

TIMED EXAMINATION

Following the practice examination, you will begin the actual examination. Before beginning, instructions for taking the examination are provided on-screen.

The computer monitors the time you spend on the examination. The examination will terminate if you exceed the time allowed. You may click on the "Time" box in the lower right-hand corner of the screen or select the Time key to monitor your time. A digital clock indicates the time remaining for you to complete the examination. The Time feature may be turned off during the examination.

Only one examination question is presented at a time. The question number appears in the lower right hand corner of the screen.

Choices of answers to the examination question are identified as A, B, C, or D. You must indicate your choice by either typing in the letter in the response box in the lower left hand of the computer screen or clicking in the option using the mouse. To change your answer, enter a different option by pressing the A, B, C, or D key or by clicking on the option using the mouse. You may change your answer as many times as you wish during the examination time limit.

To move to the next question, click on the forward arrow (>) in the lower right portion of the screen or select the NEXT key. This action will move you forward through the examination question by question. If you wish to review any question or questions, click the backward arrow (<) or use the left arrow key to move backward through the examination.

A question may be left unanswered and answered at any time during the examination session. Questions may also be bookmarked for later review by clicking in the blank square to the right of the Time button. Click on the hand icon or select the NEXT

key to advance to the next unanswered or bookmarked question on the examination. To identify all unanswered and bookmarked questions, repeatedly click on the hand icon or press the NEXT key. When the examination is completed, the number of examination questions answered is reported. If not all questions have been answered and there is time remaining, return to the examination and answer those questions. Be sure to provide an answer for each examination question before ending the examination. There is no penalty for guessing.

CANDIDATE COMMENTS

During the examination, online comments may be provided for any question by clicking on the button displaying an exclamation point (!) to the left of the Time button. This opens a dialogue box where comments may be entered. Comments will be reviewed, but individual responses will not be provided.

FOLLOWING THE EXAMINATION

After completing the examination, candidates are asked to complete a short evaluation of their testing experience. Scores are reported in written form only, in person or by U.S. mail. Scores are not reported over the telephone, by electronic mail or by facsimile.

Your score report will indicate a “pass” or “fail.” Additional detail may be provided in the form of raw scores by major content category. A raw score is the number of questions you answered correctly. Your pass/fail status is determined by your raw score.

PASS/FAIL SCORE DETERMINATION

The methodology used to set the minimum passing score is the Angoff method, applied during the performance of a Passing Point Study by a panel of experts in the field. The experts evaluate each question on the examination to determine how many correct answers

are necessary to demonstrate the knowledge and skills required to pass the examination. Your ability to pass the examination depends on the knowledge and skills you display, not on the performance of other candidates.

Passing scores vary slightly for each version of the examination. To ensure fairness to all candidates, a process of statistical equating is used. This involves selecting an appropriate mix of individual questions for each version of the examination that meet the content distribution requirements of the examination content blueprint. Because each question has been pretested, a difficulty level can be assigned. The process then considers the difficulty level of each question selected for each version of the examination, attempting to match the difficulty level of each version as closely as possible. To assure fairness, slight variations in difficulty level are addressed by adjusting the passing score up or down, depending on the overall difficulty level statistics for the group of scored questions that appear on a particular version of the examination.

SCORES CANCELLED OR WITHHELD BY ETCP OR AMP

ETCP and AMP are responsible for the validity and integrity of the scores they report. On occasion, occurrences such as computer malfunction or misconduct by a candidate may cause a score to be suspect. ETCP and AMP reserve the right to void or withhold examination results if, upon investigation, violation of its regulations is discovered.

In addition, the ETCP Council reserves the right to periodically withhold examination scores to conduct a review for quality assurance. You will be notified by ETCP if your examination scores will be temporarily withheld for any reason.

IF YOU PASS THE EXAMINATION

Candidates who pass the examination will receive:

A certificate from the ETCP detailing your qualification as an ETCP Certified Entertainment Electrician

A credit-card sized ETCP Certified Entertainment Electrician identification card with your photograph

A pin, patch, and sticker identifying you as an ETCP Certified Entertainment Electrician

IF YOU DO NOT PASS THE EXAMINATION

Candidates who do not pass an ETCP Examination may re-register with ETCP for the same examination twice more within two years without submitting a new application and supporting documents. The full retake fee of \$200 (\$150 for members - see Examination Fees on Page 8), is payable for each re-registration along with a signed letter of intent. If the candidate is not successful in these three attempts, he/she must wait one year before reapplying and the full application and fee must be submitted at that time.

CONFIDENTIALITY

Information about candidates and their examination results is considered confidential. Studies and reports concerning candidates will contain no information identifiable with any candidate, unless authorized by the candidate.

DUPLICATE SCORE REPORT

Candidates may purchase additional copies of their results at a cost of \$25 per copy. Requests must be submitted to AMP, in writing. The request must include the candidate's name, examination identification number, mailing address, telephone number, date of examination, and examination taken. Submit

this information with the required fee payable to AMP in the form of a money order or cashier's check. Duplicate score reports will be mailed within approximately two weeks after receipt of the request and fee.

ETCP DISCIPLINARY POLICY

When a person applies for ETCP certification, he/she agrees to abide by the Code of Ethics and Professional Conduct listed herein (or in subsequent revisions). If someone believes that an ETCP Certified Entertainment Technician has not abided by one or more of the "Code of Ethics and Professional Conduct" (Page 24), he/she can submit a complaint in writing outlining which standards were violated along with documentation of the claim. Complaints will be reviewed within 120 days.

APPEAL POLICY

Within 30 days of the date of the notification letter informing the candidate of a negative determination (rejection of application or failed examination), the candidate may appeal by submitting a written explanation of the reason for refuting the negative determination. All materials must be submitted in writing to ETCP, 630 Ninth Avenue, Suite 609, New York, NY 10036.

Candidates will be notified in writing of receipt of their appeal. Candidates will be informed of their appeal status in writing after a decision has been reached. All appeal decisions shall be made within 120 days. Appeal results will not be available by telephone.

REGRADE POLICY

Within 30 days of the date of the notification letter informing the candidate of a failed examination, the candidate may request his or her examination be regraded for a \$25 administrative fee payable to ETCP. Requests must be submitted in writing to ETCP, 630 Ninth Avenue, Suite 609, New York, NY 10036.

RENEWAL POLICY

Continued training and professional development activities are essential in the changing entertainment technology environment. Therefore, to maintain the ETCP certification, a Certified Entertainment Electrician must accumulate 40 renewal credits of continued training/professional development OR retake the certification examination and accumulate a minimum of 10 renewal credits of continued training/professional development over the 5 year period following the examination - see table below. Documentation of these credits must be submitted along with the renewal fee and approved every 5 years from the date of initial certification.

Renewing Your Certification

Type of Experience	Renewal Credits	Maximum Credits
Entertainment Electrical Work Experience	1 renewal credit per 40 hours of documented experience. Experience must be documented with (but not limited to) dates of work, supervisors' names and contact information, location, and type of work.	30
Attending ETCP Recognized Training Course	1 renewal credit per credit hour (See http://etcp.esta.org for information on recognized courses.)	30
Attending Course Taught by an ETCP Recognized Trainer	1 renewal credit per credit hour (See http://etcp.esta.org for information on recognized trainers.)	30
Attending Non-ETCP Recognized Training Course	0.5 renewal credit per credit hour (Training courses directly related to electrical practices, safety, or engineering.)	30
Attending Course Taught by a Non-ETCP Recognized Trainer	0.5 renewal credit per credit hour (Training courses directly related to electrical practices, safety, or engineering.)	30
Electrical Standards/Code Writing	1 renewal credit per hour of scheduled meetings (Attendance must be verifiable by ESTA, IEEE, NECA, NFPA, or other relevant standards drafting organization.)	20
Trainer for an ETCP Recognized Course or ETCP Recognized Trainer	1.5 renewal credits per credit hour (See http://etcp.esta.org for information on recognized courses.)	30
Trainer for a Non-ETCP Recognized Course or Non-ETCP Recognized Trainer	1 renewal credit per credit hour (Training courses directly related to electrical practices, safety, or engineering.)	30
Taking the ETCP Examination	30 renewal credits for a passing score (Examination must be completed prior to the cut-off date.)	30

ETCP Certified Entertainment Technician Code of Ethics and Professional Conduct

This sets forth the code of ethics and professional standards to be observed by holders of documents of certification conferred by the Council of the Entertainment Technician Certification Program (ETCP). Certificants shall, **in their professional activities**, sustain and advance the integrity, honor, and prestige of this profession by adherence to these standards:

- 1 Hold paramount the safety and health of people, the protection of the environment, and the protection of property in the performance of professional duties and exercise their obligation to advise employers, clients, employees, bystanders, and appropriate authorities of danger and unacceptable risks.
- 2 Maintain honesty, fairness, impartiality; act with responsibility and integrity. Adhere to high standards of ethical conduct with balanced care for the interests of the public, employers, clients, employees, colleagues, and the profession. Avoid all conduct or practice which is likely to discredit the profession or deceive the public.
- 3 Issue public statements only in an objective and truthful manner and only when founded upon full knowledge of the facts and competence in the subject matter.
- 4 Undertake assignments only when qualified by education, training, or experience in the specific technical fields involved; and accept responsibility to maintain and continue one's professional development and competence.
- 5 Avoid actions which falsify or misrepresent one's professional qualifications or misrepresent or exaggerate one's degree of responsibility in, or for, the subject matter of prior assignments, or in the solicitation of employment.
- 6 Act in a manner free of bias with regard to religion, ethnicity, gender, age, national origin, disability, or sexual orientation.

More information about the Disciplinary Policy is available in writing from ETCP.

SUBJECT MATTER EXPERTS

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Eric Bouchard

Peter Donovan

Don Earl

Jeanette Farmer

Ian Foulds

Tony Giovannetti

David Hatch

Mitch Hefter

John Huntington

Dave Loftin

Jim Maloney

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Nancy Shaw

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Abby Tutorow

Stephen Vanciel

Ken Vannice

Keith Woods

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Local 16 in San Francisco

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International Alliance of Theatrical Stage Employees (IATSE)

Brian Lawlor
International Representative

Pat White
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International Association of Venue Managers (IAVM)

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InfoComm International

TEA

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& Production

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Dennis Dorn
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Entertainment Technician Certification Program

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*Special thanks to our
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