

# STATE OF OKLAHOMA

# ELECTRICAL, MECHANICAL, ROOFING, AND PLUMBING **EXAMINATIONS CANDIDATE INFORMATION BULLETIN**

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Please refer to our website to check for the most updated information at https://test-takers.psiexams.com/okcontractors

## **EXAMINATIONS BY PSI**

This Candidate Information Bulletin provides you with information about the examination and application process for Contractors Licensure in the State of Oklahoma.

Eligibility for examination is determined by the State of Oklahoma Construction Industries Board.

2401 NW 23rd Street, Suite 2F Oklahoma City, OK 73107 www.ok.gov

The Board has contracted with PSI to conduct its examination program. PSI provides examinations through a network of computer examination centers in Oklahoma and in many areas throughout the United States. PSI works closely with the State to be certain that examinations meet local as well as national requirements in basic principles and examination development standards.

# **EXAMINATION SCHEDULING PROCEDURES**

Once you have been approved by the State, you are responsible for contacting PSI to schedule an appointment to take the examination. You may either schedule via the Internet at https://test-takers.psiexams.com/okcontractors, or schedule over the telephone at (855) 834-8750.

# Each Examination Portion \$92

# NOTE: REGISTRATION FEES ARE NOT REFUNDABLE OR TRANSFERABLE

The fee is for <u>each</u> registration, whether you are taking the examination for the first time or repeating.

- There is no expiration on your eligibility.
- If you fail the first time, you must wait 30 days before retesting.
- For electrical exams, the waiting period for additional retest will be 30 days.
- For all other exams, for every failure after (and including) the second fail, you must wait 90 days before retesting.

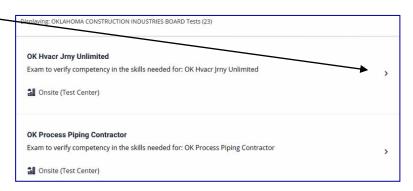
**ONLINE** (https://test-takers.psiexams.com/okcontractors)

For the fastest and most convenient examination scheduling process, register for your examinations online by accessing PSI's registration Website: <u>Click Here</u> or on the email confirmation you received from PSI.

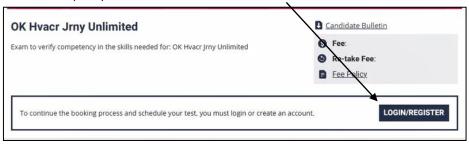
1. Select "Tests" to create an account.



2. Select the examination you will be taking.



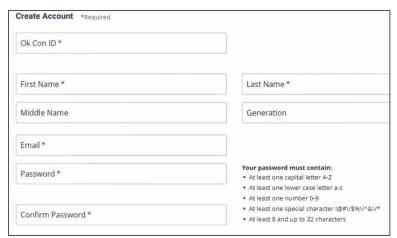
3. You will be prompted to create an account with PSI.



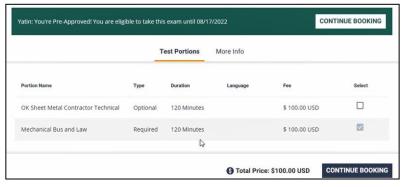
4. Select Create Account.



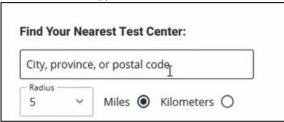
5. Fill out your personal information. The Ok Con ID # is provided by the Board.



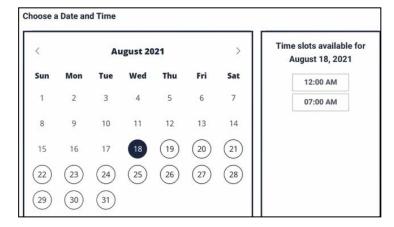
6. The examination you are approved for will be selected.



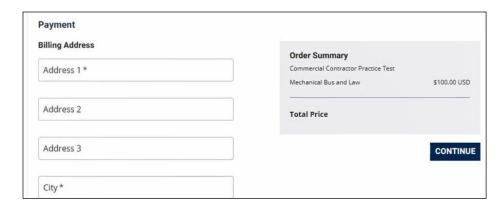
7. Enter your zip code and the closest test centers will appear.



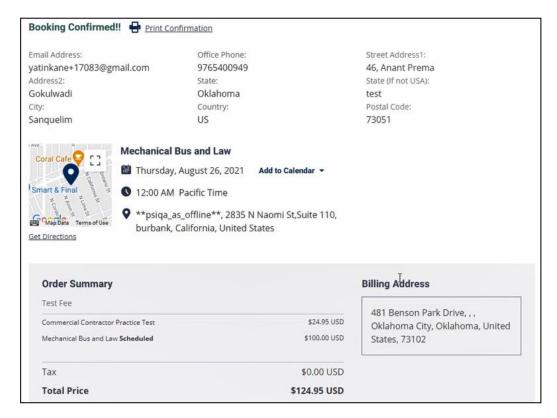
8. Select the test center, month, and date you would like to take the examination.



9. You are now ready to pay.



10. Once payment has been made you will receive the email confirmation.



#### **TELEPHONE REGISTRATION**

For telephone registration, you will need a valid credit card (Visa, MasterCard, American Express or Discover).

PSI registrars are available at (855) 834-8750, Monday through Friday between 6:30 am and 9:00 pm, and Saturday-Sunday between 8:00 am and 4:30 pm, Central Time, to receive your payment and schedule your appointment for the examination.

#### MISSED APPOINTMENT OR LATE CANCELLATION

Your registration will be invalid, you will not be able to take the examination as scheduled, and you will forfeit your examination fee, if you:

- Do not cancel your appointment in the appropriate timeframe, please see the application form for details.
- Do not appear for your examination appointment.
- Arrive after examination start time.
- Do not present proper identification when you arrive for the examination.

## **EXAM ACCOMMODATIONS**

All PSI examination centers are equipped to provide access in accordance with the Americans with Disabilities Act (ADA) of 1990, and exam accommodations will be made in meeting a candidate's needs. A candidate with a disability or a candidate who would otherwise have difficulty taking the examination should request for alternative arrangements by **Clicking Here**.

Candidates granted accommodation in accordance with the ADA, MUST schedule their examination by telephone and speak directly with a PSI registrar.

#### **EXAMINATION SITE CLOSING FOR AN EMERGENCY**

In the event that severe weather or another emergency forces the closure of an examination site on a scheduled examination date, your examination will be rescheduled. PSI personnel will attempt to contact you in this situation. However, you may check the status of your examination schedule by calling (855) 834-8750. Every effort will be made to reschedule your examination at a convenient time as soon as possible. You may also check PSI's website at https://test-takers.psiexams.com/okcontractors.

# **EXAMINATION SITE LOCATION**

The Oklahoma Contractor licensing examinations are administered at the PSI examination centers in Oklahoma as listed below:

ENID	LAWTON	McALESTER
1201 West Willow Road	4500 West Lee Boulevard	21 East Carl Albert Parkway
Enid, OK 73703	Lawton, OK 73505	McAlester, OK 74501
<b>NORMAN</b>	OKLAHOMA CITY (1)	OKLAHOMA CITY (2)
4701 12 <sup>th</sup> Avenue NW	3800 North Classen Boulevard	2400 South Vermont Avenue
Norman, OK 73070	Oklahoma City, OK 73118	Oklahoma City, OK 73108
PONCA CITY	<b>TULSA (1)</b>	TULSA (2)
2101 North Ash	9810 East 42 <sup>nd</sup> Street	2840 East 51 <sup>st</sup> Street
Ponca City, OK 74601	Tulsa, OK 74146	Tulsa, OK 74105
<b>TULSA (3)</b>	<b>WEATHERFORD</b>	WOODWARD
200 Lear Jet Lane	1001 North 7 <sup>th</sup> Street	1915 Oklahoma Avenue
Tulsa, OK 74132	Weatherford, OK 73096	Woodward, OK 73801

Additionally, PSI has examination centers in many other regions across the United States. You may take this examination at any of these locations. Once you have paid for the examination, enter your zip code and a list of the testing sites closest to you will appear.

# REPORTING TO THE EXAMINATION SITE

On the day of the examination, you should arrive at least 30 minutes before your appointment. This extra time is for signin, identification, and familiarizing you with the examination process. If you arrive late, you may not be admitted to the examination site and you will forfeit your examination registration fee.

#### REQUIRED IDENTIFICATION AT EXAMINATION SITE

Candidates must register for the exam with their LEGAL first and last name as it appears on their government issued identification. The required identification below must match the first and last name under which the candidate is registered. Candidates are required to bring one (1) form of a valid (non-expired) signature bearing identification to the test site.

#### PRIMARY IDENTIFICATION - Choose One

NOTE: ID must contain candidate's signature, photo, be valid and unexpired.

- State issued driver's license
- State issued identification card
- US Government Issued Passport
- US Government Issued Military Identification Card
- US Government Issued Alien Registration Card
- Canadian Government Issued ID

#### **SECURITY PROCEDURES**

The following security procedures will apply during the examination:

- Only non-programmable calculators that are silent, battery-operated, do not have paper tape printing capabilities, and do not have a keyboard containing the alphabet will be allowed in the examination site.
- Candidates may take only approved items into the examination room.
- All personal belongings of candidates should be placed in the secure storage provided at each site prior to entering the examination room. Personal belongings include, but are not limited to, the following items:
  - Electronic devices of any type, including cellular / mobile phones, recording devices, electronic watches, cameras, pagers, laptop computers, tablet computers (e.g., iPads), music players (e.g., iPods), smart watches, radios, or electronic games.
  - Bulky or loose clothing or coats that could be used to conceal recording devices or notes. For security purposes outerwear such as, but not limited to: open sweaters, cardigans, shawls, scarves, vests, jackets, and coats are not permitted in the testing room. In the event you are asked to remove the outerwear, appropriate attire, such as a shirt or blouse should be worn underneath.
  - Hats or headgear not worn for religious reasons or as religious apparel, including hats, baseball caps, or visors.
  - Other personal items, including purses, notebooks, reference or reading material, briefcases, backpacks, wallets, pens, pencils, other writing devices, food, drinks, and good luck items.

- Person(s) accompanying an examination candidate may not wait in the examination center, inside the building or on the building's property. This applies to guests of any nature, including drivers, children, friends, family, colleagues, or instructors.
- No smoking, eating, or drinking is allowed in the examination center.
- During the check in process, all candidates will be asked if they possess any prohibited items. Candidates may also be asked to empty their pockets and turn them out for the proctor to ensure they are empty. The proctor may also ask candidates to lift up the ends of their sleeves and the bottoms of their pant legs to ensure that notes or recording devices are not being hidden there.
- Proctors will also carefully inspect eyeglass frames, tie tacks, or any other apparel that could be used to harbor a recording device. Proctors will ask to inspect any such items in candidates' pockets.
- If prohibited items are found during check-in, candidates shall put them in the provided secure storage or return these items to their vehicle. PSI will not be responsible for the security of any personal belongings or prohibited items
- Any candidate possessing prohibited items in the examination room shall immediately have his or her test results invalidated, and PSI shall notify the examination sponsor of the occurrence.
- Any candidate seen giving or receiving assistance on an examination, found with unauthorized materials, or who violates any security regulations will be asked to surrender all examination materials and to leave the examination center. All such instances will be reported to the examination sponsor.
- Copying or communicating examination content is violation of a candidate's contract with PSI, and federal and state law. Either may result in the disqualification of examination results and may lead to legal action.
- Once candidates have been seated and the examination begins, they may leave the examination room only to use the restroom, and only after obtaining permission from the proctor. Candidate will not receive extra time to complete the examination.

# TAKING THE EXAMINATION BY COMPUTER

The examination will be administered via computer. You will be using a mouse and computer keyboard.

#### **IDENTIFICATION SCREEN**

You will be directed to a semiprivate testing station to take the examination. When you are seated at the testing station, you will be prompted to confirm your name, identification number, and the examination for which you are registered.

#### **TUTORIAL**

Before you start your examination, an introductory tutorial is provided on the computer screen. The time you spend on this tutorial, up to 15 minutes, DOES NOT count as part of your examination time. Sample questions are included following the tutorial so that you may practice answering questions and reviewing your answers.

#### **TEST QUESTION SCREEN**

One question appears on the screen at a time. During the examination, minutes remaining will be displayed at the top of the screen and updated as you record your answers.

IMPORTANT: After you have entered your responses, you will later be able to return to any question(s) and change your response, provided the examination time has not run out.

#### **EXPERIMENTAL QUESTIONS**

In addition to the number of questions for the exams, up to ten "experimental" questions may be administered to candidates during the examinations. These questions will <u>not</u> be scored, and the time taken to answer them will <u>not</u> count against examination time. The administration of such non-scored experimental questions is an essential step in developing future licensing examinations.

#### **EXAMINATION REVIEW**

PSI, in cooperation with the Oklahoma Board, will be consistently evaluating the examinations being administered to ensure that the examinations accurately measure competency in the required knowledge areas. Comments may be entered by clicking on the Comments link on the function bar of the test question screen. Your comments regarding the questions and the examinations are welcomed.

Comments will be analyzed by PSI examination development staff. While PSI does not respond to individuals regarding these comments, all substantive comments are reviewed. If a discrepancy is found during the comment review, PSI and the Board may re-evaluate candidates' results and adjust them accordingly. This is the only review of the examination available to candidates.

# **SCORE REPORTING**

Your score will be given to you immediately following completion of the examination. The following summary describes the score reporting process:

- On screen your score will appear immediately on the computer screen. This will happen automatically at the end of the time allowed for the examination.
  - If you <u>pass</u>, you will immediately receive a successful notification.
  - If you do not pass, you will receive a diagnostic report indicating your strengths and weaknesses by examination type with the score report.
- On paper an unofficial score report will be printed at the examination site.

If you pass the license exam, the Oklahoma State Construction Industries Board will issue you a license.

#### **DUPLICATE SCORE REPORTS**

You may request a duplicate score report after your examination by emailing <a href="mailto:score-eport@psionline.com">score-eport@psionline.com</a>.

# EXAMINATION REFERENCE MATERIAL AND CONTENT OUTLINE

If a test question answer could differ because of conflicting information in test reference sources, a legal requirement such as code, law, or regulation overrides any other reference. If two legal requirements appear to conflict, the state-specific code, law, or regulation overrides the national one. Information from sources on the test reference list override information from other sources or persons.

Many of the reference materials listed are available for purchase at <a href="https://www.psionlinestore.com">www.psionlinestore.com</a> or by calling the PSI Online Store, toll-free, at (866) 589-3088.

#### **ELECTRICAL BUSINESS AND LAW**

Тор	ic Info	# of Items	
1.	Biddir	ng and Estimating	10
	a.	General Estimating	10
	b.	Bid	
2.	Proje	ct Management and Supervision	
	a.	General Project Oversight	7
	b.	Oversee Budget	
	c.	Oversee Quality Control	
	d.	Oversee Materials Control	
	e.	Manage Jobsite Safety	
	f.	Schedule	
	g.	Potentially Hazardous Materials	
	h.	Environmental Protection	
	i.	Submittals and Reports	
	j.	Ethics	
	k.	Liens	
3.	Contr		
	a.	Terminology	5
	ь.	Required Elements/Components	
		Contract Types	
		Change Orders	
	e.	Standardized Documents	
		Interpretation	
	g.	Warranties	
	h.	Documents/Inclusions	
	i.	3	
4.	Finan		
	a.	Business Organization	. 8
		Characteristics, Advantages, and	d
	١.	Disadvantages	
	b.	Business Start-up	
	c.	Accounting Method	
	d.	Cash Flow Terminology	
	e.	Accounts Receivable	
	f.	Accounts Payable Balance Sheet	
	g. h.		
		Income Statement	
	i.	Taxes on Company Income	
	j. k.	Obtaining Financing Checking Account	
	l.	Financial Ratios	
	ι.	i mancial Natios	

5.	Labor	r and Personnel	
	a.	ADA	5
	b.	Labor Standards	
	c.	Requirements for Non-citizens and/residents	or Non-
	d.	Workers' Compensation	
	e.	Federal or State OSHA	
	f.	New Hires	
	g.	Personnel Record Keeping	
	h.	Other Requirements	
6.	Risk A	Management	
	a.	Insurance	4
	b.	Bonds	
7.	Payro	oll and Payroll Taxes	5
	a.	Taxes	3
	b.	Forms and Due Dates	
8.	Licen	sing Requirements	
	a.	Required Insurance/Bonds	6
	Ь.	Renewal	

The reference materials listed below were used to prepare the questions for this examination. The examination may also contain questions based on trade knowledge or general industry practices. Except for Code books, later editions of references are allowed in the test area. For Code questions, the examinations will be based only on the edition of the Code book that is listed.

Candidates may use a silent, non-printing, non-programmable calculator in the examination center. Candidates will also be provided with a magnifying glass upon request.

This examination is OPEN BOOK.

# The following reference materials <u>are</u> allowed in the examination center:

- State of Oklahoma, Construction Industries Board, Unofficial Administrative Rules & Courtesy Exam Study Aids Book, current edition (available at the Construction Industries Board Office - no fee).
- Oklahoma Electrical Industry Regulations, Oklahoma Administrative Code, Title 158, Chapter 40, Oklahoma Construction Industries Board, 2401 N.W. 23rd Street, Suite 2F, Oklahoma City, OK 73107, www.ok.gov/cib
- Oklahoma Fine Schedule of the Construction Industries Board, Oklahoma Administrative Code, Title 158, Chapter 10, Oklahoma Construction Industries Board, 2401 N.W. 23rd Street, Suite 2F, Oklahoma City, OK 73107, <a href="https://www.ok.gov/cib">www.ok.gov/cib</a>
- Oklahoma Electrical License Act, Oklahoma Statutes, Title 59, Chapter 40A, Oklahoma Construction Industries Board, 2401 N.W. 23rd Street, Suite 2F, Oklahoma City, OK 73107, www.ok.gov/cib
- Oklahoma Lien Law, Oklahoma Statutes, Title 42, Chapter 3, Oklahoma Construction Industries Board, 2401 N.W. 23rd Street, Suite 2F, Oklahoma City, OK 73107, www.ok.gov/cib
- NASCLA Contractors Guide to Business, Law and Project Management, Basic 14<sup>th</sup> Edition, National

- Association of State Contractors Licensing Agencies (NASCLA), Telephone: (623) 587-9354, www.nascla.org
- Oklahoma Workers' Compensation Act, Oklahoma Statutes, Title 85A, Chapter 1, Oklahoma Construction Industries Board, 2401 N.W. 23rd Street, Suite 2F, Oklahoma City, OK 73107, <a href="https://www.ok.gov/cib">www.ok.gov/cib</a> OR

Oklahoma Workers' Compensation Act Statutory Excerpts, Oklahoma Statutes, Title 85A, Chapter 1, Oklahoma Construction Industries Board, 2401 N.W. 23rd Street, Suite 2F, Oklahoma City, OK 73107, www.ok.gov/cib

Candidates are responsible for bringing their own references to the examination center. Reference materials may be highlighted, underlined, and/or indexed prior to the examination session. References may not be written in prior to or during the examination session. Any candidate caught writing in the references during the examination will have the references confiscated and will be reported to the department. Furthermore, candidates are not permitted to bring in any additional papers with their approved references. Any additional materials will be removed from the references and confiscated. References may be tabbed/indexed with permanent tabs only. Temporary tabs, such as Post-It notes, are not allowed and must be removed from the reference before the exam will begin. If you download a reference from the Internet, it must be spiral bound or hole-punched and placed in a binder or stapled in the left-hand corner.

#### LIMITED ELECTRICAL CONTRACTOR

#### **SCOPE OF WORK**

Tests a candidate's knowledge of the design, plan, layout, installation, repair and alteration of electrical conductors, fixtures, appliances, apparatus, raceways, conduit and related equipment and fixtures that use electrical energy for light, heat, power, data and communications.

#### Effective thru 3/26/2025

To	Topic Information # of Items				
1.	Gene	ral Knowledge	4		
	a.	Permits and Inspections	7		
	b.	Preservation of Structural Integrity	/		
	c.	Needs Analysis and Estimate			
2.	Gene	ral Electrical Knowledge			
	a.	Voltage, Current, and Resistance	10		
		in Series, Parallel, and			
		Combination Circuits			
	b.	Power Used in a Circuit			
	c.	Power Lost (called Heat Lost) in A	ny Circuit		
	d.	Fundamental AC Theory			
	e.	Fundamental Three-phase AC Theo	ory		
	f.	Cost of Power Used in a Circuit			
	g.	Troubleshooting and Test Systems			
		National Electrical Codebook			
	i.	Definitions Used by the NEC			
	j.	Temporary Wiring			
		Cranes and Hoists			
	l.	Elevators and Escalators			

3. Electrical Installation Requirements a. Approved Methods of Installation of Electrical Equipment b. Approved Methods of Installation of Electrical Equipment in Excess of 600 volts  4. Services, Feeders, and Branch Circuits a. Services b. Voltage Drop for Branch Circuits or Feeders c. Services in Excess of 600 volts d. Feeders e. Outside Branch Circuits and Feeders	s. Metal and Nonmetallic Wireways t. Surface Metal and Nonmetallic Raceways u. Underfloor Raceways v. Cabletrays  9. Special Occupancies and Equipment (Including Swimming Pools) a. Wiring in Class I, II, and III Hazardous Locations  b. Wiring in Commercial Garages and Fuel Dispensing Facilities c. Wiring in Bulk Storage Plants, Paint, and Spray Areas
of Electrical Equipment  b. Approved Methods of Installation of Electrical Equipment in Excess of 600 volts  4. Services, Feeders, and Branch Circuits  a. Services  b. Voltage Drop for Branch Circuits or Feeders  c. Services in Excess of 600 volts  d. Feeders  e. Outside Branch Circuits and Feeders	u. Underfloor Raceways v. Cabletrays  9. Special Occupancies and Equipment (Including Swimming Pools) a. Wiring in Class I, II, and III Hazardous Locations  b. Wiring in Commercial Garages and Fuel Dispensing Facilities c. Wiring in Bulk Storage Plants, Paint, and Spray
b. Approved Methods of Installation of Electrical Equipment in Excess of 600 volts  4. Services, Feeders, and Branch Circuits     a. Services     b. Voltage Drop for Branch Circuits     or Feeders     c. Services in Excess of 600 volts     d. Feeders     e. Outside Branch Circuits and Feeders	v. Cabletrays  9. Special Occupancies and Equipment (Including Swimming Pools)  a. Wiring in Class I, II, and III Hazardous Locations  b. Wiring in Commercial Garages and Fuel Dispensing Facilities c. Wiring in Bulk Storage Plants, Paint, and Spray
Equipment in Excess of 600 volts  4. Services, Feeders, and Branch Circuits a. Services b. Voltage Drop for Branch Circuits or Feeders c. Services in Excess of 600 volts d. Feeders e. Outside Branch Circuits and Feeders	9. Special Occupancies and Equipment (Including Swimming Pools)  a. Wiring in Class I, II, and III Hazardous Locations  b. Wiring in Commercial Garages and Fuel Dispensing Facilities c. Wiring in Bulk Storage Plants, Paint, and Spray
4. Services, Feeders, and Branch Circuits a. Services b. Voltage Drop for Branch Circuits or Feeders c. Services in Excess of 600 volts d. Feeders e. Outside Branch Circuits and Feeders	(Including Swimming Pools)  a. Wiring in Class I, II, and III Hazardous Locations  b. Wiring in Commercial Garages and Fuel Dispensing Facilities c. Wiring in Bulk Storage Plants, Paint, and Spray
<ul> <li>a. Services</li> <li>b. Voltage Drop for Branch Circuits or Feeders</li> <li>c. Services in Excess of 600 volts</li> <li>d. Feeders</li> <li>e. Outside Branch Circuits and Feeders</li> </ul>	<ul> <li>a. Wiring in Class I, II, and III Hazardous Locations</li> <li>b. Wiring in Commercial Garages and Fuel Dispensing Facilities</li> <li>c. Wiring in Bulk Storage Plants, Paint, and Spray</li> </ul>
<ul> <li>b. Voltage Drop for Branch Circuits or Feeders</li> <li>c. Services in Excess of 600 volts</li> <li>d. Feeders</li> <li>e. Outside Branch Circuits and Feeders</li> </ul>	<ul> <li>Hazardous Locations</li> <li>b. Wiring in Commercial Garages and Fuel Dispensing Facilities</li> <li>c. Wiring in Bulk Storage Plants, Paint, and Spray</li> </ul>
or Feeders c. Services in Excess of 600 volts d. Feeders e. Outside Branch Circuits and Feeders	<ul> <li>b. Wiring in Commercial Garages and Fuel</li> <li>Dispensing Facilities</li> <li>c. Wiring in Bulk Storage Plants, Paint, and Spray</li> </ul>
<ul><li>c. Services in Excess of 600 volts</li><li>d. Feeders</li><li>e. Outside Branch Circuits and Feeders</li></ul>	Dispensing Facilities c. Wiring in Bulk Storage Plants, Paint, and Spray
<ul><li>d. Feeders</li><li>e. Outside Branch Circuits and Feeders</li></ul>	Dispensing Facilities c. Wiring in Bulk Storage Plants, Paint, and Spray
e. Outside Branch Circuits and Feeders	c. Wiring in Bulk Storage Plants, Paint, and Spray
l f Duanah Cinavita	Areas
f. Branch Circuits	1 1
g. Space-heating, Snow-melting, and Pipe-	d. Special Occupancies
heating Circuits	e. Wiring in Health Facilities and Places of
h. Air-conditioning and Refrigeration Equipment	Assembly
5. Overcurrent Protection	f. Wiring of Mobile Home, Mobile Home Parks,
a. NEC Overcurrent Protection 6	RVs, and RV Parks
Requirements	g. Wiring of Floating Buildings
6. Grounding and Bonding	h. Wiring to Swimming Pools, Fountains, and Hot
a. General Requirements	Tubs
b. Required Sizes of Grounding Electrode	10. Low Voltage, Alarms, Signaling Systems,
Conductors	and Communications 7
c. Required Sizes of Equipment Grounding	a. Remote Control or Signaling
Conductors	Circuits
7 Conductors and Cables	b. Communication Circuits
a. Underground Conductors and	c. Equipment Operating at 50 volts or Less
Cables	d. Fiber Optics
b. Vertical Installations	e. Photovoltaics
c. Selecting Conductors	f. Remote Controls
d. Armored Cable, Type AC	g. Fire Alarms
e. Metal-clad Cable, Type MC	h. Circuit Wiring for an Emergency System
f. Nonmetallic-sheathed Cable, Types NM, NMC,	i. Communications Systems Wiring
NMS	11. Lighting and Signs
g. Service Entrance Cables, Types SE and USE	a. Fixture Installation
h. Underground Feeder and Branch Circuit Cable,	b. Fixture Grounding
Type UF	c. Fixture Wiring
i. Mineral Insulated, Type MI	d. Fluorescent Fixtures
j. Flat Cable Assemblies, Type FC, and Flat	e. Fixture Construction Requirements
Conductor Cable, Type FCC	f. Recessed Fixtures
k. Medium Voltage Cable, Type MV	g. Lighting Systems that Operate at Less Than 30
8. Raceways and Boxes	volts
	h. Neon Lighting and Electric Signs
a. General Raceway Requirements b. General Box Requirements	12. Safety
c. Pull Boxes	a. Job Site Sanitation
d. Conduit Fittings	b. Responsibility for Providing Personal
	Protective Equipment
	c. Excavation Safety
f. Type EMT (Electric Metallic Conduit) g. Type IMC (Intermediate Metal Conduit)	d. Emergency Action Plans
g. Type IMC (Intermediate Metal Conduit) h. Type RNC (Rigid Nonmetallic Conduit)	e. Safety Training Requirements
	f. Ventilation
i. Type FMC (Flexible Metal Conduit)	
j. Type LFMC (Liquid-tight Flexible Metal	g. First Aid Kit Requirements h. Use of Personal Protective Equipment
Conduit)	i. Signs, Signals, and Barricades
k. Type FMT (Flexible Metallic Tubing)	j. Tools and Equipment
I. Type HDPE (High-density Polyethylene	k. Ladders
Conduit)	l. Workplace Illumination
m. Type NUCC (Nonmetallic Underground Conduit	m. Scaffolds
with Conductors)	
n. Type LFNC (Liquid-tight Flexible Nonmetallic	<ul><li>n. Requirements for Work Around Toxic Materials</li><li>o. Material Cleanup and Disposal</li></ul>
conduit)	p. Material Safety Data Sheets (MSDS)
o. Area of Raceway and Number of Conduct	
(Conduit Fill)	q. Handling and Storing Materials r. Fall Protection
<ul><li>p. Outlet, Device, Pull, and Junction Boxes</li><li>q. Box Volume and Fill</li></ul>	13. Motors and Transformers
	a. Motors Used in Dwellings
Nonconcrete Raceways	<b>b.</b> Motor Branch Circuits in Industrial and

- **Commercial Locations**
- c. Feeder Transformersd. Use of Transformers

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1.	Gener	al Knowledge		4
	d.	Permits and Inspections		4
	e.	Preservation of Structural Inter	grity	
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2.	Gener	al Electrical Knowledge		
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		in Series, Parallel, and	-	
		Combination Circuits		
	n.	Power Used in a Circuit		
	0.	Power Lost (called Heat Lost)	in Any	Circuit
	_	Fundamental AC Theory	ш Апу	Circuit
	p.	Fundamental Three-phase AC 7	Thoom	
	q.	Cost of Power Used in a Circuit		
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3.		ical Installation Requirements		
	c.	Approved Methods of Installation	on	10
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		heating Circuits		
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٥.	d.	General Requirements		10
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7.	Condi	ictors and Cables		
<b>'</b> ·	l.	Underground Conductors and		8
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	m.			
	n.	Selecting Conductors		
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		Type UF	
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		Conductor Cable, Type FCC	
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	x.	General Box Requirements	
	у.	Pull Boxes	
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	uu.	Type FMC (Flexible Metal Conduit)	L)
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		Conduit)	.ut
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		Type HDPE (High-density Polyethyler	ne
		Conduit)	
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		with Conductors)	
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	kk.	Area of Raceway and Number of Con	duct
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	ll.	Outlet, Device, Pull, and Junction Bo	oxes
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	nn.	Auxiliary Gutters, Busways, Concrete	e and
		Nonconcrete Raceways	
		Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Racey	NOVE
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		Cabletrays	
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<i>,</i> .			
	(Inclu	ding Swimming Pools)	10
	(Includi)	ding Swimming Pools) Wiring in Class I. II. and III	10
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		Wiring in Class I, II, and III	10
		Wiring in Class I, II, and III	
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	i.	Wiring in Class I, II, and III Hazardous Locations Wiring in Commercial Garages and Fo	uel
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	j. k. l.	Wiring in Class I, II, and III Hazardous Locations  Wiring in Commercial Garages and For Dispensing Facilities Wiring in Bulk Storage Plants, Paint, Areas Special Occupancies	uel and Spray
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	i. j. k. l. m.	Wiring in Class I, II, and III Hazardous Locations  Wiring in Commercial Garages and Form Dispensing Facilities Wiring in Bulk Storage Plants, Paint, Areas Special Occupancies Wiring in Health Facilities and Places Assembly Wiring of Mobile Home, Mobile Home RVs, and RV Parks Wiring of Floating Buildings Wiring to Swimming Pools, Fountains	uel and Spray s of e Parks,
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10.	i. j. k. l. m. o. p. Low V and Co	Wiring in Class I, II, and III Hazardous Locations  Wiring in Commercial Garages and Form Dispensing Facilities Wiring in Bulk Storage Plants, Paint, Areas Special Occupancies Wiring in Health Facilities and Places Assembly Wiring of Mobile Home, Mobile Home RVs, and RV Parks Wiring of Floating Buildings Wiring to Swimming Pools, Fountains Tubs  oltage, Alarms, Signaling Systems, communications Remote Control or Signaling	and Spray s of Parks, and Hot
110.	i. j. k. l. m. o. p. Low V and Co	Wiring in Class I, II, and III Hazardous Locations  Wiring in Commercial Garages and For Dispensing Facilities Wiring in Bulk Storage Plants, Paint, Areas Special Occupancies Wiring in Health Facilities and Places Assembly Wiring of Mobile Home, Mobile Home RVs, and RV Parks Wiring of Floating Buildings Wiring to Swimming Pools, Fountains Tubs  oltage, Alarms, Signaling Systems, Dommunications Remote Control or Signaling Circuits Communication Circuits	uel and Spray s of Parks, and Hot
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10.	i. j. k. l. m. o. p. Low V and Co j. k. l.	Wiring in Class I, II, and III Hazardous Locations  Wiring in Commercial Garages and For Dispensing Facilities Wiring in Bulk Storage Plants, Paint, Areas Special Occupancies Wiring in Health Facilities and Places Assembly Wiring of Mobile Home, Mobile Home RVs, and RV Parks Wiring of Floating Buildings Wiring to Swimming Pools, Fountains Tubs  oltage, Alarms, Signaling Systems, Dommunications Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or Le	uel and Spray s of Parks, and Hot
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10.	i. j. k. l. m. o. p. Low V and Cc j. k. l. m. n.	Wiring in Class I, II, and III Hazardous Locations  Wiring in Commercial Garages and For Dispensing Facilities Wiring in Bulk Storage Plants, Paint, Areas Special Occupancies Wiring in Health Facilities and Places Assembly Wiring of Mobile Home, Mobile Home RVs, and RV Parks Wiring of Floating Buildings Wiring to Swimming Pools, Fountains Tubs  oltage, Alarms, Signaling Systems, Dommunications Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or Lefiber Optics Photovoltaics	uel and Spray s of Parks, and Hot
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10.	i. j. k. l. m. o. p. Low V and Co j. k. l. m. o. p. q. r.	Wiring in Class I, II, and III Hazardous Locations  Wiring in Commercial Garages and For Dispensing Facilities Wiring in Bulk Storage Plants, Paint, Areas Special Occupancies Wiring in Health Facilities and Places Assembly Wiring of Mobile Home, Mobile Home RVs, and RV Parks Wiring of Floating Buildings Wiring to Swimming Pools, Fountains Tubs  Oltage, Alarms, Signaling Systems, Dommunications Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or Legiber Optics Photovoltaics Remote Controls Fire Alarms Circuit Wiring for an Emergency Syst Communications Systems Wiring	uel and Spray s of Parks, and Hot 2
	i. j. k. l. m. o. p. Low V and Co j. k. l. m. o. p. q. r.	Wiring in Class I, II, and III Hazardous Locations  Wiring in Commercial Garages and Fu Dispensing Facilities Wiring in Bulk Storage Plants, Paint, Areas Special Occupancies Wiring in Health Facilities and Places Assembly Wiring of Mobile Home, Mobile Home RVs, and RV Parks Wiring of Floating Buildings Wiring to Swimming Pools, Fountains Tubs  Oltage, Alarms, Signaling Systems, ommunications Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or L Fiber Optics Photovoltaics Remote Controls Fire Alarms Circuit Wiring for an Emergency Syst Communications Systems Wiring Tog and Signs	uel and Spray s of Parks, and Hot 2 ess
	i. j. k. l. m. o. p. Low V and Co j. k. l. m. o. p. q. r.	Wiring in Class I, II, and III Hazardous Locations  Wiring in Commercial Garages and For Dispensing Facilities Wiring in Bulk Storage Plants, Paint, Areas Special Occupancies Wiring in Health Facilities and Places Assembly Wiring of Mobile Home, Mobile Home RVs, and RV Parks Wiring of Floating Buildings Wiring to Swimming Pools, Fountains Tubs Oltage, Alarms, Signaling Systems, Domunications Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or Lefiber Optics Photovoltaics Remote Controls Fire Alarms Circuit Wiring for an Emergency Syst Communications Systems Wiring Ting and Signs Fixture Installation	uel and Spray s of Parks, and Hot 2
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	i.  j.  k.  l.  m.  o.  p.  Low V  and Co  j.  k.  l.  m.  o.  p.  q.  r.  Lightin  i.	Wiring in Class I, II, and III Hazardous Locations  Wiring in Commercial Garages and For Dispensing Facilities Wiring in Bulk Storage Plants, Paint, Areas Special Occupancies Wiring in Health Facilities and Places Assembly Wiring of Mobile Home, Mobile Home RVs, and RV Parks Wiring of Floating Buildings Wiring to Swimming Pools, Fountains Tubs Oltage, Alarms, Signaling Systems, Domunications Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or Lefiber Optics Photovoltaics Remote Controls Fire Alarms Circuit Wiring for an Emergency Syst Communications Systems Wiring Ting and Signs Fixture Installation	uel and Spray s of Parks, and Hot 2 ess

Fixture Wiring Fluorescent Fixtures m. Fixture Construction Requirements **Recessed Fixtures** Lighting Systems that Operate at Less Than 30 Neon Lighting and Electric Signs p. 12. Safety s. Job Site Sanitation Responsibility for Providing Personal Protective Equipment u. Excavation Safety v. Emergency Action Plans w. Safety Training Requirements x. Ventilation y. First Aid Kit Requirements Use of Personal Protective Equipment aa. Signs, Signals, and Barricades bb. Tools and Equipment cc. Ladders dd. Workplace Illumination ee. Scaffolds ff. Requirements for Work Around Toxic Materials gg. Material Cleanup and Disposal hh. Material Safety Data Sheets (MSDS) ii. Handling and Storing Materials jj. Fall Protection 13. Motors and Transformers e. Motors Used in Dwellings Motor Branch Circuits in Industrial and **Commercial Locations** Feeder Transformers Use of Transformers

#### **REFERENCE LIST**

The reference materials listed below were used to prepare the questions for this examination. The examination may also contain questions based on trade knowledge or general industry practices. Except for Code books, later editions of references are allowed in the test area. For Code questions, the examinations will be based only on the edition of the Code book that is listed.

Candidates may use a silent, non-printing, non-programmable calculator in the examination center. Candidates will also be provided with a magnifying glass upon request.

This examination is OPEN BOOK.

The following reference materials  $\underline{are}$  allowed in the examination center:

- NFPA 70 National Electrical Code, 2023 Edition, as revised and adopted by the Oklahoma Uniform Building Code Commission, National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02169-9101, (800) 344-3555, www.nfpa.org. NEC Handbooks and spiral-bound copies of the National Electrical Code will NOT be allowed in the test center.
- Code of Federal Regulations 29 CFR Part 1926 (OSHA), with latest available amendments, Candidates can access the Government website with this link https://www.osha.gov/lawsregs/regulations/standardnumber/1926

Hard copy can be purchased from Mancomm.com. <a href="https://mancomm.com/29-cfr-1926-osha-construction-industry-regulations-standards/">https://mancomm.com/29-cfr-1926-osha-construction-industry-regulations-standards/</a>.

Amazon and other retailers sell the Mancomm OSHA publications.

OR

Code of Federal Regulations - 29 CFR Part 1926 Selections by PSI, with latest available amendments, 866-589-3088, http://www.psionlinestore.com

 Ugly's Electrical References, George V. Hart, any edition may be used, Jones and Bartlett, (800) 832-0034, www.uglys.net

Candidates are responsible for bringing their own references to the examination center. Reference materials may be highlighted, underlined, and/or indexed prior to the examination session. References may not be written in prior to or during the examination session. Any candidate caught writing in the references during the examination will have the references confiscated and will be reported to the department. Furthermore, candidates are not permitted to bring in any additional papers with their approved references. Any additional materials will be removed from the references and confiscated. References may be tabbed/indexed with permanent tabs only. Temporary tabs, such as Post-It notes, are not allowed and must be removed from the reference before the exam will begin. If you download a reference from the Internet, it must be spiral bound or hole-punched and placed in a binder or stapled in the left-hand corner.

#### UNLIMITED ELECTRICAL CONTRACTOR

# **SCOPE OF WORK**

Tests a candidate's knowledge of the design, plan, layout, installation, repair and alteration of electrical conductors, fixtures, appliances, apparatus, raceways, conduit and related equipment and fixtures that use electrical energy for light, heat, power, data and communications.

# Effective thru 3/26/2025

Top	oic Info	# of Items	
1.	Gene	ral Knowledge	4
	a.	Permits and Inspections	4
	b.	Preservation of Structural Integri	ty
	c.	Needs Analysis and Estimate	
2.	Gene	ral Electrical Knowledge	
	a.	Voltage, Current, and Resistance in Series, Parallel, and Combination Circuits	10
	b.	Power Used in a Circuit	
	c.	Power Lost (called Heat Lost) in	Any Circuit
	d.	Fundamental AC Theory	
	e.	Fundamental Three-phase AC The	eory
	f.	Cost of Power Used in a Circuit	
	g.	Troubleshooting and Test System	S
	h.	National Electrical Codebook	
	i.	Definitions Used by the NEC	
	j.	Temporary Wiring	
	k.	Cranes and Hoists	
	l.	Elevators and Escalators	

3.	Electi	rical Installation Requirements	
	a.	Approved Methods of Installation	10
	١.	of Electrical Equipment	
	b.	Approved Methods of Installation of	Electrical
		Equipment in Excess of 600 volts	
4.		ces, Feeders, and Branch Circuits	40
	a.	Services	10
	b.	Voltage Drop for Branch Circuits	
		or Feeders	
	C.	Services in Excess of 600 volts	
	d.	Feeders	
	e. f.		i
			ina haating
	g.	Space-heating, Snow-melting, and P Circuits	ipe-neating
	h.	Air-conditioning and Refrigeration E	auinment
5.	_	current Protection	quipinent
٦.	a.	NEC Overcurrent Protection	6
	u.	Requirements	
6.	Groun	nding and Bonding	
0.	a.	General Requirements	10
	b.	Required Sizes of Grounding Electro	de
	٥.	Conductors	uc
	c.	Required Sizes of Equipment Ground	ling
		Conductors	5
7.	Cond	uctors and Cables	
	a.	Underground Conductors and	6
		Cables	
	b.	Vertical Installations	
	c.	Selecting Conductors	
	d.	Armored Cable, Type AC	
	e.	Metal-clad Cable, Type MC	
	f.	Nonmetallic-sheathed Cable, Types NMS	NM, NMC,
	g.	Service Entrance Cables, Types SE a	nd LISE
	h.	Underground Feeder and Branch Circ	
	• • • • • • • • • • • • • • • • • • • •	Type UF	care cable,
	i.	Mineral Insulated, Type MI	
	j.	Flat Cable Assemblies, Type FC, and	l Flat
	,,	Conductor Cable, Type FCC	
	k.	Medium Voltage Cable, Type MV	
		median rollings carley type mit	

3.	Racew	rays and Boxes
	a.	General Raceway Requirements 7
	b.	General Box Requirements
	c.	Pull Boxes
	d.	Conduit Fittings
	e.	Type RMC (Rigid Metal Conduit)
	f.	Type EMT (Electric Metallic Conduit)
	g.	Type IMC (Intermediate Metal Conduit)
	h.	Type RNC (Rigid Nonmetallic Conduit)
	i.	Type FMC (Flexible Metal Conduit)
	j.	Type LFMC (Liquid-tight Flexible Metal Conduit)
	k.	Type FMT (Flexible Metallic Tubing)
	l.	Type HDPE (High-density Polyethylene Conduit)
	m.	Type NUCC (Nonmetallic Underground Conduit
		with Conductors)
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		conduit)
	ο.	Area of Raceway and Number of Conduct
		(Conduit Fill)
	p.	Outlet, Device, Pull, and Junction Boxes
	q.	Box Volume and Fill
	r.	Auxiliary Gutters, Busways, Concrete and
		Nonconcrete Raceways
	s.	Metal and Nonmetallic Wireways
	t.	Surface Metal and Nonmetallic Raceways
	u.	Underfloor Raceways
	٧.	Cabletrays
9.		l Occupancies and Equipment
	*	ding Swimming Pools) 10
	a.	Wiring in Class I, II, and III
	L	Hazardous Locations
	b.	Wiring in Commercial Garages and Fuel
	_	Dispensing Facilities Wiring in Bulk Storage Plants Point and Spray
	c.	Wiring in Bulk Storage Plants, Paint, and Spray
	d.	Areas Special Occupancies
		Wiring in Health Facilities and Places of
	e.	Assembly
	f.	Wiring of Mobile Home, Mobile Home Parks,
	••	RVs, and RV Parks
	g.	Wiring of Floating Buildings
	h.	Wiring to Swimming Pools, Fountains, and Hot
		Tubs
10.	Low V	oltage, Alarms, Signaling Systems,
		ommunications 7
	a.	Remote Control or Signaling
		Circuits
	b.	Communication Circuits
	c.	Equipment Operating at 50 volts or Less
	d.	Fiber Optics
	e.	Photovoltaics
	f.	Remote Controls
	g.	Fire Alarms
	h.	Circuit Wiring for an Emergency System
	i.	Communications Systems Wiring
11.	Lightir	ng and Signs
	a.	Fixture Installation 10
	b.	Fixture Grounding
	c.	Fixture Wiring
	d.	Fluorescent Fixtures
	e.	Fixture Construction Requirements
	f.	Recessed Fixtures
	g.	Lighting Systems that Operate at Less Than 30
		volts
	h.	Neon Lighting and Electric Signs

12.	Safety		4	]
	a.	Job Site Sanitation	4	
	b.	Responsibility for Providing Personal	Protecti	ve
		Equipment		
	c.	Excavation Safety		
	d.	Emergency Action Plans		
	e.	Safety Training Requirements		
	f.	Ventilation		
	g.	First Aid Kit Requirements		
	h.	Use of Personal Protective Equipmer	nt	
	i.	Signs, Signals, and Barricades		
	j.	Tools and Equipment		
	k.	Ladders		
	l.	Workplace Illumination		
	m.			
	n.	Requirements for Work Around Toxic	: Materia	ls
	о.	Material Cleanup and Disposal		
	p.	Material Safety Data Sheets (MSDS)		
	q.	Handling and Storing Materials		
	r.	Fall Protection		
13.		and Transformers	6	]
		Motors Used in Dwellings	_	]
	ь.	Motor Branch Circuits in Industrial an	ıd	
		Commercial Locations		
		Feeder Transformers		
	d.	Use of Transformers		

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Тор	oic Info	rmation # of Items	
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	t.	National Electrical Codebook	
	u.		
	٧.	Temporary Wiring	
	w.	Cranes and Hoists	
	X.	Elevators and Escalators	
3.	Electr	rical Installation Requirements	ı
	c.	Approved Methods of Installation 10	
		of Electrical Equipment	
	d.	Approved Methods of Installation of Electrical	
		Equipment in Excess of 600 volts	
4.	Servic	ces, Feeders, and Branch Circuits	
	i.	Services 10	
	j.	Voltage Drop for Branch Circuits	
		or Feeders	
	k.	Services in Excess of 600 volts	
	l.		
	m.	Outside Branch Circuits and Feeders	
	n.	Branch Circuits	

	0.	Space-heating, Snow-melting, and Pipe-heating Circuits
	p.	Air-conditioning and Refrigeration Equipment
5.		urrent Protection
	b.	NEC Overcurrent Protection 9
		Requirements
5.	Groun	ding and Bonding
•	d.	General Requirements
	e.	Required Sizes of Grounding Electrode
		Conductors
	f.	Required Sizes of Equipment Grounding
		Conductors
7.	Condu	ictors and Cables
	l.	Underground Conductors and
		Cables
	m.	Vertical Installations
	n.	Selecting Conductors
	ο.	Armored Cable, Type AC
	p.	Metal-clad Cable, Type MC
	q.	Nonmetallic-sheathed Cable, Types NM, NMC,
		NMS
	r.	Service Entrance Cables, Types SE and USE
	s.	Underground Feeder and Branch Circuit Cable,
		Type UF
	t.	Mineral Insulated, Type MI
	u.	Flat Cable Assemblies, Type FC, and Flat
		Conductor Cable, Type FCC
	<b>v.</b>	Medium Voltage Cable, Type MV
3.		yays and Boxes
	w.	General Raceway Requirements 7
	x.	General Box Requirements
	у.	Pull Boxes
	z.	Conduit Fittings
	aa.	Type RMC (Rigid Metal Conduit)
		Type EMT (Electric Metallic Conduit)
	cc.	Type IMC (Intermediate Metal Conduit) Type PMC (Pigid Normatallic Conduit)
	dd.	
	ee. ff.	Type LFMC (Liquid-tight Flexible Metal Conduit)
	gg.	Type FMT (Flexible Metallic Tubing)
		Type HDPE (High-density Polyethylene Conduit)
		Type NUCC (Nonmetallic Underground Conduit
	"-	with Conductors)
	jj.	Type LFNC (Liquid-tight Flexible Nonmetallic
	١,٠	conduit)
	kk.	Area of Raceway and Number of Conduct
		(Conduit Fill)
	II.	Outlet, Device, Pull, and Junction Boxes
	_	Box Volume and Fill
	1	Auxiliary Gutters, Busways, Concrete and
		Nonconcrete Raceways
	00.	Metal and Nonmetallic Wireways
		Surface Metal and Nonmetallic Raceways
		Underfloor Raceways
		Cabletrays
9.		Il Occupancies and Equipment
		ding Swimming Pools) 10
	ì.	Wiring in Class I, II, and III
		Hazardous Locations
	j.	Wiring in Commercial Garages and Fuel
		Dispensing Facilities
		2.000.00.00
	k.	Wiring in Bulk Storage Plants, Paint, and Spray
	k.	
	k. l.	Wiring in Bulk Storage Plants, Paint, and Spray
		Wiring in Bulk Storage Plants, Paint, and Spray Areas

Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Wiring of Floating Buildings ο. Wiring to Swimming Pools, Fountains, and Hot Low Voltage, Alarms, Signaling Systems, 2 and Communications j. Remote Control or Signaling Circuits k. Communication Circuits Equipment Operating at 50 volts or Less m. Fiber Optics n. Photovoltaics ο. Remote Controls **p.** Fire Alarms **q.** Circuit Wiring for an Emergency System Communications Systems Wiring **Lighting and Signs** 10 i. Fixture Installation Fixture Grounding j. k. Fixture Wiring l. Fluorescent Fixtures m. Fixture Construction Requirements **Recessed Fixtures** Lighting Systems that Operate at Less Than 30 Neon Lighting and Electric Signs p. 12. Safety Job Site Sanitation s. Responsibility for Providing Personal Protective t. Equipment **Excavation Safety** u. **Emergency Action Plans** ٧. **Safety Training Requirements** w. Ventilation X. у. First Aid Kit Requirements Use of Personal Protective Equipment z. aa. Signs, Signals, and Barricades Tools and Equipment bb. Ladders cc. dd. Workplace Illumination ee. Scaffolds Requirements for Work Around Toxic Materials ff. gg. Material Cleanup and Disposal hh. Material Safety Data Sheets (MSDS) Handling and Storing Materials Fall Protection Motors and Transformers e. Motors Used in Dwellings Motor Branch Circuits in Industrial and **Commercial Locations** 

#### **REFERENCE LIST**

The reference materials listed below were used to prepare the questions for this examination. The examination may also contain questions based on trade knowledge or general industry practices. Except for Code books, later editions of references are allowed in the test area. For Code questions, the examinations will be based only on the edition of the Code book that is listed.

Feeder Transformers

Use of Transformers

Candidates may use a silent, non-printing, non-programmable calculator in the examination center. Candidates will also be provided with a magnifying glass upon request.

This examination is OPEN BOOK.

The following reference materials <u>are</u> allowed in the examination center:

- NFPA 70 National Electrical Code, 2023 Edition, as revised and adopted by the Oklahoma Uniform Building Code Commission, National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02169-9101, (800) 344-3555, www.nfpa.org. NEC Handbooks and spiral-bound copies of the National Electrical Code will NOT be allowed in the test center.
- Code of Federal Regulations 29 CFR Part 1926 (OSHA), with latest available amendments, Candidates can access the Government website with this link https://www.osha.gov/lawsregs/regulations/standardnumber/1926

Hard copy can be purchased from Mancomm.com. <a href="https://mancomm.com/29-cfr-1926-osha-construction-industry-regulations-standards/">https://mancomm.com/29-cfr-1926-osha-construction-industry-regulations-standards/</a>.

Amazon and other retailers sell the Mancomm OSHA publications.

#### OR

Code of Federal Regulations - 29 CFR Part 1926 Selections by PSI, with latest available amendments, 866-589-3088, http://www.psionlinestore.com

 Ugly's Electrical References, George V. Hart, any edition may be used, or 2014 edition, Jones and Bartlett, (800) 832-0034, <u>www.uglys.net</u>

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# **UNLIMITED ELECTRICAL JOURNEYMAN**

# **SCOPE OF WORK**

Tests a candidate's knowledge of the design, plan, layout, installation, repair and alteration of electrical conductors, fixtures, appliances, apparatus, raceways, conduit and related equipment and fixtures that use electrical energy for light, heat, power, data and communications in a supervised environment.

Effective thru 3/26/2025

Top	ic Informa	ation # of	Items		e.	Type RMC (Rigid Metal Conduit)
	1	(nowledge			f.	Type EMT (Electric Metallic Conduit)
'•			4		g.	Type IMC (Intermediate Metal Conduit)
		rmits and Inspections			h.	Type RNC (Rigid Nonmetallic Conduit)
		eservation of Structural Integrity			i.	Type FMC (Flexible Metal Conduit)
		eds Analysis and Estimate			j.	Type LFMC (Liquid-tight Flexible Metal
2.	General E	Electrical Knowledge			٦.	Conduit)
	a. Vo	Itage, Current, and Resistance	10		1.	
		Series, Parallel, and			k.	Type FMT (Flexible Metallic Tubing)
		ombination Circuits			l.	Type HDPE (High-density Polyethylene
		wer Used in a Circuit				Conduit)
	-		Cinaria		m.	Type NUCC (Nonmetallic Underground Conduit
		wer lost (called Heat Lost) in Any	Circuit			with Conductors)
		ndamental AC Theory			n.	Type LFNC (Liquid-tight Flexible Nonmetallic
		ndamental Three-phase AC Theory	,			Conduit)
		st of Power Used in a Circuit			ο.	Area of Raceway and Number of Conduct
	g. Tro	oubleshooting and Test Systems			٠.	(Conduit Fill)
		tional Electrical Codebook			_	
		finitions Used by the NEC			p.	Outlet, Device, Pull, and Junction Boxes
		mporary Wiring			q.	Box Volume and Fill
					r.	Auxiliary Gutters, Busways, Concrete and
		anes and Hoists				Nonconcrete Raceways
		evators and Escalators			s.	Metal and Nonmetallic Wireways
3.		Installation Requirements			t.	Surface Metal and Nonmetallic Raceways
		proved Methods of Installation	10		u.	Underfloor Raceways
		Electrical Equipment				
		proved Methods of Installation of I	Electrical		٧.	,
		quipment in Excess of 600 volts	ziccii icai	9.		al Occupancies and Equipment
_						ding Swimming Pools) 10
4.		Feeders, and Branch Circuits	40		a.	Wiring in Class I, II, and III
		rvices	10			Hazardous Locations
	<b>b.</b> Vo	ltage Drop for Branch Circuits			b.	Wiring in Commercial Garages and Fuel
	or	Feeders				Dispensing Facilities
	c. Sei	rvices in Excess of 600 volts				Wiring in Bulk Storage Plants, Paint, and Spray
		eders			c.	
	-	itside Branch Circuits and Feeders				Areas
					d.	Special Occupancies
		anch Circuits			e.	Wiring in Health Facilities and Places of
		ace-heating, Snow-melting, and Pi	pe-			Assembly
		eating Circuits			f.	Wiring of Mobile Home, Mobile Home Parks,
	<b>h.</b> Air	r-conditioning and Refrigeration Ec	quipment		-	RVs, and RV Parks
5.	Overcurre	ent Protection			g.	Wiring of Floating Buildings
		C Overcurrent Protection	6		h.	Wiring to Swimming Pools, Fountains, and Hot
		equirements			111.	Tubs
_		g and Bonding		10		
6.			10	10.		oltage, Alarms, Signaling Systems,
		eneral Requirements			and C	ommunications 7
		quired Sizes of Grounding Electroc	le		a.	Remote Control or Signaling
	Co	onductors				Circuits
	c. Re	quired Sizes of Equipment Ground	ing		Ь.	Communication Circuits
		onductors			c.	Equipment Operating at 50 volts or Less
7.		ors and Cables			d.	Fiber Optics
<i>,</i> .			6		1	Photovoltaics
		derground Conductors and			e.	
		ables			f.	Remote Controls
		rtical Installations			g.	Fire Alarms
	c. Sel	lecting Conductors			h.	Circuit Wiring for an Emergency System
	d. Arı	mored Cable, Type AC			i.	Communications Systems Wiring
		etal-clad Cable, Type MC		11		ng and Signs
		inmetallic-sheathed Cable, Types N	M. NMC	'''		Fixture Installation 10
	NA		,,		_	i ixture instattation
			A LICE		b.	Fixture Grounding
		rvice Entrance Cables, Types SE ar			c.	Fixture Wiring
		derground Feeder and Branch Circ	uit Cable,		d.	Fluorescent Fixtures
		/pe UF			e.	
		neral Insulated, Type MI			f.	Recessed Fixtures
	j. Fla	at Cable Assemblies, Type FC, and	Flat		g.	Lighting Systems that Operate at Less Than 30
		onductor Cable, Type FCC			s.	volts
		edium Voltage Cable, Type MV			L .	Neon Lighting and Electric Signs
8.				40	h.	
		s and Boxes		12.	Safety	
υ.		neral Raceway Requirements	7		a.	Job Site Sanitation
ο.						
0.	<b>b.</b> Ge	neral Box Requirements			b.	Responsibility for Providing Personal
0.	<b>b.</b> Ge <b>c.</b> Pu				Ь.	Responsibility for Providing Personal Protective Equipment

**Excavation Safety Emergency Action Plans** d. e. **Safety Training Requirements** Ventilation First Aid Kit Requirements Use of Personal Protective Equipment Signs, Signals, and Barricades Tools and Equipment j. Ladders k. Workplace Illumination m. Scaffolds Requirements for Work Around Toxic Materials Material Cleanup and Disposal p. Material Safety Data Sheets (MSDS) **q.** Handling and Storing Materials r. Fall Protection 13. Motors and Transformers 6 a. Motors Used in Dwellings Motor Branch Circuits in Industrial and **Commercial Locations Feeder Transformers** 

#### Effective 3/27/2025

# 100 Scored Items - 240 minutes - 70% Correct to Pass

**Use of Transformers** 

Тор	ic Info	rmation	# of	Items
1.	Gener	al Knowledge		4
	d.	Permits and Inspections		4
	e.	Preservation of Structural Integ	rity	
	f.	Needs Analysis and Estimate	-	
2.	Gener	al Electrical Knowledge		
		Voltage, Current, and Resistance	e	10
		in Series, Parallel, and		
		Combination Circuits		
	n.	Power Used in a Circuit		
	ο.	Power lost (called Heat Lost) in	Any (	Circuit
	p.	Fundamental AC Theory		
	q.	Fundamental Three-phase AC T	heory	
	r.	Cost of Power Used in a Circuit		
	s.	Troubleshooting and Test Syste	ms	
	t.	National Electrical Codebook		
	u.	Definitions Used by the NEC		
	٧.	Temporary Wiring		
	w.			
	X.	Elevators and Escalators		
3.		ical Installation Requirements		
	c.	Approved Methods of Installation	n	10
	_	of Electrical Equipment		
	d.	Approved Methods of Installation		lectrical
		Equipment in Excess of 600 vol		
4.		es, Feeders, and Branch Circui	ts	
	i.	Services		10
	j.	Voltage Drop for Branch Circuit	S	
	_	or Feeders		
	k.	Services in Excess of 600 volts		
	l.	Feeders		
	m.	Outside Branch Circuits and Fee	eders	
	n.	Branch Circuits	1.5	
	0.	Space-heating, Snow-melting, a	and Pi	pe-
	_	heating Circuits	F-	
_	р.		ion Ec	uipment
5.	_	urrent Protection		9
	b.	NEC Overcurrent Protection		9

	Requirements		
Groun	ding and Bonding	40	
d.	General Requirements	10	
e.	Required Sizes of Grounding Electrod	e	
f.	Conductors Required Sizes of Equipment Groundi	ng	
	Conductors	··•	
_	ctors and Cables	8	
l.	Underground Conductors and Cables		
m.	Vertical Installations		
n.	Selecting Conductors		
0.	Armored Cable, Type AC		
p.	Metal-clad Cable, Type MC	AA NIAAC	
q.	Nonmetallic-sheathed Cable, Types N NMS	M, NMC,	
r.	Service Entrance Cables, Types SE an		
s.	Underground Feeder and Branch Circu	uit Cable,	,
t.	Type UF Mineral Insulated, Type MI		
u.	Flat Cable Assemblies, Type FC, and	Flat	
	Conductor Cable, Type FCC		
٧.	Medium Voltage Cable, Type MV		
Racew w.	ays and Boxes General Raceway Requirements	7	
w. x.	General Box Requirements	1	
	Pull Boxes		
z.	Conduit Fittings		
	Type RMC (Rigid Metal Conduit)		
	Type EMT (Electric Metallic Conduit) Type IMC (Intermediate Metal Condui	t)	
	Type RNC (Rigid Nonmetallic Conduit		
	Type FMC (Flexible Metal Conduit)		
ff.	Type LFMC (Liquid-tight Flexible Meta	al	
gg.	Conduit) Type FMT (Flexible Metallic Tubing)		
	Type HDPE (High-density Polyethylen-	e	
	Conduit)		
ii.	Type NUCC (Nonmetallic Underground with Conductors)	d Conduit	:
jj.	with Conductors) Type LFNC (Liquid-tight Flexible Nonr	netallic	
"	Conduit)		
kk.	Area of Raceway and Number of Conc	luct	
u.	(Conduit Fill) Outlet, Device, Pull, and Junction Bo	VOC	
_	Box Volume and Fill	vc2	
	Auxiliary Gutters, Busways, Concrete	and	
	Nonconcrete Raceways		
	Metal and Nonmetallic Wireways	(2) (6	
	Surface Metal and Nonmetallic Racew Underfloor Raceways	rays	
	Cabletrays		
Specia	l Occupancies and Equipment		
	ding Swimming Pools)	10	
i.	Wiring in Class I, II, and III Hazardous Locations	<del></del>	
j.	Wiring in Commercial Garages and Fu	el	
	Dispensing Facilities		
k.	Wiring in Bulk Storage Plants, Paint, a	and Spray	1
	Areas		
l. m.	Special Occupancies Wiring in Health Facilities and Places	of	
	Assembly		
n.	Wiring of Mobile Home, Mobile Home	Parks,	
	RVs, and RV Parks		

Requirements

Wiring of Floating Buildings Wiring to Swimming Pools, Fountains, and Hot 10. Low Voltage, Alarms, Signaling Systems, and Communications j. Remote Control or Signaling Circuits k. Communication Circuits Equipment Operating at 50 volts or Less m. Fiber Optics **Photovoltaics** n. **Remote Controls** ο. p. Fire Alarms Circuit Wiring for an Emergency System q. **Communications Systems Wiring** Lighting and Signs 10 i. Fixture Installation Fixture Grounding j. k. Fixture Wiring ι. Fluorescent Fixtures m. Fixture Construction Requirements **Recessed Fixtures** Lighting Systems that Operate at Less Than 30 Neon Lighting and Electric Signs 12. Safety 4 **Job Site Sanitation** s. t. Responsibility for Providing Personal **Protective Equipment** u. Excavation Safety v. Emergency Action Plans w. Safety Training Requirements x. Ventilation y. First Aid Kit Requirements Use of Personal Protective Equipment aa. Signs, Signals, and Barricades bb. Tools and Equipment cc. Ladders dd. Workplace Illumination ee. Scaffolds ff. Requirements for Work Around Toxic Materials gg. Material Cleanup and Disposal hh. Material Safety Data Sheets (MSDS) ii. Handling and Storing Materials jj. Fall Protection Motors and Transformers e. Motors Used in Dwellings Motor Branch Circuits in Industrial and **Commercial Locations** Feeder Transformers

#### **REFERENCE LIST**

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**Use of Transformers** 

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 Ugly's Electrical References, George V. Hart, any edition may be used, Jones and Bartlett, (800) 832-0034, www.uglys.net

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#### RESIDENTIAL ELECTRICAL CONTRACTOR

# **SCOPE OF WORK**

Tests a candidate's knowledge of the design, plan, layout, installation, repair and alteration of electrical conductors, fixtures, appliances, apparatus, raceways, conduit and related equipment and fixtures that use electrical energy for light, heat, power, data and communications as it applies to one-, two-, or three-family residences.

Effective thru 3/26/2025

1. General Knowledge a. Permits and Inspections  4	)
Dormits and Inspections 4	
	al
<b>b.</b> Preservation of Structural Integrity Conduit	.,
C Needs analysis and estimate	
j. Type TMT (I textble Metatile Tubling)	_
No. Type Tible 2 (Tight density Folyethyten	е
conduct)	
in Series, Parallel, and  I. Type NUCC (Nonmetallic Underground	d
Combination Circuits Conduit with Conductors)	
b. Power Used in a Circuit m. Type LFNC (Liquid-tight Flexible None	netallic
c. Power Lost (called Heat Lost) in Any Circuit Conduit)	
d. Fundamental AC Theory  n. Area of Raceways and Number of Con	duct
e. Fundamental Three-phase AC Theory (Conduit Fill)	duct
(Conduct rice)	
G. Contain Translation and Tration	xes
b. Use of the National Floatwicel Codeback	
q. Advittary dutters, busways, concrete	, and
i. Understanding and Application of Definitions  Nonconcrete Raceways	
Used by the NEC r. Metal and Nonmetallic Wireways	
j. Temporary Wiring s. Surface Metal and Nonmetallic Racev	avs
k. Elevators and Escalators t. Underfloor Raceways	•
3. Electrical Installation Requirements u. Cabletrays	
100 100 100 100 100 100 100 100 100 100	
7. Special Occupancies and Equipment	
(including 5withining 1 oots)	4
b. Approved Methods of Installation of Electrical  a. Wiring of Mobile Home, Mobile	
Equipment in Excess of 600 volts  Home Parks, RVs, and RV Parks	
4. Services, Feeders, and Branch Circuits  b. Required Wiring to Swimming Pools,	
a. Services 10 Fountains, and Hot Tubs	
b. Voltage Drop for Branch Circuits 10. Low Voltage, Alarms, Signaling Systems,	
Too down	6
and Communications	U
a. Remote Control of Signating	
Circuits	
e. Outside Branch Circuits and Feeders b. Communication Circuits	
f. Branch Circuits c. Equipment Operating at 50 volts or L	ess
g. Space-heating, Snow-melting, and Pipe-	
heating Circuits  e. Photovoltaics	
h. Air-conditioning and Refrigeration Equipment f. Remote Control	
E O	
5. THE AMITIS	
in the direction of the state o	
Requirements i. Communications Systems Wiring	
6. Grounding and Bonding  8  11. Lighting and Signs	
a. General Requirements a. Fixtures installation	4
b. Grounding Electrode Conductors b. Fixtures Grounding	
c. Equipment Grounding Conductors c. Fixture Wiring	
7 Conductors and Cables d. Fluorescent Fixtures	
a. Install Underground Conductors 6  e. Fixture Construction Requirements	
	Th
b. Perform Vertical Installations g. Lighting Systems that Operate at Less	inan
c. Select Conductor 30 volts	
d. Armored Cable, Type AC	4
e. Metal-clad Cable, Type MC	4
f. Nonmetallic-sheathed Cable, Types NM, NMC,  b. Responsibility for Providing Personal	
NMS Protective Equipment	
Total Complete Complete Types CF and UCF	
or barrey reasonable	
i. Mineral Insulated, Type MI f. Ventilation	
j. Flat Cable Assemblies, Type FC, and Flat g. First Aid Kit Requirements	
Conductor Cable, Type FCC  h. Use of Personal Protective Equipmen	:
k. Medium Voltage Cable, Type MV i. Signs, Signals, and Barricades	
8. Raceways and Boxes j. Tools and Equipment	
a. General Raceway Requirements 6 k. Ladders	
b. General Box Requirements  I. Workplace Illumination	
c. Pull Boxes and Conduit Fittings m. Scaffolds	
d. Type RMC (Rigid Metal Conduit)  n. Requirements for Work Around Toxic	

- Materials
- o. Material Cleanup and Disposal
  p. Material Safety Data Sheets (MSDS)
  q. Handling and Storing Materials
  r. Fall Protection

## Effective 3/27/2025

Тор	ic Info	rmation # of	Items
1.	Gener	al Knowledge	4
	c.	Permits and Inspections	
	d.	Preservation of Structural Integrity	
	d.	Needs analysis and estimate	
2.	Gener	al Electrical Knowledge	
	b.	Voltage, Durrent, and Resistance	12
		in Series, Parallel, and	
	_	Combination Circuits	
	l.	Power Used in a Circuit	<b>.</b> .
	m.	Power Lost (called Heat Lost) in Any	Circuit
	n.	Fundamental AC Theory	
	0.	Fundamental Three-phase AC Theory	
	p.	Cost of Power Used in a Circuit System Troubleshooting and Testing	
	q.	Use of the National Electrical Codebo	ook
	r. s.	Understanding and Application of De	
	3.	Used by the NEC	111111111111111111111111111111111111111
	t.	Temporary Wiring	
	u.	Elevators and Escalators	
3.		ical Installation Requirements	
٥.	c.	Approved Methods of Installation	10
	٠.	of Electrical Equipment	
	d.	Approved Methods of Installation of I	Electrical
		Equipment in Excess of 600 volts	
4.	Servic	es, Feeders, and Branch Circuits	
	i.	Services	10
	j.	Voltage Drop for Branch Circuits	
	_	or Feeders	
	k.	Services in Excess of 600 volts	
	l.	Feeders	
	m.		
	n.	Branch Circuits	
	0.	Space-heating, Snow-melting, and Pi	pe-
	_	heating Circuits	
_	р.		uipment
5.	_	urrent Protection NEC Overcurrent Protection	8
	b.		
6.	Group	Requirements ding and Bonding	
٥.	d.	General Requirements	8
	e.	Grounding Electrode Conductors	
	f.	Equipment Grounding Conductors	
7.		ictors and Cables	
<i>,</i> .	l.	Install Underground Conductors	8
	"	and Cables	
	m.	Perform Vertical Installations	
	n.	Select Conductor	
	0.	Armored Cable, Type AC	
	p.	Metal-clad Cable, Type MC	
	q.	Nonmetallic-sheathed Cable, Types I	NM, NMC,
	'	NMS	. ,
	r.	Service Entrance Cables, Types SE ar	nd USE
	s.	Underground Feeder and Branch	Circuit

		Cable, Type UF	
1	t.	Mineral Insulated, Type MI	
	u.	Flat Cable Assemblies, Type FC,	and Flat
		Conductor Cable, Type FCC	
_	٧.	Medium Voltage Cable, Type MV	
8.		rays and Boxes	
	v.	General Raceway Requirements	6
	w.	General Box Requirements	
	х.	Pull Boxes and Conduit Fittings	
	у.	Type RMC (Rigid Metal Conduit)	
	z.	Type EMT (Electric Metallic Conduit) Type IMC (Intermediate Metal Condu	
	aa. bb.		
	cc.		-)
		Type LFMC (Liquid-tight Flexible Met	al
	uu.	Conduit)	.at
	ee.	Type FMT (Flexible Metallic Tubing)	
	ff.	Type HDPE (High-density Polyethyler	ne
		Conduit)	
	gg.	Type NUCC (Nonmetallic Undergroun	d
		Conduit with Conductors)	
	hh.	Type LFNC (Liquid-tight Flexible Non	metallic
		Conduit)	
	ii.	Area of Raceways and Number of Cor	nduct
		(Conduit Fill)	
	jj.		oxes
	-	Box Volume and Fill	
	ll.	Auxiliary Gutters, Busways, Concrete	e, and
		Nonconcrete Raceways	
		. Metal and Nonmetallic Wireways	
		Surface Metal and Nonmetallic Racev	ways
		Underfloor Raceways Cabletrays	
9.		l Occupancies and Equipment	
7.		ding Swimming Pools)	4
	c.	Wiring of Mobile Home, Mobile	_
	٠.	Home Parks, RVs, and RV Parks	
1	d.		
	d.	Required Wiring to Swimming Pools,	
10.	_	Required Wiring to Swimming Pools, Fountains, and Hot Tubs	
10.	Low V	Required Wiring to Swimming Pools,	2
10.	Low V	Required Wiring to Swimming Pools, Fountains, and Hot Tubs oltage, Alarms, Signaling Systems, ommunications	2
10.	Low V	Required Wiring to Swimming Pools, Fountains, and Hot Tubs oltage, Alarms, Signaling Systems,	2
10.	Low V and Co j. k.	Required Wiring to Swimming Pools, Fountains, and Hot Tubs oltage, Alarms, Signaling Systems, ommunications Remote Control or Signaling Circuits Communication Circuits	
10.	Low V and Co j. k. l.	Required Wiring to Swimming Pools, Fountains, and Hot Tubs oltage, Alarms, Signaling Systems, ommunications Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or L	
10.	Low V and Co j. k. l. m.	Required Wiring to Swimming Pools, Fountains, and Hot Tubs oltage, Alarms, Signaling Systems, ommunications Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or L Fiber Optic	
10.	Low V and Co j. k. l. m. n.	Required Wiring to Swimming Pools, Fountains, and Hot Tubs oltage, Alarms, Signaling Systems, ommunications Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or L Fiber Optic Photovoltaics	
10.	Low V and Co j. k. l. m. n.	Required Wiring to Swimming Pools, Fountains, and Hot Tubs oltage, Alarms, Signaling Systems, ommunications Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or L Fiber Optic Photovoltaics Remote Control	
10.	Low V and Co j. k. l. m. n. o. p.	Required Wiring to Swimming Pools, Fountains, and Hot Tubs oltage, Alarms, Signaling Systems, ommunications Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or L Fiber Optic Photovoltaics Remote Control Fire Alarms	ess
10.	Low V and Co j. k. l. m. n. o. p.	Required Wiring to Swimming Pools, Fountains, and Hot Tubs oltage, Alarms, Signaling Systems, ommunications Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or L Fiber Optic Photovoltaics Remote Control Fire Alarms Circuit Wiring for Emergency Systems	ess
	Low V and Co j. k. l. m. o. p. q.	Required Wiring to Swimming Pools, Fountains, and Hot Tubs  oltage, Alarms, Signaling Systems, ommunications Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or L Fiber Optic Photovoltaics Remote Control Fire Alarms Circuit Wiring for Emergency Systems Communications Systems Wiring	ess
11.	Low V and Co j.  k. l. m. o. p. q. r. Lightin	Required Wiring to Swimming Pools, Fountains, and Hot Tubs  oltage, Alarms, Signaling Systems, ommunications Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or L Fiber Optic Photovoltaics Remote Control Fire Alarms Circuit Wiring for Emergency Systems Communications Systems Wiring Ing and Signs	ess
	Low V and Co j.  k. l. m. o. p. q. r. Lightin	Required Wiring to Swimming Pools, Fountains, and Hot Tubs  oltage, Alarms, Signaling Systems, ommunications  Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or L Fiber Optic Photovoltaics Remote Control Fire Alarms Circuit Wiring for Emergency Systems Communications Systems Wiring Ing and Signs Fixtures Installation	ess
	Low V and Co j.  k. l. m. o. p. q. r. Lightin h.	Required Wiring to Swimming Pools, Fountains, and Hot Tubs  oltage, Alarms, Signaling Systems, ommunications  Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or L Fiber Optic Photovoltaics Remote Control Fire Alarms Circuit Wiring for Emergency Systems Communications Systems Wiring Ing and Signs Fixtures Installation Fixtures Grounding	ess
	Low V and Co j.  k. l. m. o. p. q. r. Lightin h. i. j.	Required Wiring to Swimming Pools, Fountains, and Hot Tubs  oltage, Alarms, Signaling Systems, ommunications  Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or L Fiber Optic Photovoltaics Remote Control Fire Alarms Circuit Wiring for Emergency Systems Communications Systems Wiring ng and Signs Fixtures Installation Fixtures Grounding Fixture Wiring	ess
	Low V and Co j.  k. l. m. o. p. q. r. Lightin h.	Required Wiring to Swimming Pools, Fountains, and Hot Tubs oltage, Alarms, Signaling Systems, ommunications Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or L Fiber Optic Photovoltaics Remote Control Fire Alarms Circuit Wiring for Emergency Systems Communications Systems Wiring ng and Signs Fixtures Installation Fixtures Grounding Fixture Wiring Fluorescent Fixtures	ess
	Low V and Co j.  k. l. m. o. p. q. r. Lightin h. i. j. k.	Required Wiring to Swimming Pools, Fountains, and Hot Tubs  oltage, Alarms, Signaling Systems, ommunications  Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or L Fiber Optic Photovoltaics Remote Control Fire Alarms Circuit Wiring for Emergency Systems Communications Systems Wiring ng and Signs Fixtures Installation Fixtures Grounding Fixture Wiring	ess
	Low V and Co j.  k. l. m. o. p. q. r. Lightin h. i. j. k.	Required Wiring to Swimming Pools, Fountains, and Hot Tubs  oltage, Alarms, Signaling Systems, ommunications Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or L Fiber Optic Photovoltaics Remote Control Fire Alarms Circuit Wiring for Emergency Systems Communications Systems Wiring and Signs Fixtures Installation Fixtures Grounding Fixture Wiring Fluorescent Fixtures Fixture Construction Requirements	ess s
	Low V and Co j.  k. l. m. o. p. q. r. Lightin h. i. j. k. l. m.	Required Wiring to Swimming Pools, Fountains, and Hot Tubs  oltage, Alarms, Signaling Systems, ommunications  Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or L Fiber Optic Photovoltaics Remote Control Fire Alarms Circuit Wiring for Emergency Systems Communications Systems Wiring Tog and Signs Fixtures Installation Fixtures Grounding Fixture Wiring Fluorescent Fixtures Fixture Construction Requirements Recessed Fixtures	ess s
	Low V and Co j.  k. l. m. o. p. q. r. Lightin h. i. j. k. l. m.	Required Wiring to Swimming Pools, Fountains, and Hot Tubs  oltage, Alarms, Signaling Systems, ommunications Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or L Fiber Optic Photovoltaics Remote Control Fire Alarms Circuit Wiring for Emergency Systems Communications Systems Wiring and Signs Fixtures Installation Fixtures Grounding Fixture Wiring Fluorescent Fixtures Fixture Construction Requirements Recessed Fixtures Lighting Systems that Operate at Les 30 volts	ess s 4
11.	Low V and Co j.  k. l. m. o. p. q. r. Lightin h. i. j. k. l. m.	Required Wiring to Swimming Pools, Fountains, and Hot Tubs  oltage, Alarms, Signaling Systems, ommunications Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or L Fiber Optic Photovoltaics Remote Control Fire Alarms Circuit Wiring for Emergency Systems Communications Systems Wiring and Signs Fixtures Installation Fixtures Grounding Fixture Wiring Fluorescent Fixtures Fixture Construction Requirements Recessed Fixtures Lighting Systems that Operate at Les 30 volts	ess s
11.	Low V and Co j.  k. l. m. o. p. q. r. Lightin h. i. j. k. l. m. n.	Required Wiring to Swimming Pools, Fountains, and Hot Tubs  oltage, Alarms, Signaling Systems, ommunications  Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or L Fiber Optic Photovoltaics Remote Control Fire Alarms Circuit Wiring for Emergency Systems Communications Systems Wiring and Signs Fixtures Installation Fixtures Grounding Fixture Wiring Fluorescent Fixtures Fixture Construction Requirements Recessed Fixtures Lighting Systems that Operate at Les 30 volts  Job Site Sanitation Responsibility for Providing Personal	ess s 4
11.	Low V and Co j.  k. l. m. o. p. q. r. Lightin h. i. j. k. l. m. n.	Required Wiring to Swimming Pools, Fountains, and Hot Tubs  oltage, Alarms, Signaling Systems, ommunications Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or L Fiber Optic Photovoltaics Remote Control Fire Alarms Circuit Wiring for Emergency Systems Communications Systems Wiring and Signs Fixtures Installation Fixtures Grounding Fixture Wiring Fluorescent Fixtures Fixture Construction Requirements Recessed Fixtures Lighting Systems that Operate at Les 30 volts  Job Site Sanitation Responsibility for Providing Personal Protective Equipment	ess s 4
11.	Low V and Co j.  k. l. m. o. p. q. r. Lightin h. i. j. k. l. m. n.	Required Wiring to Swimming Pools, Fountains, and Hot Tubs  oltage, Alarms, Signaling Systems, ommunications  Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or L Fiber Optic Photovoltaics Remote Control Fire Alarms Circuit Wiring for Emergency Systems Communications Systems Wiring and Signs Fixtures Installation Fixtures Grounding Fixture Wiring Fluorescent Fixtures Fixture Construction Requirements Recessed Fixtures Lighting Systems that Operate at Les 30 volts  Job Site Sanitation Responsibility for Providing Personal	ess s 4

- w. Safety Training Requirements
- x. Ventilation
- y. First Aid Kit Requirements
- z. Use of Personal Protective Equipment
- aa. Signs, Signals, and Barricades
- **bb.** Tools and Equipment
- cc. Ladders
- dd. Workplace Illumination
- ee. Scaffolds
- ff. Requirements for Work Around Toxic Materials
- gg. Material Cleanup and Disposal
- hh. Material Safety Data Sheets (MSDS)
- ii. Handling and Storing Materials
- jj. Fall Protection

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- Code of Federal Regulations 29 CFR Part 1926 (OSHA), with latest available amendments, Candidates can access the Government website with this link https://www.osha.gov/lawsregs/regulations/standardnumber/1926

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OR

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 Ugly's Electrical References, George V. Hartz, any edition may be used, Jones and Bartlett, (800) 832-0034, www.uglys.net

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#### RESIDENTIAL ELECTRICAL JOURNEYMAN

#### **SCOPE OF WORK**

Tests a candidate's knowledge of the installation, repair and alteration of electrical conductors, fixtures, appliances, apparatus, raceways, conduit and related equipment and fixtures that use electrical energy for light, heat, power, data and communications as it applies to one-, two-, or three-family residences in a supervised environment.

#### Effective thru 3/26/2025

Тор	ic Info	rmation # of	Items
1.	Gener	ral Knowledge	4
	a.	Permits and Inspections	7
	b.	Preservation of Structural Integrity	
	c.	Needs Analysis and Estimate	
2.	Gener	ral Electrical Knowledge	
	a.	Voltage, Current, and Resistance	12
		in Series, Parallel, and	
		Combination Circuits	
	b.	Power Used in a Circuit	
	c.	Power Lost (called Heat Lost) in Any	Circuit
	d.	Fundamental AC Theory	
	e.	Fundamental Three-phase AC Theory	1
	f.	Cost of Power Used in a Circuit	
	g.	System Troubleshooting and Testing	
	h.	Use of the National Electrical Codebo	
	i.	Understanding and Application of De	finitions
		Used by the NEC	
	j.	Temporary Wiring	
	k.	Elevators and Escalators	
3.		rical Installation Requirements	10
	a.	Approved Methods of Installation	10
		of Electrical Equipment	
	ь.	Approved Methods of Installation of I	Electrical
-		Equipment in Excess of 600 volts	
4.	l l	ces, Feeders, and Branch Circuits	40
	a.	Services	10
	b.	Voltage Drop for Branch Circuits	
		or Feeders	
	c. d.	Services in Excess of 600 volts	
		Feeders	
	e. f.	Outside Branch Circuits and Feeders Branch Circuits	
			o hosting
	g.	Space-heating, Snow-melting and Pip Circuits	re-neating
	h.	Air-conditioning and Refrigeration Ec	uinment
<u> </u>	111.	All-conditioning and Nemigeration Lo	uipilielit

5.	Overc	urrent Protection
٠.	a.	NEC Overcurrent Protection 6
		Requirements
6.	Groun	ding and Bonding
	a.	General Requirements
	ь.	Grounding Electrode Conductors
7	C.	Equipment Grounding Conductors
7.	condi a.	Install Underground Conductors 6
	a.	and Cables
	ь.	Perform Vertical Installations
	c.	Select Conductor
	d.	Armored Cable, Type AC
	e.	Metal-clad Cable, Type MC
	f.	Nonmetallic-sheathed Cable, Types NM, NMC,
		NMS Sorvice Entrance Cables Types SE and USE
	g. h.	Service Entrance Cables, Types SE and USE Underground Feeder and Branch Circuit Cable,
		Type UF
	i.	Mineral Insulated, Type MI
	j.	Flat Cable Assemblies, Type FC, and Flat
		Conductor Cable, Type FCC
	k.	Medium Voltage Cable, Type MV
8.		vays and Boxes
	a.	General Raceway Requirements 6
	b.	General Box Requirements Pull Boxes and Conduit Fittings
	c. d.	Type RMC (Rigid Metal Conduit)
	e.	Type EMT (Electric Metallic Conduit)
	f.	Type IMC (Intermediate Metal Conduit)
	g.	Type RNC (Rigid Nonmetallic Conduit)
	ĥ.	Type FMC (Flexible Metal Conduit)
	i.	Type LFMC (Liquid-tight Flexible Metal
		Conduit)
	j.	Type FMT (Flexible Metallic Tubing) Type HDPE (High-density Polyethylene
	k.	Conduit)
	l.	Type NUCC (Nonmetallic Underground Conduit
		with Conductors)
	m.	Type LFNC (Liquid-tight Flexible Nonmetallic
		Conduit)
	n.	Area of Raceways and Number of Conduct
		(Conduit Fill)
	0.	Outlet, Device, Pull, and Junction Boxes Box Volume and Fill
	p. q.	Auxiliary Gutters, Busways, Concrete, and
	4.	Nonconcrete Raceways
	r.	Metal and Nonmetallic Wireways
	s.	Surface Metal and Nonmetallic Raceways
	t.	Underfloor Raceways
_	u.	Cabletrays
9.		al Occupancies and Equipment
	(inclu	ding Swimming Pools)  Wiring of Mobile Home, Mobile
	a.	Home Parks, RVs, and RV Parks
	b.	Required Wiring to Swimming Pools,
		Fountains, and Hot Tubs
10.	Low V	oltage, Alarms, Signaling Systems,
		ommunications 6
	a.	Remote Control or Signaling
	1.	Circuits
	b.	Communication Circuits
	c. d.	Equipment Operating at 50 volts or Less Fiber Optic
	e.	Photovoltaics
	f.	Remote Control
		TOTAL CONTROL

	g.	Fire Alarms
	h.	Circuit Wiring for Emergency Systems
	i.	Communications Systems Wiring
11.	Lighti	ng and Signs
	a.	Fixtures Installation 4
	ь.	Fixtures Grounding
		Fixture Wiring
		Fluorescent Fixtures
		Fixture Construction Requirements
	f.	Recessed Fixtures
	g.	Lighting Systems that Operate at Less Than 30 volts
12.	Safety	
	a.	Job Site Sanitation 4
	b.	Responsibility for Providing Personal
		Protective Equipment
	c.	Excavation Safety
	d.	Emergency Action Plans
	e.	Safety Training Requirements
	f.	Ventilation
		First Aid Kit Requirements
	h.	Use of Personal Protective Equipment
	i.	Signs, Signals, and Barricades
	j.	
	k.	
	l.	Workplace Illumination
	m.	
	n.	Requirements for Work Around Toxic Materials
	0.	Material Cleanup and Disposal
	p.	Material Safety Data Sheets (MSDS)
	q.	Handling and Storing Materials
	r.	Fall Protection

# Effective 3/27/2025

Top	oic Info	rmation	# of Items
1.	Gener	ral Knowledge	4
	d.		•
	e.	Preservation of Structural Inte	grity
	f.	Needs Analysis and Estimate	
2.	Gener	al Electrical Knowledge	
	l.	Voltage, Current, and Resistan in Series, Parallel, and	12
		Combination Circuits	
	m.	Power Used in a Circuit	
	n.	Power Lost (called Heat Lost)	in Any Circuit
	0.	Fundamental AC Theory	
	p.	Fundamental Three-phase AC	
	q.	Cost of Power Used in a Circuit	•
	r.	-,	
	s.	Use of the National Electrical (	
	t.	Understanding and Application Used by the NEC	of Definitions
	u.	Temporary Wiring	
	٧.	Elevators and Escalators	
3.	Electr	rical Installation Requirements	
	c.	Approved Methods of Installati of Electrical Equipment	on 10
	d.	Approved Methods of Installati Equipment in Excess of 600 vo	
4.	Servi	es, Feeders, and Branch Circu	
	i.	Services	10

	j. k.	Voltage Drop for Branch Circuits or Forester Services in Excess of 600 volts	eeders
	l.	Feeders	
	m.	Outside Branch Circuits and Feeders	
	n.		
	ο.		e-heating
	_	Circuits	uinmant
5.		Air-conditioning and Refrigeration Equurent Protection	uipment
٥.	b.	NEC Overcurrent Protection	8
	D.	Requirements	
6.	Groun	ding and Bonding	
٠.	d.	General Requirements	8
	e.	Grounding Electrode Conductors	
	f.	<b>Equipment Grounding Conductors</b>	
7.	Condu	ctors and Cables	8
	l.	Install Underground Conductors	0
		and Cables	
	m.	Perform Vertical Installations	
	n.	Select Conductor Armored Cable, Type AC	
		Metal-clad Cable, Type MC	
	q.	Nonmetallic-sheathed Cable, Types N	IM. NMC.
	٦.	NMS	,
	r.	Service Entrance Cables, Types SE an	d USE
	s.	Underground Feeder and Branch Circ	uit Cable,
		Type UF	
	t.	Mineral Insulated, Type MI	=1 .
	u.	Flat Cable Assemblies, Type FC, and	Flat
		Conductor Cable, Type FCC	
8.	V.	Medium Voltage Cable, Type MV	
ο.	v.	rays and Boxes General Raceway Requirements	6
	w.	General Box Requirements	0
	x.	Pull Boxes and Conduit Fittings	
	у.	Type RMC (Rigid Metal Conduit)	
	z.	Type EMT (Electric Metallic Conduit)	
	aa.	Type IMC (Intermediate Metal Conduit	
		Type RNC (Rigid Nonmetallic Conduit	.)
	CC.	Type FMC (Flexible Metal Conduit) Type LFMC (Liquid-tight Flexible Metal	al
	aa.	Conduit)	dl
	ee.	Type FMT (Flexible Metallic Tubing)	
	ff.	Type HDPE (High-density Polyethylen	e
		Conduit)	
	gg.	Type NUCC (Nonmetallic Underground	d Conduit
		with Conductors)	
	nn.	Type LFNC (Liquid-tight Flexible Non- Conduit)	metallic
	ii.	Area of Raceways and Number of Cor	duct
		(Conduit Fill)	iduct
	jj.	· ·	xes
		Box Volume and Fill	
	ll.	Auxiliary Gutters, Busways, Concrete	, and
		Nonconcrete Raceways	
		. Metal and Nonmetallic Wireways	
		Surface Metal and Nonmetallic Racev	vays
		Underfloor Raceways Cabletrays	
9.		l Occupancies and Equipment	
· ·		ding Swimming Pools)	4
	C.	Wiring of Mobile Home, Mobile	-
		Home Parks, RVs, and RV Parks	
	d.	Required Wiring to Swimming Pools.	

Fountains, and Hot Tubs

10.		oltage, Alarms, Signaling Systems,	•
		ommunications	2
	j.	Remote Control or Signaling	
		Circuits	
	k.	Communication Circuits	
	l.	Equipment Operating at 50 volts or Lo	ess
	m.	Fiber Optic	
	n.	Photovoltaics	
	0.	Remote Control	
	F *	Fire Alarms	
		Circuit Wiring for Emergency Systems	
		Communications Systems Wiring	
11.	Lightir	ng and Signs	
	h.	Fixtures Installation	4
	i.	Fixtures Grounding	
	j.	Fixture Wiring	
	k.	Fluorescent Fixtures	
	l.	Fixture Construction Requirements	
	m.	Recessed Fixtures	
	n.	Lighting Systems that Operate at Less	Than 30
		volts	
12.	Safety		4
	s.	Job Site Sanitation	4
	t.	Responsibility for Providing Personal	
		Protective Equipment	
	u.	Excavation Safety	
		Emergency Action Plans	
	w.	Safety Training Requirements	
	x.	Ventilation	
	у.	First Aid Kit Requirements	
		Use of Personal Protective Equipment	t
		Signs, Signals, and Barricades	
		Tools and Equipment	
	_	Ladders	
		Workplace Illumination	
		Scaffolds	
		Requirements for Work Around Toxic	Materials
		Material Cleanup and Disposal	
		Material Safety Data Sheets (MSDS)	
		Handling and Storing Materials	
	jj.	Fall Protection	

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# REFINERY ELECTRICAL JOURNEYMAN

#### **SCOPE OF WORK**

Top	Topic Information # of Items				
1.	Gener	al Electrical Knowledge			
	a.	Permits and Inspections	10		
	b.	Preservation of Structural Integrity			
	c.	Needs Analysis and Estimate			
	d.	Voltage, Current, and Resistan Parallel, and Combination Circ			
	e.	Power Used in a Circuit			
	f.		n Any Circuit		
	g.	Fundamental AC Theory			
	h.	Fundamental Three-phase AC 1			
	i.				
		Troubleshooting and Test Syste	ems		
	k.	National Electrical Codebook			
	l.				
	m.	Temporary Wiring			
	n.	Cranes and Hoists			
	0.	Elevators and Escalators			
2.	Electr	ical Installation Requirements			
	a.	Approved Methods of Installation	on <b>4</b>		
		of Electrical Equipment			

b. Approved Methods of Installation of Electrical Equipment in Excess of 600 volts  3. Services, Feeders, and Branch Circuits				
a. Services b. Voltage Drop for Branch Circuits or Feeders c. Services in Excess of 600 volts d. Feeders e. Outside Branch Circuits and Feeders f. Branch Circuits g. Space-heating, Snow-melting, and Pipeheating Circuits h. Air-conditioning and Refrigeration Equipment 4. Overcurrent Protection a. NEC Overcurrent Protection Requirements b. Required Sizes of Grounding Electrode Conductors c. Required Sizes of Equipment Grounding Conductors c. Required Sizes of Equipment Grounding Conductors d. Underground Conductors and Cables b. Vertical Installations c. Selecting Conductors d. Armored Cable, Type AC e. Metal-clad Cable, Type AC e. Metal-clad Cable, Type MC f. Nonmetallic-sheathed Cable, Types NM, NMC, NMS g. Service Entrance Cables, Types SE and USE h. Underground Feeder and Branch Circuit Cable, Type UF i. Mineral Insulated, Type MI j. Flat Cable Assemblies, Type FC, and Flat Conductor Cable, Type FC k. Medium Voltage Cable, Type MV 7. Raceways and Boxes a. General Raceway Requirements b. General Box Requirements c. Pull Boxes d. Conduit Fittings e. Type RMC (Rigid Metal Conduit) f. Type EMC (Electric Metallic Conduit) f. Type FMC (Flexible Metal Conduit) i. Type FMC (Rigid Nonmetallic Conduit) i. Type FMC (Rigid Nonmetallic Underground Conduit with Conductors) n. Type LFMC (Liquid-tight Flexible Nonmetallic Conduit) i. Type FMC (Flexible Metal Conduit) i. Type FMC (Rigid-Hensity Polyethylene Conduit) m. Type NUCC (Nonmetallic Underground Conduit with Conductors) n. Type LFNC (Liquid-tight Flexible Nonmetallic Conduit) i. Type FMC (Rigid-Hensity Polyethylene Conduit) i. Type HDPE (High-density Polyethylene Conduit) i. Type HDPE (High-density Polyethylene Conduit) i. Type LFNC (Liquid-tight Flexible Nonmetallic Conduit) vint Conductors) n. Type LFNC (Liquid-tight Flexible Nonmetallic Conduit) s		b.		Electrical
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t. Surface Metal and Nonmetallic Raceways				
u. Underfloor Raceways		t.		vays
		u.	Underfloor Raceways	

v. Cabletrays Low Voltage, Alarms, Signaling Systems, 4 and Communications a. Remote Control or Signaling Circuits **Communication Circuits** b. Equipment Operating at 50 volts or Less c. d. **Fiber Optics Photovoltaics** e. f. **Remote Controls** g. Fire Alarms h. Circuit Wiring for an Emergency System **Communications Systems Wiring** i. Lighting and Signs 4 a. Fixture Installation **Fixture Grounding** Ь. **Fixture Wiring** c. Fluorescent Fixtures d. **Fixture Construction Requirements** e. f. **Recessed Fixtures** Lighting Systems that Operate at Less Than 30 g. Neon Lighting and Electric Signs h. 10. Safety 5 **Job Site Sanitation** a. Responsibility for Providing Personal b. **Protective Equipment** C. **Excavation Safety** d. Emergency Action Plans Safety Training Requirements e. f. Ventilation First Aid Kit Requirements g. Use of Personal Protective Equipment Signs, Signals, and Barricades Tools and Equipment j. Ladders k. Ι. Workplace Illumination Scaffolds Requirements for Work Around Toxic Materials n. Material Cleanup and Disposal ο. Material Safety Data Sheets (MSDS) p. Handling and Storing Materials q. Fall Protection **Motors and Transformers** a. Motors Used in Dwellings Motor Branch Circuits in Industrial and **Commercial Locations** Feeder Transformers **d.** Use of Transformers **Hazardous Locations** 12. 35 a. Hazardous Location Classifications **b.** Hazardous Materials c. Equipment used in Hazardous Locations d. Ventilation and Seals e. Underground Wiring

# **REFERENCE LIST**

The reference materials listed below were used to prepare the questions for this examination. The examination may also contain questions based on trade knowledge or general industry practices. Except for Code books, later editions of references are allowed in the test area. For Code questions, the

f. Fuel Dispensing Location Requirements

examinations will be based only on the edition of the Code book that is listed.

Candidates may use a silent, non-printing, non-programmable calculator in the examination center. Candidates will also be provided with a magnifying glass upon request.

This examination is OPEN BOOK.

The following reference materials <u>are</u> allowed in the examination center:

- NFPA 70 National Electrical Code, 2023 Edition, as revised and adopted by the Oklahoma Uniform Building Code Commission, National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02169-9101, (800) 344-3555, www.nfpa.org. NEC Handbooks and spiral-bound copies of the National Electrical Code will NOT be allowed in the test center.
- International Residential Code for One-and Two-Family Dwellings, 2018 edition, International Code Council, 5203 Leesburg Pike, Suite 600, Falls Church, VA 22041, (800) 786-4452, www.iccsafe.org, with Oklahoma Revisions found at http://ok.gov/oubcc/Codes & Rules/Adopted Buildin g Codes
- Code of Federal Regulations 29 CFR Part 1926 (OSHA), with latest available amendments, Candidates can access the Government website with this link https://www.osha.gov/lawsregs/regulations/standardnumber/1926

Hard copy can be purchased from Mancomm.com. <a href="https://mancomm.com/29-cfr-1926-osha-construction-industry-regulations-standards/">https://mancomm.com/29-cfr-1926-osha-construction-industry-regulations-standards/</a>.

Amazon and other retailers sell the Mancomm OSHA publications.

OR

Code of Federal Regulations - 29 CFR Part 1926 Selections by PSI, with latest available amendments, 866-589-3088, http://www.psionlinestore.com

- Ugly's Electrical References, George V. Hart, any edition may be used, Jones and Bartlett, (800) 832-0034, www.uglys.net
- Hazardous Locations, 2005, International Association of Electrical Inspectors, (800) 786-4234, <u>www.iaei.org</u>

Candidates are responsible for bringing their own references to the examination center. Reference materials may be highlighted, underlined, and/or indexed prior to the examination session. References may not be written in prior to or during the examination session. Any candidate caught writing in the references during the examination will have the references confiscated and will be reported to the department. Furthermore, candidates are not permitted to bring in any additional papers with their approved references. Any additional materials will be removed from the references and confiscated. References may be tabbed/indexed with permanent tabs only. Temporary tabs, such as Post-It notes, are not allowed and must be removed from the reference before the exam will begin. If you download a reference from the Internet, it must be spiral bound or hole-punched and placed in a binder or stapled in the left-hand corner.

#### **MECHANICAL BUSINESS AND LAW**

# of Questions	Passing %	Passing (Raw)	Time Allowed
50	70	35	120 minutes

Тор	oic Info	rmation	# of Items
1.	Biddir	ng and Estimating	10
	a.	General Estimating	10
	b.	Bid	
2.		ct Management and Supervision	1
	a.	General Project Oversight	7
	b.	Oversee Budget	,
	c.	Oversee Quality Control	
	d.	Oversee Materials Control	
	e.	Manage Jobsite Safety	
	f.	Schedule	
	g.	Potentially Hazardous Materials	
	h.	Environmental Protection	
	i.	Submittals and Reports	
	j.	Ethics	
	k.	Liens	
3.	Contra		
٥.	a.	Terminology	5
	b.	Required Elements/Component	_
	c.	Contract Types	.3
	d.	Change Orders	
	e.	Standardized Documents	
	f.		
	-	Interpretation Warranties	
	g. h.	Documents/Inclusions	
		Other Obligations	
4	Finan		
4.			8
	a.	Business Organization Characteristics, Advantages, a	_
			iu
	ь.	Disadvantages	
	C.	Business Start-up Accounting method	
	d.	Cash Flow Terminology	
	-	Accounts Receivable	
	e. f.		
	-	Accounts Payable Balance Sheet	
	g. h.	Income Statement	
	i.	Taxes on Company Income	
	j.	Obtaining Financing	
	k.	Checking Account	
	l.	Financial Ratios	
5.		and Personnel	
J.	a.	ADA	5
	а. b.	Labor Standards	
	о. С.	Requirements for Non-citizen	s and/or Non
	٠.	residents	s and/or North
	d.	Workers' Compensation	
	e.	Federal or State OSHA	
	f.	New Hires	
		Personnel Record Keeping	
	g.		
	h.	Other Requirements	
6.		lanagement	4
	a.	Insurance	•
	b.	Bonds	

7.	Payro	II and Payroll Taxes	
	a.	Taxes	3
	b.	Forms and Due Dates	
8.	Licen	sing Requirements	
	a.	Required Insurance/Bonds	6
	Ь.	Renewal	

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This examination is OPEN BOOK.

The following reference materials <u>are</u> allowed in the examination center:

- State of Oklahoma, Construction Industries Board, Unofficial Administrative Rules & Courtesy Exam Study Aids Book, current edition (available at the Construction Industries Board Office - no fee).
- Oklahoma Mechanical Licensing Act, Oklahoma Statutes, Title 59, Chapter 43A, Oklahoma Construction Industries Board, 2401 N.W. 23rd Street, Suite 2F, Oklahoma City, OK 73107, www.ok.gov/cib
- Oklahoma Mechanical Industry Regulations, Oklahoma Administrative Code, Title 158, Chapter 50, Oklahoma Construction Industries Board, 2401 N.W. 23rd Street, Suite 2F, Oklahoma City, OK 73107, www.ok.gov/cib
- Oklahoma Fine Schedule of the Construction Industries Board, Oklahoma Administrative Code, Title 158, Chapter 10, Oklahoma Construction Industries Board, 2401 N.W. 23rd Street, Suite 2F, Oklahoma City, OK 73107, www.ok.gov/cib
- Oklahoma Lien Law, Oklahoma Statutes, Title 42, Chapter 3, Oklahoma Construction Industries Board, 2401 N.W. 23rd Street, Suite 2F, Oklahoma City, OK 73107, www.ok.gov/cib
- NASCLA Contractors Guide to Business, Law and Project Management, Basic 14<sup>th</sup> Edition, National Association of State Contractors Licensing Agencies (NASCLA), Telephone: (623) 587-9354, <a href="https://www.nascla.org">www.nascla.org</a>
- Oklahoma Workers' Compensation Act, Oklahoma Statutes, Title 85A, Chapter 1, Oklahoma Construction Industries Board, 2401 N.W. 23rd Street, Suite 2F, Oklahoma City, OK 73107, <a href="https://www.ok.gov/cib">www.ok.gov/cib</a>

OR

Oklahoma Workers' Compensation Act Statutory Excerpts, Oklahoma Statutes, Title 85A, Chapter 1, Oklahoma Construction Industries Board, 2401 N.W. 23rd Street, Suite 2F, Oklahoma City, OK 73107, www.ok.gov/cib

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# **NATURAL GAS CONTRACTOR**

#### **SCOPE OF WORK**

Tests the candidate's knowledge on the installation, repair, alteration or extension of gas piping and gas mains.

# of	Passing %	Passing	Time
Questions		(Raw)	Allowed
40	70	28	120 minutes

Topic Information # of Items  1. General Fuel Gas Piping Knowledge, Definitions, and Regulations a. Testing and Inspection b. Pipe Material Properties and Requirements  2. Pipe Sizing 12  3. Pipe Installation a. Indoor and Outdoor Installation Requirements b. Gas Pressure Regulators c. Structural Safety d. Hangers and Supports e. Direction Changes f. Concealed Locations g. Joints and Connections h. Valves and Controls i. Outlets j. Drip Legs and Sediment Traps k. Piping Protection  4. Safety a. Sanitation b. Contractor Responsibilities c. Excavation Safety d. Ventilation and Confined Space e. Safety Training f. First Aid Kits g. PPE h. Signs, Signals and Barricades i. Fall Protection j. Ladders and Scaffolds k. Tools and Equipment l. MSDS								
Definitions, and Regulations a. Testing and Inspection b. Pipe Material Properties and Requirements  2. Pipe Sizing  12  3. Pipe Installation a. Indoor and Outdoor Installation Requirements b. Gas Pressure Regulators c. Structural Safety d. Hangers and Supports e. Direction Changes f. Concealed Locations g. Joints and Connections h. Valves and Controls i. Outlets j. Drip Legs and Sediment Traps k. Piping Protection  4. Safety a. Sanitation b. Contractor Responsibilities c. Excavation Safety d. Ventilation and Confined Space e. Safety Training f. First Aid Kits g. PPE h. Signs, Signals and Barricades i. Fall Protection j. Ladders and Scaffolds k. Tools and Equipment	Тор	opic Information # of Items						
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		i.	MSDS					

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- Code of Federal Regulations 29 CFR Part 1926 (OSHA), with latest available amendments, Candidates can access the Government website with this link <a href="https://www.osha.gov/laws-regs/regulations/standardnumber/1926">https://www.osha.gov/laws-regs/regulations/standardnumber/1926</a>

Hard copy can be purchased from Mancomm.com. <a href="https://mancomm.com/29-cfr-1926-osha-construction-industry-regulations-standards/">https://mancomm.com/29-cfr-1926-osha-construction-industry-regulations-standards/</a>.

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#### **NATURAL GAS JOURNEYMAN**

#### **SCOPE OF WORK**

Tests the candidate's knowledge on the installation, repair, alteration or extension of gas piping and gas mains.

# of	Passing %	Passing	Time
Questions		(Raw)	Allowed
30	70	21	90 minutes

Тор	oic Info	rmation # of	Items
1.		ral Fuel Gas Piping Knowledge, tions, and Regulations	8
	a. b.	Testing and Inspection Pipe Material Properties and Require	ments
2.	Pipe S	iizing	4
3.	Pine I	nstallation	
٠.	a.	Indoor and Outdoor Installation Requirements	15
	b.	Gas Pressure Regulators	
	c.	Structural Safety	
	d.	Hangers and Supports	
	e.	Direction Changes	
	f.	Concealed Locations	
	g.	Joints and Connections	
	h.	Valves and Controls	
	i.	Outlets	
	j.	Drip Legs and Sediment Traps	
	k.	Piping Protection	
4.	Safety	<i>(</i>	
	a.	Excavations	3
	b.	· · · · · · · · · · · · · · · · · · ·	
	c.	PPE	
	d.	3 -, - 3	
		Fall Protection	
	f.		
	g.	Tools and Equipment	
	h.	MSDS	

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#### PROCESS PIPING CONTRACTOR

# **SCOPE OF WORK**

Tests the candidate's knowledge on the installation, repair, alteration or extension of the piping and tubing which conveys liquids or gases which is used directly in research, laboratory, or production processes.

# of	Passing %	Passing	Time
Questions		(Raw)	Allowed
40	70	28	120 minutes

Тор	oic Info	ormation	# of Items
1.	Gene	ral Knowledge and Definitions	6
2.	a. b.	ating and Plan Reading Plan Reading Offset Calculations Material Estimates	7
3.	Pipe I a. b.	Materials, Uses, and Properties Material Properties and Selectio Pipe Sizing	n 5
4.	a. b. c. d. e. f. g. h. i.	Pipe Welding Pipe Brazing and Soldering Mechanical Joints Threaded Joints Compression Fittings Chemical Adhesives Tube Bending System Testing Line Labeling	8
5.		ers and Supports Measure and Install Pipe Suppor	ts <b>5</b>

6.	Valves	and Controls	
	a.	Valve Selection	6
	b.	Valve and Control Installation	
	c.	Maintenance and Troubleshooting	
7.	Safety		2
	a.	Contractor Responsibilities	3
	b.	Safety Training	
	c.	Ventilation and Confined Space	
	d.	First Aid Kits	
	e.	Personal Protective Equipment (PPE)	
	f.	Material Safety Data Sheets (MSDS)	
	g.	Toxic Materials	
	h.	Fall Protection	
	i.	Lockout/Tagout	
	j.	Ladders and Scaffolds	

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OR

Code of Federal Regulations - 29 CFR Part 1926 Selections by PSI, with latest available amendments, 866-589-3088, http://www.psionlinestore.com

- Facility Piping Systems Handbook, Second Edition, 2002, McGraw-Hill Publishing, Inc., PO Box 182604, Columbus, OH 43272, (800) 338-3987, www.mhprofessional.com
- International Mechanical Code, 2018 edition, International Code Council, 5203 Leesburg Pike, Suite 600, Falls Church, VA 22041, (800) 786-4452, www.iccsafe.org, with Oklahoma Revisions http://ok.gov/oubcc/Codes\_&\_Rules/Adopted\_Buildin g Codes/
- Mathematics for Plumbers and Pipefitters, Lee Smith, 8th Edition, 2013, www.cengage.com
- ASME A13.1: Scheme for the Identification of Piping Systems, 2007, American Society of Mechanical Engineers (ASME), Three Park Avenue, New York, NY 10065, (800) 843-2763, www.asme.org

 ASME B31.3-2004: Process Piping, 2004, American Society of Mechanical Engineers (ASME), Three Park Avenue, New York, NY 10065, (800) 843-2763, www.asme.org

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#### PROCESS PIPING JOURNEYMAN

#### **SCOPE OF WORK**

Tests the candidate's knowledge on the installation, repair, alteration or extension of the piping and tubing which conveys liquids or gases which is used directly in research, laboratory, or production processes only while in the employ of a process piping contractor.

# of	Passing %	Passing	Time
Questions		(Raw)	Allowed
35	70	25	120 minutes

Тор	Topic Information # or		# of Items
1.	General Know	General Knowledge and Definitions	
2.	Plan Reading	3	3
3.		ls, Uses, and Properties al Properties and Selection izing	on <b>5</b>
4.	<ul> <li>a. Indoor</li> <li>b. Pipe W</li> <li>c. Pipe B</li> <li>d. Mecha</li> <li>e. Thread</li> <li>f. Compr</li> <li>g. Chemi</li> <li>h. Tube B</li> <li>i. System</li> </ul>	razing and Soldering nical Joints ded Joints ression Fittings cal Adhesives	8
5.	Hangers and		ts 5
<b>5</b> .			5

- 7. Safety
  - a. Ventilation and Confined Space
  - **b.** Personal Protective Equipment (PPE)
  - c. Material Safety Data Sheets (MSDS)
  - d. Toxic Materials
  - e. Fall Protection
  - f. Lockout/Tagout
  - g. Ladders and Scaffolds

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The following reference materials <u>are</u> allowed in the examination center:

 Pipefitter's Handbook, 1967, 3rd Edition, Forest R. Linsey, Industrial Press, Inc., <a href="https://www.industrialpress.com">www.industrialpress.com</a>

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#### SHEET METAL CONTRACTOR

#### **SCOPE OF WORK**

Those who are qualified to manufacture, assemble, cast, cut, shape, forge, fabricate, weld, repair, recondition, adjust and install sheet rolled metal of any kind or combination and all other air-conveyor systems and air handling systems regardless of materials used, including all equipment and all reinforcements in connection therewith.

# of Questions	Passing %	Passing (Raw)	Time Allowed
60	70	42	120 minutes

Тор	ic Information	# of Items
1.	General Knowledge a. Tools and Equipment	13

	b.	Materials	
	c.		
	d.	Blueprints and Plan Reading	
	e.	The second secon	
	f.	Testing, Adjusting and Balancing (TA	B)
2.	Duct	Sizing, Design, and Hanging and	
	Supp	ort Requirements	6
	a.	Duct Sizing	
	b.	Duct Design	
	c.	Hangers and Supports	
3.	Duct	Fabrication and Installation	
	a.	Rectangular Metal Ducts	13
	b.	Oval and Flexible Metal Ducts	
	c.	Fiberglass Ducts	
	d.	<b>Duct Accessories and Exterior Compo</b>	nents
4.	Plenu	ıms	
			6
_	A 1:	and Vanting and Cambustian Air	
5.		ance Venting and Combustion Air	5
	a.	Venting and Combustion Air Sizing Clearance to Combustibles	
	Ь.		
	C.	Equipment Installation	nination
	d.		IIIIIation
6.		lation and Exhaust Devices	14
	a.	Device Selection and Installation	
	Ь.	Exhaust Ducts	
	C.	Exhaust System Terminations Exhaust Fans	
	d.		
	e. f.	Auxiliary Equipment Solid Fuel Systems	
_	g.	Downdraft Appliance Ventilation	
7.	Safet		3
	a.	Contractor Responsibilities	
	b.	Safety Training First Aid Kits	
	c. d.	Personal Protective Equipment (PPE)	
	e. f.	Signs, Signals, and Barricades Ladders	
		Fall Protection	
	g. h.		
	-	Lockout/Tagout	
	i.	MSDS	

#### REFERENCE LIST

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- ACCA Ductulator (Duct Slide Rule), Air Conditioning Contractors of America (ACCA), 2800 Shirlington Road, Suite 300, Arlington, VA 22206, (703) 575-4477, www.acca.org
- International Mechanical Code, 2018 edition, International Code Council, 5203 Leesburg Pike, Suite 600, Falls Church, VA 22041, (800) 786-4452,

www.iccsafe.org, with Oklahoma Revisions http://ok.gov/oubcc/Codes\_&\_Rules/Adopted\_Buildin g\_Codes/

- Fibrous Glass Duct Construction Standards, Fifth Edition, 2002, North American Insulation Manufacturers Association (NAIMA), 44 Canal Center Plaza, Suite 310, Alexandria, VA 22314, (703) 684-0084, www.naima.org
- Code of Federal Regulations 29 CFR Part 1926 (OSHA), with latest available amendments, Candidates can access the Government website with this link https://www.osha.gov/lawsregs/regulations/standardnumber/1926

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#### OR

Code of Federal Regulations - 29 CFR Part 1926 Selections by PSI, with latest available amendments, 866-589-3088, <a href="http://www.psionlinestore.com">http://www.psionlinestore.com</a>

- HVAC Duct Construction Standards, Metal and Flexible, 2005, 3rd edition, Sheet Metal and Air Conditioning Contractors' National Association, Inc., (703) 803-2980, www.smacna.org
- Sheet Metal, 1995 Edition, American Technical Publishers (ATP), 1155 West 175th Street, Homewood, IL 60430-4600, (800) 323-3471, www.americantech.net

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#### SHEET METAL JOURNEYMAN

#### **SCOPE OF WORK**

Those who are qualified to fabricate, install, repair, alter, or extend sheet metal work while employed or supervised by a sheet metal contractor.

# of	Passing %	Passing	Time
Questions		(Raw)	Allowed
50	70	35	120 minutes

Горіс	pic Information		# of Items	
. 0	Gene	ral Knowledge	12	
	a.	Tools and Equipment	12	
	b.	Materials		
	c.	Welding		
	d.	Blueprints and Plan Reading		

	e.		
	f.	Testing, Adjusting and Balancing (TA	B)
2.	Duct	Sizing, Design, and Hanging and	
	Suppo	ort Requirements	4
	a.	Duct Sizing	
	b.	Duct Design	
	c.	Hangers and Supports	
3.	Duct I	Fabrication and Installation	
	a.	Rectangular Metal Ducts	10
	b.	Oval and Flexible Metal Ducts	
	c.	J	
	d.	Duct Accessories and Exterior Compo	nents
4.	Plenu	ms	
			4
5.	Applia	ance Venting and Combustion Air	
	a.	Venting and Combustion Air Sizing	5
	b.	Clearance to Combustibles	
	c.	Equipment Installation	
	d.	Vent and Combustion Air Supply Terr	nination
6.	Venti	lation and Exhaust Devices	
	a.	Device Selection and Installation	12
	b.	Exhaust Ducts	
	c.	Exhaust System Terminations	
	d.	Exhaust Fans	
	e.	Auxiliary Equipment	
	f.	Solid Fuel Systems	
	g.	Downdraft Appliance Ventilation	
7.	Safety	•	3
	a.	Contractor Responsibilities	•
	b.	Safety Training	
	c.	First Aid Kits	
1	d.	Personal Protective Equipment (PPE)	
	e.	Signs, Signals and Barricades	
	f.	Ladders	
	g.	Fall Protection	
	h.	Lockout/Tagout	
	i.	MSDS	

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## **HVACR CONTRACTOR, LIMITED**

#### **SCOPE OF WORK**

Tests a candidate's knowledge of the installation, maintenance, repair, fabrication, alteration or extension of air conditioning, refrigeration, heating, and ventilation, including ductwork, within a complete system limited to twenty-five tons cooling and five-hundred thousand BTU heating, and related appurtenances, apparatus, piping vessels, ducts and insulation.

# of	Passing %	Passing	Time
Questions		(Raw)	Allowed
80	70	56	210 minutes

Тор	ic Info	rmation # of	Items
1.		rical Knowledge and Controls	
	a.	General Electrical Theory and	15
		Knowledge	
	ь.	Motors	
	c.	D/C Circuits	
	d.	A/C Circuits	
	e.	Controls	
2.	Natur	al Gas	
	a.	Piping Valves	12
	b.		
	c.	Accessories	
	d.	Hangers and Supports	
	e.	Sizing	
	f.	Materials	
	g.	Testing	
3.	Air Di	stribution Systems	
	a.	Duct Definitions	15
	b.	Sizing and Design	
	c.	Duct Assembly and Installation	
	d.	Hangers and Supports	
	e.	Duct Materials and Shapes	
	f.	Duct Insulation	
	g.	Fire and Smoke Control	
	ĥ.	Hoods and Exhaust Systems	
	i.	Testing and Balancing	
	j.	Ventilation Requirements	
	k.	Plans and Symbols	
4.	Refrig	geration and Air Conditioning	
	Syste		20
	a.	Theory	
	b.	Refrigerants	
	c.	Equipment Sizing and Design	
	d.	Equipment and Components	
	e.	Piping	
	f.	Equipment Installation	
	g.	System Operation, Troubleshooting,	and
		Maintenance	
5.	Heati	ng Systems	
	a.	Heating Theory and Types	15
	ь.	Combustion Air	
	c.	•	
	d.	Equipment Sizing	
	e.	Heating Equipment	
	f.	Equipment Installation	
	g.	System Operation, Troubleshooting,	and
		Maintenance	
<u> </u>	h.	Hydronics and Hydronic Piping	
6.	Safety		3
	a.	Responsibility for Providing	
		Personal Protective Equipment to En	nployees
	b.	Safety Training Requirements	
	c.	Adequate Ventilation for Employees	
	d.	First Aid Kit Requirements	
	e.	Use of Personal Protective Equipmen	īt
	f.	Material Safety Data Sheets (MSDS)	
	g.	Requirements for Work Around Toxic	Materials
	h.	Fall Protection	
	į.	Lockout/Tagout Procedures	
	j.	Ladders	
	K.	Scaffolds	

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- International Fuel Gas Code, 2018 edition, International Code Council, 5203 Leesburg Pike, Suite 600, Falls Church, VA 22041, (800) 786-4452, www.iccsafe.org, with Oklahoma Revisions http://ok.gov/oubcc/Codes & Rules/Adopted Buildin g\_Codes/
- Modern Refrigeration and Air Conditioning, Althouse, Turnquist, Bracciano, 20<sup>th</sup> or 21st edition, Goodheart-Willcox, www.g-w.com

OR

Refrigeration & Air Conditioning Technology, Fifth Edition, 2005 Delmar Publishing/Thomson Learning, PO Box 6904, Florence, KY 41022, (800) 347-7707, www.delmarlearning.com

- Manual J Residential Load Calcs, reprinted 2006, Eighth Full Edition, Air Conditioning Contractors of America (ACCA), 2800 Shirlington Road, Suite 300. Arlington, VA 22206, (703) 575-4477, www.acca.org
- Mathematics for Plumbers and Pipefitters, Lee Smith, 8th Edition, 2013, www.cengage.com
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#### **HVACR JOURNEYMAN LIMITED**

## **SCOPE OF WORK**

Tests a candidate's knowledge of the installation, maintenance, repair, fabrication, alteration or extension of air conditioning, refrigeration, heating, and ventilation, including ductwork, within a complete system limited to twenty-five tons cooling and five-hundred thousand BTU heating, and related appurtenances, apparatus, piping vessels, ducts and insulation while employed or supervised by a refrigeration contractor.

# of	Passing %	Passing	Time
Questions		(Raw)	Allowed
60	70	42	180 minutes

Top	pic Info	rmation	# of	Items
1.	Electi	rical Knowledge and Controls		15
	a.	General Electrical Theory Knowledge	and	
	b.	Motors		
	c.	D/C Circuits		
	d.	A/C Circuits		
	e.	Controls		
2.	Natur	al Gas		
	a.	Piping Valves		9
	b.	Connectors		
	c.	Accessories		
		Hangers and Supports		
		Sizing		
		Materials		
	g.	Testing		
	h.	Installation and Assembly		
3.	Air Di	stribution Systems		
	a.	Duct Definitions		10
	b.	Sizing and Design		
		Duct Assembly and Installation		
		Hangers and Supports		
	e.	Duct Materials and Shapes		
	f.	Duct Insulation		
	g.	Fire and Smoke Control		

**Hoods and Exhaust Systems** Testing and Balancing i. **Ventilation Requirements** j. Plans and Symbols Refrigeration and Air Conditioning 13 Systems **a.** Theory **b.** Refrigerants c. Equipment Sizing and Design d. Equipment and Components e. Piping Equipment Installation f. g. System Operation, Troubleshooting, and Maintenance **Heating Systems** 10 a. Heating Theory and Types b. Combustion Air c. Vents and Chimneys **d.** Equipment Sizing e. Heating Equipment **Equipment Installation** f. System Operation, Troubleshooting, and Maintenance h. Hydronics and Hydronic Piping Safety 3 a. Responsibility for Providing Personal Protective Equipment to Employees b. Safety Training Requirements c. Adequate Ventilation for Employees d. First Aid Kit Requirements e. Use of Personal Protective Equipment f. Material Safety Data Sheets (MSDS) g. Requirements for Work Around Toxic Materials h. Fall Protection i. Lockout/Tagout Procedures j. Ladders Scaffolds

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- International Fuel Gas Code, 2018 edition, International Code Council, 5203 Leesburg Pike, Suite 600, Falls Church, VA 22041, (800) 786-4452, www.iccsafe.org, with Oklahoma Revisions

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Refrigeration & Air Conditioning Technology, Fifth Edition, 2005 Delmar Publishing/Thomson Learning, PO Box 6904, Florence, KY 41022, (800) 347-7707, www.delmarlearning.com

- Mathematics for Plumbers and Pipefitters, Lee Smith, 8th Edition, 2013, <u>www.cengage.com</u>
- Code of Federal Regulations 29 CFR Part 1926 (OSHA), with latest available amendments, Candidates can access the Government website with this link https://www.osha.gov/lawsregs/regulations/standardnumber/1926

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## **HVACR CONTRACTOR UNLIMITED**

### **SCOPE OF WORK**

Tests a candidate's knowledge of the installation, maintenance, repair, fabrication, alteration or extension of air conditioning, refrigeration, heating, and ventilating, including ductwork within a complete system unlimited in horsepower or tons, and related appurtenances, piping vessels, ducts and insulation.

# of	Dagging %	Passing	Time
Questions	Passing %	(Raw)	Allowed

90	70	63	240 minutes
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Тор	ic Infor	rmation # o	of Items
1.	Electr	ical Knowledge and Controls	45
		General Electrical Theory and	15
		Knowledge	
	b.	Motors	
	c.	D/C Circuits	
	d.	A/C Circuits	
		Controls	
2.	Natura	al Gas	
	a.	Piping Valves	12
	b.	Connectors	12
	c.	Accessories	
	1	Hangers and Supports	
		Sizing	
	f.	Materials	
	-	Testing	
3.		stribution Systems	
٥.	a.	Duct Definitions	25
	b.	Sizing and Design	
	c.	Duct Assembly and Installation	
	-	Hangers and Supports	
		Duct Materials and Shapes	
		Duct Insulation	
		Fire and Smoke Control	
	_	Hoods and Exhaust Systems	
	i.	Testing and Balancing	
	j.	Ventilation Requirements	
	k.	Plans and Symbols	
4.		eration and Air Conditioning	
1.	Systen		20
	a.	Theory	
	b.	Refrigerants	
		Equipment Sizing and Design	
		Equipment and Components	
		Piping	
		Equipment Installation	
	g.	System Operation, Troubleshooting	, and
	J.	Maintenance	,
5.	Heatir	ng Systems	
		Heating Theory and Types	15
	b.	Combustion Air	
	c.	Vents and Chimneys	
	d.	Equipment Sizing	
	e.	Heating Equipment	
	f.	Equipment Installation	
	g.	System Operation, Troubleshooting	, and
	_	Maintenance	
	h.	Hydronics and Hydronic Piping	
6.	Safety		
	a.	Responsibility for Providing	3
		Personal Protective Equipment to	Employees
	b.	Safety Training Requirements	
	c.	Adequate Ventilation for Employee	S
	d.	First Aid Kit Requirements	
	e.	Use of Personal Protective Equipme	ent
	f.	Material Safety Data Sheets (MSDS)	
	g.	Requirements for Work Around Tox	ic Materials
	h.	Fall Protection	
	i.	Lockout/Tagout Procedures	
	j.	Ladders	
	k.	Scaffolds	

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OR

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- Manual N Load Calculation for Small Commercial Buildings, Fifth Edition, 2008, Air Conditioning Contractors of America (ACCA), 2800 Shirlington Road, Suite 300, Arlington, VA 22206, (703) 575-4477, www.acca.org
- Mathematics for Plumbers and Pipefitters, Lee Smith, 8th Edition, 2013, www.cengage.com
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#### **HVACR JOURNEYMAN UNLIMITED**

# **SCOPE OF WORK**

Tests a candidate's knowledge of the installation, maintenance, repair, fabrication, alteration or extension of air conditioning, refrigeration, heating, and ventilating, including ductwork within a complete system unlimited in horsepower or tons, and related appurtenances, piping vessels, ducts and insulation while employed by a HVACR contractor.

# of	Passing %	Passing	Time
Questions		(Raw)	Allowed
70	70	49	180 minutes

Тор	oic Info	rmation	# of Items
1.	Electi	rical Knowledge and Controls	15
	a.	General Electrical Theory and Knowledge	13
	b.	Motors	
	c.	D/C Circuits	
	d.	A/C Circuits	
	e.	Controls	
2.	Natur	al Gas	
	a.	Piping Valves	10
	b.	Connectors	
	c.	Accessories	
	d.	Hangers and Supports	
	e.	Sizing	
	f.	Materials	
	g.	Testing	
	h.	Installation and Assembly	
3.	Air Di	stribution Systems	
	a.	Duct Definitions	16
	b.	Sizing and Design	
	c.	<b>Duct Assembly and Installation</b>	
	d.	Hangers and Supports	
	e.	Duct Materials and Shapes	
	f.	Duct Insulation	
	g.	Fire and Smoke Control	

	h.	Hoods and Exhaust Systems		
	i.	Testing and Balancing		
	j.	Ventilation Requirements		
	k.	Plans and Symbols		
١.	Refrig	eration and Air Conditioning		
	Systen	ns	16	
	a.	Theory		
	b.	Refrigerants		
	c.	Equipment Sizing and Design		
	d.	Equipment and Components		
	e.	Piping		
	f.	Equipment Installation		
	g.	System Operation, Troubleshooting,	and	
		Maintenance		
	Heatir	g Systems		
	a.	Heating Theory and Types	10	
	b.	Combustion Air		
	c.	Vents and Chimneys		
	d.	Equipment Sizing		
	e.	Heating Equipment		
	f.	Equipment Installation		
	g.	System Operation, Troubleshooting,	and	
		Maintenance		
	h.	Hydronics and Hydronic Piping		
<b>).</b>	Safety		3	
	a.	Responsibility for Providing		
		Personal Protective Equipment to Er	nployees	
	ь.	Safety Training Requirements		
	c.	Adequate Ventilation for Employees		
	d.	First Aid Kit Requirements		
	e.	Use of Personal Protective Equipmen	it	
	f.	Material Safety Data Sheets (MSDS)		
	g.	Requirements for Work Around Toxic	Materials	5
	h.	Fall Protection		
	i.	Lockout/Tagout Procedures		
	j.	Ladders		

#### **REFERENCE LIST**

The reference materials listed below were used to prepare the questions for this examination. The examination may also contain questions based on trade knowledge or general industry practices. Except for Code books, later editions of references are allowed in the test area. For Code questions, the examinations will be based only on the edition of the Code book that is listed.

Candidates may use a silent, non-printing, non-programmable calculator in the examination center. Candidates will also be provided with a magnifying glass upon request.

This examination is OPEN BOOK.

Scaffolds

The following reference materials <u>are</u> allowed in the examination center:

- International Mechanical Code, 2018 edition, International Code Council, 5203 Leesburg Pike, Suite 600, Falls Church, VA 22041, (800) 786-4452, www.iccsafe.org, with Oklahoma Revisions http://ok.gov/oubcc/Codes\_&\_Rules/Adopted\_Buildin g\_Codes/
- International Fuel Gas Code, 2018 edition, International Code Council, 5203 Leesburg Pike, Suite 600, Falls Church, VA 22041, (800) 786-4452, www.iccsafe.org, with Oklahoma Revisions

- http://ok.gov/oubcc/Codes & Rules/Adopted Buildin g Codes/
- Modern Refrigeration and Air Conditioning, Althouse, Turnquist, Bracciano, 20<sup>th</sup> or 21st edition, Goodheart-Willcox, www.g-w.com OR Refrigeration & Air Conditioning Technology, Fifth Edition, 2005 Delmar Publishing/Thomson Learning, PO Box 6904, Florence, KY 41022, (800) 347-7707, www.delmarlearning.com
- Mathematics for Plumbers and Pipefitters, Lee Smith, 8th Edition, 2013, www.cengage.com
- Code of Federal Regulations 29 CFR Part 1926 (OSHA), with latest available amendments, Candidates can access the Government website with this link https://www.osha.gov/lawsregs/regulations/standardnumber/1926

Hard copy can be purchased from Mancomm.com. <a href="https://mancomm.com/29-cfr-1926-osha-construction-industry-regulations-standards/">https://mancomm.com/29-cfr-1926-osha-construction-industry-regulations-standards/</a>.

Amazon and other retailers sell the Mancomm OSHA publications.

OR

Code of Federal Regulations - 29 CFR Part 1926 Selections by PSI, with latest available amendments, 866-589-3088, http://www.psionlinestore.com

Additional books that are neither used in the development of the exam nor contain answers to all the related subject questions, but are allowed in the test area under the same physical conditions as the other books:

 NCCER Heating, Ventilating, and Air Conditioning Book 1, Book 2, Book 3. and Book 4

Candidates are responsible for bringing their own references to the examination center. Reference materials may be highlighted, underlined, and/or indexed prior to the examination session. References may not be written in prior to or during the examination session. Any candidate caught writing in the references during the examination will have the references confiscated and will be reported to the department. Furthermore, candidates are not permitted to bring in any additional papers with their approved references. Any additional materials will be removed from the references and confiscated. References may be tabbed/indexed with permanent tabs only. Temporary tabs, such as Post-It notes, are not allowed and must be removed from the reference before the exam will begin. If you download a reference from the Internet, it must be spiral bound or hole-punched and placed in a binder or stapled in the left-hand corner.

#### REFRIGERATION CONTRACTOR

# **SCOPE OF WORK**

Tests a candidate's knowledge of the operation, installation, maintenance, repair, fabrication, alteration or extension of refrigeration systems; including electrical components, piping, refrigerants, and refrigeration components.

# of	Passing %	Passing	Time
Questions		(Raw)	Allowed
80	70	56	210 minutes

Top	pic Info	ormation	# of	Items
1.	Elect	rical Knowledge and Controls		20
	a.	General Electrical Theory and		20
		Knowledge		
	b.	Motors		
	C.	A/C and D/C Circuits		
	d.	11100010		
	e.			
2		Relays		
2.		gerants  Defrigerent Types		10
	a. b.	Refrigerant Types		
		Refrigerant Systems		
3.	C.	Refrigerant Theory		
٥.	Pipin			5
	a. b.	Piping Supports Piping Materials and Sizes		
	c.	Piping Pressure Tests		
4.		geration Equipment and		
4.		ponents		20
	a.	Valves		20
	b.	Compressors		
		Condensers		
		Evaporators		
	e.	* .		
	f.	Accumulators		
	g.	Expansion Devices		
	ĥ.	Dryers		
5.	Re	frigeration Systems Operations		
	a.	Systems Troubleshooting		20
	b.	Systems Operations		
	c.	System Installation, Maintenance	e, and	d
		Repair		
6.	Safet	y		
	a.	Safety Training Requirements		5
	b.	Ventilation Requirements		
	c.	First Aid Kit Requirements		
	d.			t
	e.			
	f.	Requirements for Work Around	Toxic	
		Materials		
ĺ	g.	Lockout/Tagout Procedures		
	h.	Ladders		

#### **REFERENCE LIST**

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Candidates may use a silent, non-printing, non-programmable calculator in the examination center. Candidates will also be provided with a magnifying glass upon request.

This examination is OPEN BOOK.

The following reference materials <u>are</u> allowed in the examination center:

 International Mechanical Code, 2018 edition, International Code Council, 5203 Leesburg Pike, Suite 600, Falls Church, VA 22041, (800) 786-4452, www.iccsafe.org, with Oklahoma Revisions

- http://ok.gov/oubcc/Codes & Rules/Adopted Building\_Codes/
- Modern Refrigeration and Air Conditioning, Althouse, Turnquist, Bracciano, 20<sup>th</sup> or 21st edition, Goodheart-Willcox, <u>www.g-w.com</u>

OR

Refrigeration & Air Conditioning Technology, Fifth Edition, 2005 Delmar Publishing/Thomson Learning, PO Box 6904, Florence, KY 41022, (800) 347-7707, www.delmarlearning.com

 Code of Federal Regulations - 29 CFR Part 1926 (OSHA), with latest available amendments, Candidates can access the Government website with this link https://www.osha.gov/lawsregs/regulations/standardnumber/1926

Hard copy can be purchased from Mancomm.com. <a href="https://mancomm.com/29-cfr-1926-osha-construction-industry-regulations-standards/">https://mancomm.com/29-cfr-1926-osha-construction-industry-regulations-standards/</a>.

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#### **REFRIGERATION JOURNEYMAN**

# **SCOPE OF WORK**

Tests a candidate's knowledge of the operation, installation, maintenance, repair, fabrication, alteration or extension of refrigeration systems; including electrical components, piping, refrigerants, and refrigeration components while employed by a Refrigeration Contractor.

# of	Passing %	Passing	Time
Questions		(Raw)	Allowed
60	70	42	150 minutes

Тор	Topic Information		# of Items
1.		rical Knowledge and Controls General Electrical Theory and Knowledge Motors A/C and D/C Circuits Meters Controls	15

	f.	Relays	
2.	Refrig	erants	
۲.	a.		5
	b.	Refrigerant Systems	
	c.	Refrigerant Theory	
3.	Piping	·	5
	a.	`	3
	b.	Piping Materials and Sizes	
	c.	Piping Pressure Tests	
4.	Refrig	eration Equipment and	
	Comp	onents	17
	a.	Valves	
	b.	Compressors	
	c.	Condensers	
	d.	Evaporators	
	e.	Receivers	
	f.	Accumulators	
		Expansion Devices	
	h.	Dryers	
5.	Ref	rigeration Systems Operations	
	a.	Systems Troubleshooting	15
	b.	Systems Operations	
	c.	System Installation, Maintenance, an	ıd Repair
6.	Safety	<i>(</i>	3
	a.	Safety Training Requirements	3
	b.	Ventilation Requirements	
	c.	First Aid Kit Requirements	
	d.	Use of Personal Protective Equipmen	it
	e.	Material Safety Data Sheets (MSDS)	
	f.	Requirements for Work Around Toxic	
		Materials	
	g.	Lockout/Tagout Procedures	
	h.	Ladders	

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- Modern Refrigeration and Air Conditioning, Althouse, Turnquist, Bracciano, 20<sup>th</sup> or 21st edition, Goodheart-Willcox, <u>www.g-w.com</u>

OR

Refrigeration & Air Conditioning Technology, Fifth Edition, 2005 Delmar Publishing/Thomson Learning,

PO Box 6904, Florence, KY 41022, (800) 347-7707, www.delmarlearning.com

 Code of Federal Regulations - 29 CFR Part 1926 (OSHA), with latest available amendments, Candidates can access the Government website with this link https://www.osha.gov/lawsregs/regulations/standardnumber/1926

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# LIMITED RESIDENTIAL JOURNEYMAN (MECHANICAL)

#### **SCOPE OF WORK**

A limited residential journeyman license entitles the licensee to install complete new systems for detached one or two family dwellings and multiple single-family dwellings (townhouses) not more than three stories in height with a separate means of egress. Installations shall include 5-ton or less cooling systems and 150,000 Btu/h or less heating systems and related accessories such as humidifiers, filtering systems, kitchen vent hoods, exhaust fans and clothes dryer vent exhausts for such dwellings. Such installations shall not include any fuel gas piping, welding, soldering, brazing or final connection of refrigerant lines or final connection of any electrical wiring permitted to be installed in accordance with Oklahoma statutes.

# of	Passing %	Passing	Time
Questions		(Raw)	Allowed
40	70	28	100 minutes

To	pic Information	# of Items
1.	Duct Systems	10
2.	Vents	4

	1	
3.	Insulation	3
4.	Clothes Dryer	3
5.	Range Hoods	1
6.	Clearances	3
7.	Access	4
8.	Appliance Installation	1
9.	Restroom Exhaust Systems	1
10.	Combustion Air	3
11.	Piping	1
12.	General Installation	3
13.	SMACNA Symbols	3

#### REFERENCE LIST

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This examination is OPEN BOOK.

The following reference materials <u>are</u> allowed in the examination center:

- International Residential Code for One-and Two-Family Dwellings, 2018 edition, International Code Council, 5203 Leesburg Pike, Suite 600, Falls Church, VA 22041, (800) 786-4452, www.iccsafe.org, with Oklahoma Revisions found at <a href="http://ok.gov/oubcc/Codes & Rules/Adopted Building Codes">http://ok.gov/oubcc/Codes & Rules/Adopted Building Codes</a>
- Oklahoma Mechanical Industry Regulations, Oklahoma Administrative Code, Title 158, Chapter 50, Oklahoma Construction Industries Board, 2401 NW 23<sup>rd</sup> Street, Suite 2F, Oklahoma City, OK 73107, www.ok.gov/cib
- SMACNA Symbols Sheet, located under testing information, www.ok.gov/cib

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#### LIMITED RESIDENTIAL INSTALLER

#### **SCOPE OF WORK**

A limited residential installer license entitles the licensee to install complete new systems in new construction for detached one or two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories in height with a separate means of egress. Installations shall include 5-ton or less cooling systems and 150,000 Btu/h or less heating systems and related accessories such as humidifiers, filtering systems, kitchen vent hoods, exhaust fans and clothes dryer vent exhausts for such dwellings. Such installations shall not include any fuel gas piping, welding, soldering, brazing or final connection of refrigerant lines or final connection of any electrical wiring permitted to be installed in accordance with Oklahoma statutes.

# of Questions	Passing %	Passing (Raw)	Time Allowed
30	70	21	75

Тор	oic Information	# of Items
1.	Duct Systems	9
2.	Vents	2
3.	Insulation	2
4.	Clothes Dryer	2
5.	Range Hoods	1
6.	Clearances	2
7.	Access	3
8.	Appliance Installation	1
9.	Restroom Exhaust Systems	1
10.	Combustion Air	2

11.	Piping	1
12.	General Installation	2
13.	SMACNA Symbols	2

#### **REFERENCE LIST**

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- International Residential Code for One-and Two-Family Dwellings, 2018 edition, International Code Council, 5203 Leesburg Pike, Suite 600, Falls Church, VA 22041, (800) 786-4452, www.iccsafe.org, with Oklahoma Revisions found at <a href="http://ok.gov/oubcc/Codes\_&\_Rules/Adopted\_Building\_Codes">http://ok.gov/oubcc/Codes\_&\_Rules/Adopted\_Building\_Codes</a>
- SMACNA Symbols Sheet, located under testing information, www.ok.gov/cib

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#### PLUMBING BUSINESS AND LAW

# of	Passing %	Passing	Time
Questions		(Raw)	Allowed
50	75	37	120 minutes

Topic	Topic Information		# of Items	
1. B		ng and Estimating General Estimating Bid	10	

2.	Projec	ct Management and Supervision	
	a.	General Project Oversight	7
	b.	Oversee Budget	
	c.	Oversee Quality Control	
	d.	Oversee Materials Control	
	e.	Manage Jobsite Safety	
	f.	Schedule	
	g.	Potentially Hazardous Materials	
	h.	Environmental Protection	
	i.	Submittals and Reports	
	j.	Ethics	
	k.	Liens	
3.	Contra	acts	
	a.	Terminology	5
	b.	Required Elements/Components	
	c.	Contract Types	
	d.	Change Orders	
	e.	Standardized Documents	
	f.	Interpretation	
	g.	Warranties	
	h.	Documents/Inclusions	
	i.	Other Obligations	
4.	Finan	cial	
	a.	Business Organization	8
		Characteristics, Advantages, and	
		Disadvantages	
	b.	Business Start-up	
	c.	Accounting Method	
	d.	Cash Flow Terminology	
	e.	Accounts Receivable	
	f.	Accounts Payable	
	g.	Balance Sheet	
	h.	Income Statement	
	i.	Taxes on Company Income	
	j.	Obtaining Financing	
	k.	Checking Account	
	l.	Financial Ratios	
5.	Labor	and Personnel	5
	a.	ADA	3
	b.	Labor Standards	
	c.	Requirements for Non-citizens and/o	or Non-
		residents	
	d.	Workers' Compensation	
	e.	Federal or State OSHA	
	f.	New Hires	
	g.	Personnel Record Keeping	
	h.	Other Requirements	
6.		lanagement	4
	a.	Insurance	
	b.	Bonds	
7.	-	ll and Payroll Taxes	5
	a.	Taxes	
	b.	Forms and Due Dates	
8.		sing Requirements	
	a.	Required Insurance/Bonds	6
Ì	b.	Renewal	

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This examination is OPEN BOOK.

The following reference materials <u>are</u> allowed in the examination center:

- State of Oklahoma, Construction Industries Board, Unofficial Administrative Rules & Courtesy Exam Study Aids Book, current edition (available at the Construction Industries Board Office - no fee).
- Oklahoma Plumbing License Law of 1955, Oklahoma Statutes, Title 59, Chapter 27, Oklahoma Construction Industries Board, 2401 N.W. 23rd Street, Suite 2F, Oklahoma City, OK 73107, www.ok.gov/cib
- Oklahoma Plumbing Industry Regulations, Oklahoma Administrative Code, Title 158, Chapter 30, Oklahoma Construction Industries Board, 2401 N.W. 23rd Street, Suite 2F, Oklahoma City, OK 73107, <a href="https://www.ok.gov/cib">www.ok.gov/cib</a>
- Oklahoma Fine Schedule of the Construction Industries Board, Oklahoma Administrative Code, Title 158, Chapter 10, Oklahoma Construction Industries Board, 2401 N.W. 23rd Street, Suite 2F, Oklahoma City, OK 73107, <a href="https://www.ok.gov/cib">www.ok.gov/cib</a>
- Oklahoma Lien Law, Oklahoma Statutes, Title 42, Chapter 3, Oklahoma Construction Industries Board, 2401 N.W. 23rd Street, Suite 2F, Oklahoma City, OK 73107, www.ok.gov/cib
- NASCLA Contractors Guide to Business, Law and Project Management, Basic 14<sup>th</sup> Edition, National Association of State Contractors Licensing Agencies (NASCLA), Telephone: (623) 587-9354, <a href="www.nascla.org">www.nascla.org</a> Oklahoma Workers' Compensation Act, Oklahoma Statutes, Title 85A, Chapter 1, Oklahoma Construction Industries Board, 2401 N.W. 23rd Street, Suite 2F, Oklahoma City, OK 73107, <a href="www.ok.gov/cib">www.ok.gov/cib</a> OR

Oklahoma Workers' Compensation Act Statutory Excerpts, Oklahoma Statutes, Title 85A, Chapter 1, Oklahoma Construction Industries Board, 2401 N.W. 23rd Street, Suite 2F, Oklahoma City, OK 73107, <a href="https://www.ok.gov/cib">www.ok.gov/cib</a>

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#### PLUMBING CONTRACTOR AND NATURAL GAS

#### **SCOPE OF WORK**

Installation, repair and maintenance or extension of any plumbing system, including sanitary drainage waste and vents, water supply, plumbing fixtures and roof drains and also install, maintain, or repair gas piping, appliances, vents, flues, tanks and other related appurtenances in a supervised environment.

# of	Passing %	Passing	Time
Questions		(Raw)	Allowed
85	75	64	180 minutes

Тор	ic Info	rmation #	# of	Items
1.		al Plumbing edge and Regulations		10
	a.	Head Pressure		
	b.	Pipe Joints		
	c.	Solvent Welded Pipe Joints		
	d.	Calculations of Area and Volume		
	e.	Calculations of Water Supply Fri	ctio	n Loss
	f.	Permits and Inspections		
	g.	Job Costs		
	h. Notches and Bore Holes in Structural Members			
	i. Fire Integrity			
	j.	Pipe Offsets Test Systems		
	k.	Condensate Disposal Trenching,	Fxca	vation, and
		Backfill	LXCu	vacion, and
	l.	Fitting Identification		
2.		, Valves, and Control Valves		
Ĺ.	a.	PVC Piping and Connections		8
	b.	CPVC Piping and Connections		0
	c.	Galvanized Piping and Connections	ne	
	d.	Copper Tubing and Connections	113	
	e.	Copper Piping and Connections		
	f.	Polyethylene Piping and Connections		
	g. h.	Underground Piping and Connect	ions	
	i.	Cast Iron Piping and Connections		
	j.	Steel Piping and Connections	'	
	k.	Connecting Dissimilar Materials		
	l.			
2				
3.	a.	es and Equipment Identify Minimum Plumbing Nee for Structures/Facilities	ds	8
	b.	Install Fixtures and Associated Ed	auipi	ment
4.		Supply	1 10 -	
	a.	Water Supply and Distribution	on	10
		Lines		
	ь.	Protection of Potable Water Supp	olv	
	c.			
5.		and Sewers		
٠.	a.	Drain and Sewer Pipe		10
	b.	·		
	c.	Sewer and Drain Cleanouts		
	d.	Sewage Ejectors and Sump Pump	s	
	e.	Health Care Plumbing		
	f.	Drain and Waste Piping		
	g.	Storm Drainage		
6.	Vents	Jeonii Diamage		
υ.	a.	Vent Installation		13

	b.	Developed Length
7.	Traps,	Interceptors, Indirect, and
		al Waste
	a.	Traps
	b.	Interceptors and Separators
	c.	Indirect and Special Waste
8.	Isome	tric Analysis
	a.	Isometric Drawings 7
9.	Fuel G	Gas
	a.	Gas Distribution Pipe Sizing 10
	b.	Gas Pressure Regulators
	c.	Hangers and Supports
	d.	Direction Changes
	e.	Concealed Locations
	f.	Joints and Connections
	g.	Valves
	h.	Location of Outlets
	i.	Drip Leg and Sediment Traps
	j.	Water Heaters and Other Appliances
	k.	Confined Spaces
	l.	Combustion Air
	m.	Chimneys and Vents
	n.	Permits and Inspections for Gas
	0.	Cost Estimates for Gas
	p.	Outdoor Gas Supply Piping
	q.	Testing and Inspection of Gas Systems
	r.	Pipe Material Requirements
10.	Safety	
	a.	Responsibility for Providing 4
		Personal Protective Equipment
	b.	Excavation Safety
	c.	Employee Protection in Trenches and
	١.	Excavations
	d.	Safety Training Requirements
	e.	Adequate Ventilation for Employees
	f.	First Aid Kit Requirements
	g.	Use of Personal Protective Equipment
	h.	Signs, Signals, and Barricades As Required
	i.	Tools and Equipment Requirements
	j.	Ladder Use in Accordance with Requirements
	k.	Workplace Illumination
	l.	Scaffold Use in Accordance with Requirements
	m.	Requirements for Work Around Toxic Materials
	n.	Appropriate Material Cleanup and Disposal
	0.	Material Safety Data Sheets (MSDS)
	p.	Handling and Storing Materials

#### **REFERENCE LIST**

**q.** Fall Protection

The reference materials listed below were used to prepare the questions for this examination. The examination may also contain questions based on trade knowledge or general industry practices. Except for Code books, later editions of references are allowed in the test area. For Code questions, the examinations will be based only on the edition of the Code book that is listed.

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This examination is OPEN BOOK.

The following reference materials <u>are</u> allowed in the examination center:

- International Plumbing Code, 2018 edition, International Code Council, 5203 Leesburg Pike, Suite 600, Falls Church, VA 22041, (800) 786-4452, www.iccsafe.org, with Oklahoma Revisions http://ok.gov/oubcc/Codes\_&\_Rules/Adopted\_Buildin g\_Codes/
- International Fuel Gas Code, 2018 edition, International Code Council, 5203 Leesburg Pike, Suite 600, Falls Church, VA 22041, (800) 786-4452, www.iccsafe.org, with Oklahoma Revisions http://ok.gov/oubcc/Codes\_&\_Rules/Adopted\_Buildin g\_Codes/
- Mathematics for Plumbers and Pipefitters, Lee Smith, 8th Edition, 2013, <u>www.cengage.com</u>
- Code of Federal Regulations 29 CFR Part 1926 (OSHA), with latest available amendments, Candidates can access the Government website with this link <a href="https://www.osha.gov/laws-regs/regulations/standardnumber/1926">https://www.osha.gov/laws-regs/regulations/standardnumber/1926</a>

Hard copy can be purchased from Mancomm.com. <a href="https://mancomm.com/29-cfr-1926-osha-construction-industry-regulations-standards/">https://mancomm.com/29-cfr-1926-osha-construction-industry-regulations-standards/</a>.

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## PLUMBING JOURNEYMAN AND NATURAL GAS

#### **SCOPE OF WORK**

Installation, repair and maintenance or extension of any plumbing system, including sanitary drainage waste and vents, water supply, plumbing fixtures and roof drains and also install, maintain, or repair gas piping, appliances, vents, flues, tanks and other related appurtenances in a supervised environment.

# of	Passing %	Passing	Time
Questions		(Raw)	Allowed
85	75	64	180 minutes

Topic Information

# of Items

1.	General Plumbing Knowledge and Regulations	10
	a. Head Pressure	
	b. Pipe Joints	
	c. Solvent Welded Pipe Joints	
	d. Calculations of Area and Volume	
	e. Calculations of Water Supply Frict	ion Loss
	f. Permits and Inspections	
	g. Job Costs	
	h. Notches and Bore Holes in Structur	al Members
	i. Fire Integrity	
	j. Pipe Offsets Test Systems	
	k. Condensate Disposal Trenching, E	xcavation, and
	Backfill	
	I. Fitting Identification	
2.	Piping, Valves, and Control Valves	
	<ul> <li>a. PVC Piping and Connections</li> </ul>	8
	<ul> <li>b. CPVC Piping and Connections</li> </ul>	
	c. Galvanized Piping and Connections	;
	d. Copper Tubing and Connections	
	e. Copper Piping and Connections	
	f. Polyethylene Piping Connections	
	g. PEX Piping and Connections	
	<ul> <li>h. Underground Piping and Connectio</li> </ul>	ns
	i. Cast Iron Piping and Connections	
	j. Steel Piping and Connections	
	k. Connecting Dissimilar Materials	
	I. Valves and Control Valves	
3.	Fixtures and Equipment	
	a. Identify Minimum Plumbing Needs	8
	for Structures/Facilities	
	<ul> <li>b. Install Fixtures and Associated Equ</li> </ul>	ipment
4.	Water Supply	
	<ul> <li>a. Water Supply and Distribution</li> </ul>	10
	Lines	
	<b>b.</b> Protection of Potable Water Supply	y
	c. Backflow	
5.	Drains and Sewers	40
	a. Drain and Sewer Pipe	10
	b. Building Sewers	
	c. Sewer and Drain Cleanouts	
	d. Sewage Ejectors and Sump Pumps	
	e. Health Care Plumbing	
	f. Drain and Waste Piping	
	g. Storm Drainage	
6.	Vents	13
	a. Vent Installation	10
	a. Developed Length	
7.	Traps, Interceptors, Indirect, and	5
	Special Waste	
	a. Traps	
	a. Interceptors and Separators	
	b. Indirect and Special Waste	
8.	Isometric Analysis	
	a. Isometric Drawings	7
9.	Fuel Gas	
	a. Gas Distribution Pipe Sizing	10
	<b>b.</b> Gas Pressure Regulators	
	c. Hangers and Supports	
	d. Direction Changes	
	e. Concealed Locations	
	f. Joints and Connections	
	g. Valves	
	h. Location of Outlets	
	i. Drip Leg and Sediment Traps	
1	in all and a partition of the partition	

Water Heaters and Other Appliances **Confined Spaces** k. **Combustion Air** m. Chimneys and Vents Permits and Inspections for Gas Cost Estimates for Gas **Outdoor Gas Supply Piping** Testing and Inspection of Gas Systems Pipe Material Requirements 10. Safety a. Responsibility for Providing Personal Protective Equipment **b.** Excavation Safety **Employee Protection in Trenches and Excavations Safety Training Requirements** Adequate Ventilation for Employees First Aid Kit Requirements Use of Personal Protective Equipment Signs, Signals, and Barricades As Required **Tools and Equipment Requirements** Ladder Use in Accordance with Requirements Workplace Illumination Scaffold Use in Accordance with Requirements m. Requirements for Work Around Toxic Materials n. Appropriate Material Cleanup and Disposal Material Safety Data Sheets (MSDS) Handling and Storing Materials Fall Protection q.

## **REFERENCE LIST**

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- International Fuel Gas Code, 2018 edition, International Code Council, 5203 Leesburg Pike, Suite 600, Falls Church, VA 22041, (800) 786-4452, www.iccsafe.org, with Oklahoma Revisions http://ok.gov/oubcc/Codes\_&\_Rules/Adopted\_Buildin g\_Codes/
- Mathematics for Plumbers and Pipefitters, Lee Smith, 8th Edition, 2013, <u>www.cengage.com</u>
- Code of Federal Regulations 29 CFR Part 1926 (OSHA), with latest available amendments, Candidates can access the Government website with this link

https://www.osha.gov/laws-regs/regulations/standardnumber/1926

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# RESIDENTIAL JOURNEYMAN PLUMBING AND NATURAL GAS

Тор	ic Info	rmation	# of Items
1.		al Plumbing Knowledge and	
	Regula	Calculate Area and Volume	10
		General Code Requirements	
		Plumbing Definitions	
		Notches and Holes in Structural	Members
		Test Systems	Welliner 2
		Water Column	
		Pipe Offsets	
	5.		
2.	Piping	, Valves, and Control Valves	
	a.	Piping Connections	8
	b.	Cast Iron Piping	
	c.	Copper Piping and Tubing	
		Steel Piping	
		PVC, CPVC, Plastic and PEX Pipi	ng
	f.	Valves	
3.	Fixtur	es and Equipment	
	a.	Fixture Installation	8
	b.	Install Water Heaters	
	c.	Requirements for Fixtures	
4.	Water	Supply	
	a.		10
	b.	Protection of Potable Water Sup	oply
	c.	Backflow	

5.		and Sewers	10
	a.		10
	b.	Building Sewers	
		Sewer and Drain Cleanouts	
		DFUs	
	e.	Drain and Water Piping	
6.	Vents		13
		Vent Installation	10
	b.	Wet Venting	
7.		Interceptors, Indirect, and	
		al Waste	5
	a.		
		Indirect Waste	
	c.	Traps	
8.	Isome	tric Analysis	
	a.	Isometric Drawings	7
9.	Fuel C	ias	
		Gas Piping Conduit	10
	b.	General Gas Piping and Valves	
	c.	Piping Supports and Hangars	
		Pipe Sizing	
		Testing	
	f.	Installaion and Joining Gas Pipe	
	g.	Threads	
10.	Safety	1	4
	a.	Construction Activitites	4
	b.	Ladders	
	c.	Fall Arrest Systems	

The reference materials listed below were used to prepare the questions for this examination. The examination may also contain questions based on trade knowledge or general industry practices. Except for Code books, later editions of references are allowed in the test area. For Code questions, the examinations will be based only on the edition of the Code book that is listed.

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This examination is OPEN BOOK.

The following reference materials <u>are</u> allowed in the examination center:

- International Residential Code for One-and Two-Family Dwellings, 2018 edition, International Code Council, 5203 Leesburg Pike, Suite 600, Falls Church, VA 22041, (800) 786-4452, www.iccsafe.org, with Oklahoma Revisions found at <a href="http://ok.gov/oubcc/Codes & Rules/Adopted Building\_Codes">http://ok.gov/oubcc/Codes & Rules/Adopted Building\_Codes</a>
- Code of Federal Regulations 29 CFR Part 1926 (OSHA), with latest available amendments, Candidates can access the Government website with this link <a href="https://www.osha.gov/laws-regs/regulations/standardnumber/1926">https://www.osha.gov/laws-regs/regulations/standardnumber/1926</a>

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 Mathematics for Plumbers and Pipefitters, Lee Smith, 8th Edition, 2013, www.cengage.com

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# RESIDENTIAL CONTRACTOR PLUMBING AND NATURAL GAS

Tor	nic Info	rmation	# of Items
1.		al Plumbing Knowledge and	" Of Icellis
	Regula		10
	ĥ.	Calculate Area and Volume	
	i.	General Code Requirements	
	j.	Plumbing Definitions	
	k.	Notches and Holes in Structural	Members
		Test Systems	
		Water Column	
	n.	Pipe Offsets	
2.	Piping	, Valves, and Control Valves	
	g.	Piping Connections	8
		Cast Iron Piping	
		Copper Piping and Tubing	
	j.	Steel Piping	
	k.	PVC, CPVC, Plastic and PEX Pip	ing
		Valves	
3.		es and Equipment	
		Fixture Installation	8
	l l	Install Water Heaters	
	f.	Requirements for Fixtures	
4.		Supply	10
	d.	Water Supply and Distribution Lines	10
	e.	Protection of Potable Water Su	pply
		Backflow	rr 9
5.	Drains	and Sewers	
	f.	Drain and Sewer Pipe	10
	g.	Building Sewers	

	h.	Sewer and Drain Cleanouts	
		DFUs	
	j.	Drain and Water Piping	
6.	Vents		13
	c.	Vent Installation	13
	d.	Wet Venting	
7.		, Interceptors, Indirect, and	
	Specia	al Waste	5
	d.	Ejector Pumps	
	e.	Indirect Waste	
	f.	Traps	
8.	Isome	tric Analysis	
	ь.	Isometric Drawings	7
9.	Fuel (	Gas	
	h.	Gas Piping Conduit	10
	i.	General Gas Piping and Valves	
	i.	Piping Supports and Hangars	
	k.	Pipe Sizing	
		Testing	
		Installaion and Joining Gas Pipe	
	n.		
10.	Safety	,	
		Construction Activitites	4
		Ladders	
	-		
	1.	Fall Arrest Systems	

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- Code of Federal Regulations 29 CFR Part 1926 (OSHA), with latest available amendments, Candidates can access the Government website with this link <a href="https://www.osha.gov/laws-regs/regulations/standardnumber/1926">https://www.osha.gov/laws-regs/regulations/standardnumber/1926</a>

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#### **ROOFING BUSINESS AND LAW**

# of	Passing %	Passing	Time
Questions		(Raw)	Allowed
50	70	35	120 minutes

Тор	Topic Information # of Items			
1.	Bidding and Estimating		10	
	a.	General Estimating	10	
	b.	Bid		
2.	Proje	ct Management and Supervision		
	a.	General Project Oversight	7	
	b.			
	c.	Oversee Quality Control		
	d.			
		Manage Jobsite Safety		
	f.	Schedule		
	g.	Potentially Hazardous Materials		
	h.			
	i.	Submittals and Reports		
	j.	Ethics		
	k.	Liens		
3.	Contr	acts		
	a.	Terminology	5	
	b.	Required Elements/Components		
	c.	21		
	d.			
	e.			
	f.	Interpretation		
	g.	Warranties		
	h.			
<u> </u>	i.	Other Obligations		
4.	Finan			
	a.	Business Organization	8	
		Characteristics, Advantages, and	d	
	Ι.	Disadvantages		
	Ь.	Business Start-up		
	c.	Accounting Method		

	d.	Cash Flow Terminology
	e.	Accounts Receivable
	f.	Accounts Payable
	g.	Balance Sheet
	h.	Income Statement
	i.	Taxes on Company Income
	j.	Obtaining Financing
	k.	Checking Account
	l.	Financial Ratios
5.	Labor	and Personnel
	a.	ADA 5
	b.	Labor Standards
	c.	- 1
		residents
		Workers' Compensation
		Federal or State OSHA
	f.	New Hires
	g.	
	h.	Other Requirements
6.	Risk M	anagement 4
	a.	insurance
	b.	Bonds
7.	Payrol	l and Payroll Taxes 5
	a.	Taxes
	b.	Forms and Due Dates
8.	Licens	ing Requirements
	a.	Required Insurance/Bonds 6
	b.	Renewal

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This examination is OPEN BOOK.

The following reference materials  $\underline{are}$  allowed in the examination center:

- State of Oklahoma, Construction Industries Board, Unofficial Administrative Rules & Courtesy Exam Study Aids Book, current edition (available at the Construction Industries Board Office - no fee).
- Oklahoma Roofing Contractor Registration Act,
   Oklahoma Statutes, Title 59, Section 1151, et seq.,
   Oklahoma Construction Industries Board, 2401 N.W.
   23rd Street, Suite 2F, Oklahoma City, OK 73107,
   www.ok.gov/cib
- Oklahoma Roofing Contractor Regulations, Oklahoma Administrative Code, Title 158, Chapter 85, Oklahoma Construction Industries Board, 2401 N.W. 23rd Street, Suite 2F, Oklahoma City, OK 73107, www.ok.gov/cib
- Oklahoma Fine Schedule of the Construction Industries Board, Oklahoma Administrative Code, Title 158, Chapter 10, Oklahoma Construction Industries Board,

- 2401 N.W. 23rd Street, Suite 2F, Oklahoma City, OK 73107, www.ok.gov/cib
- Oklahoma Workers' Compensation Act, Oklahoma Statutes, Title 85A, Chapter 1, Oklahoma Construction Industries Board, 2401 N.W. 23rd Street, Suite 2F, Oklahoma City, OK 73107, <a href="https://www.ok.gov/cib">www.ok.gov/cib</a> OR

Oklahoma Workers' Compensation Act Statutory Excerpts, Oklahoma Statutes, Title 85A, Chapter 1, Oklahoma Construction Industries Board, 2401 N.W. 23rd Street, Suite 2F, Oklahoma City, OK 73107, www.ok.gov/cib

- Oklahoma Lien Law, Oklahoma Statutes, Title 42, Chapter 3, Oklahoma Construction Industries Board, 2401 N.W. 23rd Street, Suite 2F, Oklahoma City, OK 73107, www.ok.gov/cib
- NASCLA Contractors Guide to Business, Law and Project Management, Basic 14<sup>th</sup> Edition, National Association of State Contractors Licensing Agencies (NASCLA), Telephone: (623) 587-9354, <a href="https://www.nascla.org">www.nascla.org</a>

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#### ROOFING CONTRACTOR COMMERCIAL ENDORSEMENT

# **SCOPE OF WORK**

A commercial roofing contractor's work includes, but is not limited to, installation, renovation, remodeling, reroofing, reconstructing, repair, maintenance, improvement, alteration, and waterproofing of building roofs using a variety of materials, including shingles, asphalt, and metal. Commercial roofing contractors supervise and manage activities or personnel, supply material, and solicit commercial roofing contracts. A commercial roofing contractor may operate as an individual, firm, partnership, or corporation installing or repairing roofs on residential, commercial and industrial buildings.

# of	Passing %	Passing	Time
Questions		(Raw)	Allowed
50	70	35	150 minutes

Topic Information	# of Items
-------------------	------------

1.	General Roofing Knowledge	5
2.	Low Slope Roofing	15
3.	Architectural Metal Roofing Systems and Sheet Metal Flashing	
		9
4.	Moisture and Energy Control	
		6
5.	Repairs and Reroofing	
٥.	Repairs and Refooting	8
6.	Safety	
		7

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This examination is OPEN BOOK.

The following reference materials <u>are</u> allowed in the examination center:

- Architectural Sheet Metal Manual, 2012, Sheet Metal and Air Conditioning Contractors' National Association, Inc. (SMACNA), <a href="https://www.smacna.org/store">www.smacna.org/store</a>
- International Building Code, 2018, International Code Council, (800) 786-4452, www.iccsafe.org with Oklahoma Revisions <a href="http://ok.gov/oubcc/Codes\_&\_Rules/Adopted\_Building\_Codes/">http://ok.gov/oubcc/Codes\_&\_Rules/Adopted\_Building\_Codes/</a>
- NRCA Roofing Manual: Membrane Roofing Systems, 2023, The National Roofing Contractors Association, (866) 275-6722, www.nrca.net
- NRCA Roofing Manual: Metal Panel and SPF Roof Systems, 2020, The National Roofing Contractors Association, (847) 299-9070, <u>www.nrca.net</u>
- NRCA Roofing Manual: Steep Slope Roof Systems, 2021, The National Roofing Contractors Association, (847) 299-9070, <u>www.nrca.net</u>

- NRCA Roofing Manual: Architectural Metal Flashing Condensation and Air Leakage Control, and Reroofing, 2022, The National Roofing Contractors Association, (847) 299-9070, www.nrca.net
- Code of Federal Regulations 29 CFR Part 1926 (OSHA), with latest available amendments, Candidates can access the Government website with this link https://www.osha.gov/lawsregs/regulations/standardnumber/1926

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Candidates are responsible for bringing their own references to the examination center. Reference materials may be highlighted, underlined, and/or indexed prior to the examination session. References may not be written in prior to or during the examination session. Any candidate caught writing in the references during the examination will have the references confiscated and will be reported to the department. Furthermore, candidates are not permitted to bring in any additional papers with their approved references. Any additional materials will be removed from the references and confiscated. References may be tabbed/indexed with permanent tabs only. Temporary tabs, such as Post-It notes, are not allowed and must be removed from the reference before the exam will begin. If you download a reference from the Internet, it must be spiral bound or hole-punched and placed in a binder or stapled in the left-hand corner.