## \*psi

## **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

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Effective 1/29/2025

#### **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 <u>www.ok.gov</u>

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  $\underline{each}$  registration, whether you are taking the examination for the first time or repeating.

- **Y** There is no expiration on your eligibility.
- **1** If you fail the first time, you must wait 30 days before retesting.
- Solution For electrical exams, the waiting period for additional retest will be 30 days.
- Y 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.

		CONTACT US HELP
	OKLAHOMA	
	onstruction Indu	stries Board
	Program Info Tests	<u>Client Admin</u>
	Overview   FAQs	
Construction Trades exams offered for the Oklah	noma Construction Industries Board	

2. Select the examination you will be taking.

OK Hvacr Jrny Unlimited	
Exam to verify competency in the skills needed for: OK Hvacr Jrny Unlimited	
Onsite (Test Center)	
OK Process Piping Contractor	
Exam to verify competency in the skills needed for: OK Process Piping Contractor	

1. Select "Tests" to create an account.

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

<b>OK Hvacr Jrny Unlimited</b> Exam to verify competency in the skills needed for: OK Hvacr Jrny Unlimited	<ul> <li>Candidate Bulletin</li> <li>Fee:</li> <li>Re-take Fee:</li> </ul>
To continue the booking process and schedule your test, you must login or create an	Eee Policy account.  LOGIN/REGISTER

### 4. Select Create Account.

Login				
Sign in to retrieve your <b>O</b> Account.	KLAHOMA CONSTRU	CTION INDUSTRIES BOARD	test information. Don't have a	in account? <u>Creat</u>
Email *	*	Password *	茶	
*Required				

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

Create Account *Required	
Ok Con ID *	
First Name *	Last Name *
Middle Name	Generation
Email *	
Password *	Your password must contain: • At least one capital letter A-Z • At least one lower case letter a-z • At least one number 0-9
Confirm Password *	<ul> <li>At least one special character !@#V\$%V^&amp;V*</li> <li>At least 8 and up to 32 characters</li> </ul>

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

	1	Test Portions	More Info		
Portion Name	Туре	Duration	Language	Fee	Select
OK Sheet Metal Contractor Technical	Optional	120 Minutes		\$ 100.00 USD	
Mechanical Bus and Law	Required	120 Minutes		\$ 100.00 USD	

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

City, province, or postal code	city, province, or postar code	
--------------------------------	--------------------------------	--

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

<		Au	igust 20	21		>	Time slots available for August 18, 2021
Sun	Mon	Tue	Wed	Thu	Fri	Sat	12:00 AM
1	2	3	4	5	6	7	07:00 AM
8	9	10	11	12	13	14	
15	16	17	18	(19)	20	(21)	
(22)	(23)	(24)	(25)	(26)	(27)	(28)	
29	30	31	0	0	0		

#### 9. You are now ready to pay.

Billing Address	Order Summary
Address 1 *	Commercial Contractor Practice Test
Address 1	Mechanical Bus and Law \$100.00 USE
Address 2	Total Price
Address 3	CONTINU

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

Booking Confirmed!	firmation	
Smart & Final • 12:00 AM	August 26, 2021 Add to Calendar -	Street Address1: 46, Anant Prema State (If not USA): test Postal Code: 73051
Order Summary Test Fee Commercial Contractor Practice Test Mechanical Bus and Law Scheduled	\$24.95 USD \$100.00 USD	Billing Address 481 Benson Park Drive, , , Oklahoma City, Oklahoma, United States, 73102
Tax Total Price	\$0.00 USD <b>\$124.95 USD</b>	

#### **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.

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://testtakers.psiexams.com/okcontractors.

#### **EXAMINATION SITE LOCATION**

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

ENID 1201 West Willow Road	LAWTON 4500 West Lee Boulevard	McALESTER 21 East Carl Albert Parkway
Enid, OK 73703	Lawton, OK 73505	McAlester, OK 74501
NORMAN	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	TULSA (1)	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
TULSA (3)	WEATHERFORD	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.

#### EXAM ACCOMMODATIONS

#### **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:

- <u>On screen</u> 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 <u>do not pass</u>, you will receive a diagnostic report indicating your strengths and weaknesses by examination type with the score report.
- <u>On paper</u> 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:scor

#### EXAMINATION REFERENCE MATERIAL AND CONTENT OUTLINE

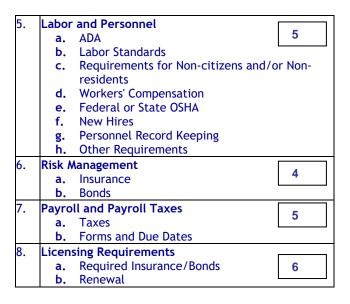
If a test question answer could differ because of conflicting information in test reference sources, a legal requirement such as code, law, or regulation overrides any other reference. If two legal requirements appear to conflict, the state-specific code, law, or regulation overrides the national one. 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 <u>www.psionlinestore.com</u> or by calling the PSI Online Store, toll-free, at (866) 589-3088.

#### ELECTRICAL BUSINESS AND LAW

50 Scored Items - 120 minutes - 70% Correct to Pass

Тор	oic Info	ormation	# of Items
1.	Biddi	ng and Estimating	10
	а.	General Estimating	10
	b.	Bid	
2.	Proie	ct Management and Supervision	
	a.	General Project Oversight	7
	b.	Oversee Budget	
	с.	Oversee Quality Control	
	d.	Oversee Materials Control	
	е.	Manage Jobsite Safety	
	f.	Schedule	
	g.	Potentially Hazardous Materials	
	ĥ.	Environmental Protection	
	i.	Submittals and Reports	
	j.	Ethics	
	k.	Liens	
3.	Contr	acts	
	а.	Terminology	5
	b.	Required Elements/Components	; []
	с.	Contract Types	
	d.	Change Orders	
	е.	Standardized Documents	
	f.	Interpretation	
	g.	Warranties	
	h.	Documents/Inclusions	
	i.	Other Obligations	
4.	Finan	cial	
	а.	Business Organization	8
		Characteristics, Advantages, and	d 🖵 🗹
		Disadvantages	
	ь.	Business Start-up	
	с.	Accounting Method	
	d.	Cash Flow Terminology	
	е.	Accounts Receivable	
	f.	Accounts Payable	
	g.	Balance Sheet	
	h.	Income Statement	
	i.	Taxes on Company Income	
	j.	Obtaining Financing	
	<b>k.</b>	Checking Account	
	ι.	Financial Ratios	



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, <u>www.ok.gov/cib</u>
- 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, <u>www.ok.gov/cib</u>
- 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, <u>www.ok.gov/cib</u>
- Oklahoma Lien Law, Oklahoma Statutes, Title 42, Chapter 3, Oklahoma Construction Industries Board, 2401 N.W. 23rd Street, Suite 2F, Oklahoma City, OK 73107, <u>www.ok.gov/cib</u>
- 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, <u>www.nascla.org</u>

 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, <u>www.ok.gov/cib</u> 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. <u>Temporary tabs</u>, 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.

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

Γο	oic Info	rmation # of It	ems
١.	Gener	ral Knowledge	4
	а.	Permits and Inspections	7
	<b>b</b> .	Preservation of Structural Integrity	
	с.	Needs Analysis and Estimate	
2.	Gener	ral Electrical Knowledge	
	а.	Voltage, Current, and Resistance	10
		in Series, Parallel, and	
		Combination Circuits	
	<b>b.</b>	Power Used in a Circuit	
	с.	Power Lost (called Heat Lost) in Any (	Circuit
	<b>d</b> .	Fundamental AC Theory	
	е.	Fundamental Three-phase AC Theory	
	f.	Cost of Power Used in a Circuit	
	g.	Troubleshooting and Test Systems	
	h.	National Electrical Codebook	
	i.	Definitions Used by the NEC	
	ј.	Temporary Wiring	
	<b>k.</b>	Cranes and Hoists	
	ι.	Elevators and Escalators	

3.	Electr	rical Installation Requirements	, ]
	а.	Approved Methods of Installation 10	
		of Electrical Equipment	1
	ь.	Approved Methods of Installation of Electrical	
		Equipment in Excess of 600 volts	
4.	Sonia	ces, Feeders, and Branch Circuits	_
4.		Services 10	
	а.	Services	
	ь.	Voltage Drop for Branch Circuits	
		or Feeders	
	с.	Services in Excess of 600 volts	
	<b>d</b> .		
	е.		
	f.	Branch Circuits	
	g.	Space-heating, Snow-melting, and Pipe-	
		heating Circuits	
	h.	Air-conditioning and Refrigeration Equipment	
5.	Overo	current Protection	1
	a.	NEC Overcurrent Protection 9	
		Requirements	
<i>5</i> .	Grour	nding and Bonding	1
~	a.	General Requirements 10	
	b.	Required Sizes of Grounding Electrode	
	D.	Conductors	
	с.	Required Sizes of Equipment Grounding	
		Conductors	
7.	Condu	uctors and Cables	
	а.	Underground Conductors and	
		Cables	
	<b>b</b> .		
	с.		
	d.	Armored Cable, Type AC	
	е.	2 2 I	
	f.	Nonmetallic-sheathed Cable, Types NM, NMC,	
		NMS	
	g.	Service Entrance Cables, Types SE and USE	
	ĥ.		
		Type UF	í
	i.	Mineral Insulated, Type MI	
	ј.	Flat Cable Assemblies, Type FC, and Flat	
		Conductor Cable, Type FCC	
	k.	2 - 2 C	
3.		ways and Boxes	_
	a. b	General Raceway Requirements 7	
	b.	General Box Requirements	
	с.	Pull Boxes	
	d.	Conduit Fittings	
	е.	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)	
	ј.	Type LFMC (Liquid-tight Flexible Metal	
		Conduit)	
	<b>k.</b>	Type FMT (Flexible Metallic Tubing)	
	ι.	Type HDPE (High-density Polyethylene	
		Conduit)	
	<b>m</b> .	Type NUCC (Nonmetallic Underground Conduit	t
		with Conductors)	-
	n.	Type LFNC (Liquid-tight Flexible Nonmetallic	
		conduit)	
		· · · · · · · · · · · · · · · · · · ·	
	ο.	Area of Raceway and Number of Conduct	
	_	(Conduit Fill)	
	p.	Outlet, Device, Pull, and Junction Boxes	
	q.	Box Volume and Fill	
	<b>r.</b>	Auxiliary Gutters, Busways, Concrete and	
		Nonconcrete Raceways	

	S.	Metal and Nonmetallic Wireways
	t.	Surface Metal and Nonmetallic Raceways
	u.	Underfloor Raceways
9.		Cabletrays al Occupancies and Equipment
9.		ding Swimming Pools)
	a.	Wiring in Class I, II, and III
	ч.	Hazardous Locations
	ь.	Wiring in Commercial Garages and Fuel
		Dispensing Facilities
	с.	Wiring in Bulk Storage Plants, Paint, and Spray
		Areas
	d.	Special Occupancies
	e.	Wiring in Health Facilities and Places of Assembly
	f.	Wiring of Mobile Home, Mobile Home Parks,
		RVs, and RV Parks
	g.	Wiring of Floating Buildings
	ĥ.	Wiring to Swimming Pools, Fountains, and Hot
		Tubs
10.	Low V	oltage, Alarms, Signaling Systems,
		ommunications 2
	а.	Remote Control or Signaling
	ь.	Circuits Communication Circuits
		Equipment Operating at 50 volts or Less
	d.	Fiber Optics
	е.	Photovoltaics
	f.	Remote Controls
	g.	Fire Alarms
	h.	Circuit Wiring for an Emergency System
	i.	, <u> </u>
11.	-	ng and Signs
	а. b.	Fixture Installation 10 Fixture Grounding
	с.	Fixture Wiring
	d.	
	е.	Fixture Construction Requirements
	f.	Recessed Fixtures
	g.	Lighting Systems that Operate at Less Than 30
		volts
12	h.	Neon Lighting and Electric Signs
12.	Safety a.	Job Site Sanitation 4
	b.	Responsibility for Providing Personal
	~.	Protective Equipment
	с.	Excavation Safety
	d.	Emergency Action Plans
	е.	Safety Training Requirements
	f.	Ventilation
	g. h.	First Aid Kit Requirements
	n. i.	Use of Personal Protective Equipment Signs, Signals, and Barricades
	j.	Tools and Equipment
	k.	Ladders
	ι.	Workplace Illumination
	<b>m.</b>	Scaffolds
	n.	Requirements for Work Around Toxic Materials
	ο.	Material Cleanup and Disposal
	р.	Material Safety Data Sheets (MSDS)
	q.	Handling and Storing Materials
13.	r. Motor	Fall Protection s and Transformers
13.	a.	Motors Used in Dwellings 6
	b.	Motor Branch Circuits in Industrial and

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

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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:

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

Hard copy can be purchased from Mancomm.com. <u>https://mancomm.com/29-cfr-1926-osha-</u> <u>construction-industry-regulations-standards/</u>. 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, <u>http://www.psionlinestore.com</u>

 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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#### 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.

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

Тор	Topic Information		# of	ltems	
1.	Gener	ral Knowledge			
	а.	Permits and Inspections		4	
	b.	Preservation of Structural Integ	grity		
	с.	Needs Analysis and Estimate	5 - 7		
2.	Gener	ral Electrical Knowledge		-	
	a.	Voltage, Current, and Resistan	ce	10	
		in Series, Parallel, and			I
		Combination Circuits			
	b.	Power Used in a Circuit			
	с.	Power Lost (called Heat Lost)	in Any	Circuit	
	<b>d</b> .	Fundamental AC Theory			
	е.	Fundamental Three-phase AC T	heory	,	
	f.	Cost of Power Used in a Circuit			
	g.	Troubleshooting and Test Syste	ems		
	h.	National Electrical Codebook			
	i.	Definitions Used by the NEC			
	j.	Temporary Wiring			
	<b>k.</b>	Cranes and Hoists			
	ι.	Elevators and Escalators			
3.		ical Installation Requirements			1
	а.	Approved Methods of Installation	on	10	
		of Electrical Equipment			•
	ь.	Approved Methods of Installatio		lectrical	
		Equipment in Excess of 600 vol			
4.		ces, Feeders, and Branch Circui	its	10	
	a.	Services		10	
	ь.	Voltage Drop for Branch Circuit	LS		
	-	or Feeders Services in Excess of 600 volts			
	с. d.	Feeders			
	e.		odors		
	f.	Branch Circuits	cucis		
	g.	Space-heating, Snow-melting, a	and Pi	ne-heatir	าฮ
	5.	Circuits		pe neuen	'5
	h.		ion Eo	uipment	
5.	-	current Protection			1
	a.	NEC Overcurrent Protection		9	
		Requirements			I
6.	Grour	nding and Bonding			1
•••		General Requirements		10	
	b.	Required Sizes of Grounding Ele	ectrod	e	1
		Conductors			
	с.	Required Sizes of Equipment G	roundi	ing	
		Conductors		-	
7.	Condu	uctors and Cables		0	
	а.	Underground Conductors and		8	
		Cables			
	<b>b.</b>	Vertical Installations			
	с.	Selecting Conductors			

d. Armored Cable, Type AC

	1	
1	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 FCC
	k.	Medium Voltage Cable, Type MV
8.	1	vays and Boxes
0.	a.	General Raceway Requirements 7
	b.	General Box Requirements
	с.	Pull Boxes
	d.	Conduit Fittings
	е.	Type RMC (Rigid Metal Conduit)
	f.	Type EMT (Electric Metallic Conduit)
	g.	Type IMC (Intermediate Metal Conduit)
1	ĥ.	Type RNC (Rigid Nonmetallic Conduit)
1	i.	Type FMC (Flexible Metal Conduit)
1	j.	Type LFMC (Liquid-tight Flexible Metal Conduit)
1	<b>k.</b>	Type FMT (Flexible Metallic Tubing)
1	ι.	Type HDPE (High-density Polyethylene Conduit)
1	m.	Type NUCC (Nonmetallic Underground Conduit
1	~	with Conductors) Type LFNC (Liquid-tight Flexible Nonmetallic
	n.	conduit)
	о.	Area of Raceway and Number of Conduct
1	0.	(Conduit Fill)
	р.	Outlet, Device, Pull, and Junction Boxes
1	р. q.	Box Volume and Fill
1	r.	Auxiliary Gutters, Busways, Concrete and
		Nonconcrete Raceways
		nonconcrete naceways
1	s.	Metal and Nonmetallic Wireways
	s. t.	
	t. u.	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways
	t. u. v.	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays
9.	t. u. v. Specia	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment
9.	t. u. v. Specia (Inclue	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment ding Swimming Pools) 10
9.	t. u. v. Specia	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment ding Swimming Pools) Wiring in Class I, II, and III
9.	t. u. v. Specia (Inclue a.	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment ding Swimming Pools) Wiring in Class I, II, and III Hazardous Locations
9.	t. u. v. Specia (Inclue	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment ding Swimming Pools) Wiring in Class I, II, and III Hazardous Locations Wiring in Commercial Garages and Fuel
9.	t. u. V. Specia (Inclue a. b.	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment ding Swimming Pools) Wiring in Class I, II, and III Hazardous Locations Wiring in Commercial Garages and Fuel Dispensing Facilities
9.	t. u. v. Specia (Inclue a.	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment ding Swimming Pools) Wiring in Class I, II, and III Hazardous Locations Wiring in Commercial Garages and Fuel
9.	t. u. V. Specia (Inclue a. b.	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment ding Swimming Pools) Wiring in Class I, II, and III Hazardous Locations Wiring in Commercial Garages and Fuel Dispensing Facilities Wiring in Bulk Storage Plants, Paint, and Spray Areas
9.	t. u. Specia (Inclui a. b. c.	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment ding Swimming Pools) Wiring in Class I, II, and III Hazardous Locations Wiring in Commercial Garages and Fuel Dispensing Facilities Wiring in Bulk Storage Plants, Paint, and Spray
9.	t. u. Specia (Includ a. b. c. d.	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment ding Swimming Pools) Wiring in Class I, II, and III Hazardous Locations Wiring in Commercial Garages and Fuel Dispensing Facilities Wiring in Bulk Storage Plants, Paint, and Spray Areas Special Occupancies Wiring in Health Facilities and Places of Assembly
9.	t. u. Specia (Includ a. b. c. d.	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment ding Swimming Pools) Wiring in Class I, II, and III Hazardous Locations Wiring in Commercial Garages and Fuel Dispensing Facilities Wiring in Bulk Storage Plants, Paint, and Spray Areas Special Occupancies Wiring in Health Facilities and Places of
9.	t. u. v. Specia (Inclui a. b. c. d. e.	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment ding Swimming Pools) Wiring in Class I, II, and III Hazardous Locations Wiring in Commercial Garages and Fuel Dispensing Facilities Wiring in Bulk Storage Plants, Paint, and Spray Areas Special Occupancies Wiring in Health Facilities and Places of Assembly Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks
9.	t. u. v. Specia (Inclue a. b. c. d. e. f. g.	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment ding Swimming Pools) Wiring in Class I, II, and III Hazardous Locations Wiring in Commercial Garages and Fuel Dispensing Facilities Wiring in Bulk Storage Plants, Paint, and Spray Areas Special Occupancies Wiring in Health Facilities and Places of Assembly Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Wiring of Floating Buildings
9.	t. u. v. Specia (Inclue a. b. c. d. e. f.	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment ding Swimming Pools) Wiring in Class I, II, and III Hazardous Locations Wiring in Commercial Garages and Fuel Dispensing Facilities Wiring in Bulk Storage Plants, Paint, and Spray Areas Special Occupancies Wiring in Health Facilities and Places of Assembly Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Wiring to Swimming Pools, Fountains, and Hot
	t. u. v. Specia (Inclue a. b. c. d. e. f. g. h.	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment ding Swimming Pools) Wiring in Class I, II, and III Hazardous Locations Wiring in Commercial Garages and Fuel Dispensing Facilities Wiring in Bulk Storage Plants, Paint, and Spray Areas Special Occupancies Wiring in Health Facilities and Places of Assembly Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Wiring to Swimming Pools, Fountains, and Hot Tubs
9.	t. u. v. Specia (Inclue a. b. c. d. e. f. g. h. Low V	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment ding Swimming Pools) Wiring in Class I, II, and III Hazardous Locations Wiring in Commercial Garages and Fuel Dispensing Facilities Wiring in Bulk Storage Plants, Paint, and Spray Areas Special Occupancies Wiring in Health Facilities and Places of Assembly Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Wiring to Swimming Pools, Fountains, and Hot Tubs 'oltage, Alarms, Signaling Systems,
	t. u. v. Specia (Inclue a. b. c. d. e. f. g. h. Low V and Co	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment ding Swimming Pools) Wiring in Class I, II, and III Hazardous Locations Wiring in Commercial Garages and Fuel Dispensing Facilities Wiring in Bulk Storage Plants, Paint, and Spray Areas Special Occupancies Wiring in Health Facilities and Places of Assembly Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Wiring to Swimming Pools, Fountains, and Hot Tubs Yoltage, Alarms, Signaling Systems, ommunications Marce Sand Society Statemeters Metal and Nonmetallic Raceways 10 10 10 10 10 10 10 10 10 10
	t. u. v. Specia (Inclue a. b. c. d. e. f. g. h. Low V	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment ding Swimming Pools) Wiring in Class I, II, and III Hazardous Locations Wiring in Commercial Garages and Fuel Dispensing Facilities Wiring in Bulk Storage Plants, Paint, and Spray Areas Special Occupancies Wiring in Health Facilities and Places of Assembly Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Wiring of Floating Buildings Wiring to Swimming Pools, Fountains, and Hot Tubs Oltage, Alarms, Signaling Systems, ommunications Remote Control or Signaling
	t. u. v. Specia (Inclue a. b. c. d. e. f. g. h. Low V and Co a.	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment ding Swimming Pools) Wiring in Class I, II, and III Hazardous Locations Wiring in Commercial Garages and Fuel Dispensing Facilities Wiring in Bulk Storage Plants, Paint, and Spray Areas Special Occupancies Wiring in Health Facilities and Places of Assembly Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Wiring to Swimming Pools, Fountains, and Hot Tubs Oltage, Alarms, Signaling Systems, ommunications Remote Control or Signaling Circuits Metal and Nonmetallic Raceways 10 10 10 10 10 10 10 10 10 10
	t. u. v. Specia (Inclue a. b. c. d. e. f. g. h. Low V and Co a. b.	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment ding Swimming Pools) Wiring in Class I, II, and III Hazardous Locations Wiring in Commercial Garages and Fuel Dispensing Facilities Wiring in Bulk Storage Plants, Paint, and Spray Areas Special Occupancies Wiring in Health Facilities and Places of Assembly Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Wiring of Floating Buildings Wiring to Swimming Pools, Fountains, and Hot Tubs Coltage, Alarms, Signaling Systems, ommunications Remote Control or Signaling Circuits Communication Circuits
	t. u. v. Specia (Inclue a. b. c. d. e. f. g. h. Low V and Co a. b. c.	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment ding Swimming Pools) Wiring in Class I, II, and III Hazardous Locations Wiring in Commercial Garages and Fuel Dispensing Facilities Wiring in Bulk Storage Plants, Paint, and Spray Areas Special Occupancies Wiring in Health Facilities and Places of Assembly Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Wiring of Floating Buildings 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 Less
	t. u. v. Specia (Inclue a. b. c. d. e. f. g. h. Low V and Co a. b. c. d.	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment ding Swimming Pools) Wiring in Class I, II, and III Hazardous Locations Wiring in Commercial Garages and Fuel Dispensing Facilities Wiring in Bulk Storage Plants, Paint, and Spray Areas Special Occupancies Wiring in Health Facilities and Places of Assembly Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Wiring of Floating Buildings 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 Less Fiber Optics
	t. u. v. Specia (Inclue a. b. c. d. e. f. g. h. Low V and Co a. b. c. d. e. d. e.	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment ding Swimming Pools) Wiring in Class I, II, and III Hazardous Locations Wiring in Commercial Garages and Fuel Dispensing Facilities Wiring in Bulk Storage Plants, Paint, and Spray Areas Special Occupancies Wiring in Health Facilities and Places of Assembly Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Wiring of Floating Buildings 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 Less Fiber Optics Photovoltaics
	t. u. v. Specia (Inclue a. b. c. d. e. f. Low V and Co a. b. c. d. e. f. c. d. e. f.	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment ding Swimming Pools) Wiring in Class I, II, and III Hazardous Locations Wiring in Commercial Garages and Fuel Dispensing Facilities Wiring in Bulk Storage Plants, Paint, and Spray Areas Special Occupancies Wiring in Health Facilities and Places of Assembly Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks 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 Less Fiber Optics Photovoltaics Remote Controls
	t. u. v. Specia (Inclue a. b. c. d. e. f. g. h. Low V and Co a. b. c. d. e. f. g. f. g. f. g. f. g. f. g. f. g. f. g. f. g. f. f. g. f. f. f. f. f. f. f. f. f. f. f. f. f.	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment ding Swimming Pools) Wiring in Class I, II, and III Hazardous Locations Wiring in Commercial Garages and Fuel Dispensing Facilities Wiring in Bulk Storage Plants, Paint, and Spray Areas Special Occupancies Wiring in Health Facilities and Places of Assembly Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Wiring of Floating Buildings 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 Less Fiber Optics Photovoltaics Remote Controls Fire Alarms
	t. u. v. Specia (Inclue a. b. c. d. e. f. Low V and Co a. b. c. d. e. f. c. d. e. f.	Metal and Nonmetallic Wireways Surface Metal and Nonmetallic Raceways Underfloor Raceways Cabletrays al Occupancies and Equipment ding Swimming Pools) Wiring in Class I, II, and III Hazardous Locations Wiring in Commercial Garages and Fuel Dispensing Facilities Wiring in Bulk Storage Plants, Paint, and Spray Areas Special Occupancies Wiring in Health Facilities and Places of Assembly Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks 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 Less Fiber Optics Photovoltaics Remote Controls

11.	Lightir	ng and Signs	
	а.	Fixture Installation	10
	b.	Fixture Grounding	· · · · · ·
	с.	Fixture Wiring	
	d.	Fluorescent Fixtures	
	e.	Fixture Construction Requirements	
	f.	Recessed Fixtures	
	g.	Lighting Systems that Operate at Les volts	s Than 30
	h.	Neon Lighting and Electric Signs	
12.	Safety		
	a. (	Job Site Sanitation	4
	b.	Responsibility for Providing Personal	Protective
		Equipment	
	с.	Excavation Safety	
	d.	Emergency Action Plans	
	е.	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	
	<b>k.</b>	Ladders	
	ι.	Workplace Illumination	
	m.	Scaffolds	
	n.	Requirements for Work Around Toxic	: Materials
	ο.	Material Cleanup and Disposal	
	р.	Material Safety Data Sheets (MSDS)	
	q.	Handling and Storing Materials	
12	r.	Fall Protection	
13.		and Transformers	6
	a.	Motors Used in Dwellings	
	b.	Motor Branch Circuits in Industrial an	a
		Commercial Locations Feeder Transformers	
	c. d.	Use of Transformers	
	u.		

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:

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

Hard copy can be purchased from Mancomm.com. <u>https://mancomm.com/29-cfr-1926-osha-</u> <u>construction-industry-regulations-standards/</u>. Amazon and other retailers sell the Mancomm OSHA publications. OR

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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.

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

Тор	oic Info	rmation	# of Items
1.	Gene	ral Knowledge	4
	а.	Permits and Inspections	-
	<b>b</b> .	Preservation of Structural Integ	rity
	с.	Needs Analysis and Estimate	
2.	Gene	ral Electrical Knowledge	
	а.	Voltage, Current, and Resistanc	e 10
		in Series, Parallel, and	
		Combination Circuits	
	<b>b.</b>	Power Used in a Circuit	
	с.	Power lost (called Heat Lost) in	Any Circuit
	d.	Fundamental AC Theory	
	е.	Fundamental Three-phase AC T	heory
	f.	Cost of Power Used in a Circuit	
	g.	Troubleshooting and Test Syster	ms
	h.	National Electrical Codebook	
	i.	Definitions Used by the NEC	

	j.	Temporary Wiring	
	<b>k.</b>	Cranes and Hoists	
	ι.	Elevators and Escalators	
3.	Electr	rical Installation Requirements	
	а.	Approved Methods of Installation	10
		of Electrical Equipment	
	b.	Approved Methods of Installation of I	Electrical
		Equipment in Excess of 600 volts	
4.	Servio	ces, Feeders, and Branch Circuits	
	а.	Services	10
	<b>b.</b>	Voltage Drop for Branch Circuits	·
		or Feeders	
	с.	Services in Excess of 600 volts	
	d.	Feeders	
	е.	Outside Branch Circuits and Feeders	
	f.	Branch Circuits	
	g.	Space-heating, Snow-melting, and Pi	pe-
		heating Circuits	
	h.	<u> </u>	quipment
5.	Overc	urrent Protection	
	а.	NEC Overcurrent Protection	9
		Requirements	
6.	Groun	nding and Bonding	10
	а.	General Requirements	10
	ь.	Required Sizes of Grounding Electroc	le
	1	Conductors	
	с.	Required Sizes of Equipment Ground	ing
		Conductors	
7.	Condu	uctors and Cables	8
	а.	Underground Conductors and	0
		Cables	
	b.	Vertical Installations	
	с.	Selecting Conductors	
	d.	Armored Cable, Type AC	
	е.	Metal-clad Cable, Type MC	
	e. f.	Nonmetallic-sheathed Cable, Types	NM, NMC,
		Nonmetallic-sheathed Cable, Types NMS	
	f. g.	Nonmetallic-sheathed Cable, Types N NMS Service Entrance Cables, Types SE ar	nd USE
	f.	Nonmetallic-sheathed Cable, Types N NMS Service Entrance Cables, Types SE ar Underground Feeder and Branch Circ	nd USE
	f. g. h.	Nonmetallic-sheathed Cable, Types N NMS Service Entrance Cables, Types SE ar Underground Feeder and Branch Circ Type UF	nd USE
	f. g. h. i.	Nonmetallic-sheathed Cable, Types N NMS Service Entrance Cables, Types SE ar Underground Feeder and Branch Circ Type UF Mineral Insulated, Type MI	nd USE cuit Cable,
	f. g. h.	Nonmetallic-sheathed Cable, Types N NMS Service Entrance Cables, Types SE ar Underground Feeder and Branch Circ Type UF Mineral Insulated, Type MI Flat Cable Assemblies, Type FC, and	nd USE cuit Cable,
	f. g. h. i. j.	Nonmetallic-sheathed Cable, Types N NMS Service Entrance Cables, Types SE ar Underground Feeder and Branch Circ Type UF Mineral Insulated, Type MI Flat Cable Assemblies, Type FC, and Conductor Cable, Type FCC	nd USE cuit Cable,
	f. g. h. i. j. k.	Nonmetallic-sheathed Cable, Types N NMS Service Entrance Cables, Types SE ar Underground Feeder and Branch Circ Type UF Mineral Insulated, Type MI Flat Cable Assemblies, Type FC, and Conductor Cable, Type FCC Medium Voltage Cable, Type MV	nd USE cuit Cable,
8.	f. g. h. j. k. Racev	Nonmetallic-sheathed Cable, Types N NMS Service Entrance Cables, Types SE ar Underground Feeder and Branch Circ Type UF Mineral Insulated, Type MI Flat Cable Assemblies, Type FC, and Conductor Cable, Type FCC Medium Voltage Cable, Type MV vays and Boxes	nd USE uit Cable, Flat
8.	f. g. h. j. k. Racev a.	Nonmetallic-sheathed Cable, Types N NMS Service Entrance Cables, Types SE ar Underground Feeder and Branch Circ Type UF Mineral Insulated, Type MI Flat Cable Assemblies, Type FC, and Conductor Cable, Type FCC Medium Voltage Cable, Type MV vays and Boxes General Raceway Requirements	nd USE suit Cable,
8.	f. g. h. j. k. Racev a. b.	Nonmetallic-sheathed Cable, Types N NMS Service Entrance Cables, Types SE ar Underground Feeder and Branch Circ Type UF Mineral Insulated, Type MI Flat Cable Assemblies, Type FC, and Conductor Cable, Type FCC Medium Voltage Cable, Type MV vays and Boxes General Raceway Requirements General Box Requirements	nd USE uit Cable, Flat
8.	f. g. h. j. k. Racev a. b. c.	Nonmetallic-sheathed Cable, Types N NMS Service Entrance Cables, Types SE ar Underground Feeder and Branch Circ Type UF Mineral Insulated, Type MI Flat Cable Assemblies, Type FC, and Conductor Cable, Type FCC Medium Voltage Cable, Type MV vays and Boxes General Raceway Requirements General Box Requirements Pull Boxes	nd USE uit Cable, Flat
8.	f. g. h. j. k. Racev a. b. c. d.	Nonmetallic-sheathed Cable, Types N NMS Service Entrance Cables, Types SE ar Underground Feeder and Branch Circ Type UF Mineral Insulated, Type MI Flat Cable Assemblies, Type FC, and Conductor Cable, Type FCC Medium Voltage Cable, Type MV vays and Boxes General Raceway Requirements General Box Requirements Pull Boxes Conduit Fittings	nd USE uit Cable, Flat
8.	f. g. h. j. k. Racev a. b. c. d. e.	Nonmetallic-sheathed Cable, Types N NMS Service Entrance Cables, Types SE ar Underground Feeder and Branch Circ Type UF Mineral Insulated, Type MI Flat Cable Assemblies, Type FC, and Conductor Cable, Type FCC Medium Voltage Cable, Type MV vays and Boxes General Raceway Requirements General Box Requirements Pull Boxes Conduit Fittings Type RMC (Rigid Metal Conduit)	nd USE uit Cable, Flat
8.	f. g. h. j. k. Racev a. b. c. d. e. f.	Nonmetallic-sheathed Cable, Types N NMS Service Entrance Cables, Types SE ar Underground Feeder and Branch Circ Type UF Mineral Insulated, Type MI Flat Cable Assemblies, Type FC, and Conductor Cable, Type FCC Medium Voltage Cable, Type MV vays and Boxes General Raceway Requirements General Box Requirements Pull Boxes Conduit Fittings Type RMC (Rigid Metal Conduit) Type EMT (Electric Metallic Conduit)	nd USE uit Cable, Flat 7
8.	f. g. h. j. k. Racev a. b. c. d. e. f. g.	Nonmetallic-sheathed Cable, Types N NMS Service Entrance Cables, Types SE ar Underground Feeder and Branch Circ Type UF Mineral Insulated, Type MI Flat Cable Assemblies, Type FC, and Conductor Cable, Type FCC Medium Voltage Cable, Type MV vays and Boxes General Raceway Requirements General Box Requirements Pull Boxes Conduit Fittings Type RMC (Rigid Metal Conduit) Type EMT (Electric Metallic Conduit) Type IMC (Intermediate Metal Condu	nd USE uit Cable, Flat 7
8.	f. g. h. j. k. k. k. e. f. g. h.	Nonmetallic-sheathed Cable, Types N NMS Service Entrance Cables, Types SE ar Underground Feeder and Branch Circ Type UF Mineral Insulated, Type MI Flat Cable Assemblies, Type FC, and Conductor Cable, Type FCC Medium Voltage Cable, Type MV vays and Boxes General Raceway Requirements General Box Requirements Pull Boxes Conduit Fittings Type RMC (Rigid Metal Conduit) Type EMT (Electric Metallic Conduit) Type IMC (Intermediate Metal Conduit) Type RNC (Rigid Nonmetallic Conduit)	nd USE uit Cable, Flat 7
8.	f. g. h. j. k. k. k. e. f. g. h. i.	Nonmetallic-sheathed Cable, Types N NMS Service Entrance Cables, Types SE ar Underground Feeder and Branch Circ Type UF Mineral Insulated, Type MI Flat Cable Assemblies, Type FC, and Conductor Cable, Type FCC Medium Voltage Cable, Type MV vays and Boxes General Raceway Requirements General Box Requirements Pull Boxes Conduit Fittings Type RMC (Rigid Metal Conduit) Type EMT (Electric Metallic Conduit) Type IMC (Intermediate Metal Conduit) Type RNC (Rigid Nonmetallic Conduit) Type FMC (Flexible Metal Conduit)	nd USE uit Cable, Flat 7 it)
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8.	f. g. h. j. k. Racev a. b. c. d. e. f. g. h. i. j. k. l.	Nonmetallic-sheathed Cable, Types N NMS Service Entrance Cables, Types SE ar Underground Feeder and Branch Circ Type UF Mineral Insulated, Type MI Flat Cable Assemblies, Type FC, and Conductor Cable, Type FCC Medium Voltage Cable, Type MV vays and Boxes General Raceway Requirements General Box Requirements Pull Boxes Conduit Fittings Type RMC (Rigid Metal Conduit) Type EMT (Electric Metallic Conduit) Type IMC (Intermediate Metal Conduit) Type FMC (Rigid Nonmetallic Conduit) Type FMC (Flexible Metal Conduit) Type LFMC (Liquid-tight Flexible Metal Conduit) Type FMT (Flexible Metallic Tubing) Type HDPE (High-density Polyethyler Conduit)	nd USE uit Cable, Flat 7 it) :) al
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8.	f. g. h. j. k. Racev a. b. c. d. e. f. g. h. i. j. k. l. m.	Nonmetallic-sheathed Cable, Types N NMS Service Entrance Cables, Types SE ar Underground Feeder and Branch Circ Type UF Mineral Insulated, Type MI Flat Cable Assemblies, Type FC, and Conductor Cable, Type FCC Medium Voltage Cable, Type MV vays and Boxes General Raceway Requirements General Box Requirements Pull Boxes Conduit Fittings Type RMC (Rigid Metal Conduit) Type EMT (Electric Metallic Conduit) Type FMC (Intermediate Metal Conduit) Type FMC (Rigid Nonmetallic Conduit) Type FMC (Flexible Metal Conduit) Type FMC (Flexible Metal Conduit) Type FMC (Liquid-tight Flexible Metal Conduit) Type HDPE (High-density Polyethyler Conduit) Type NUCC (Nonmetallic Undergroun with Conductors) Type LFNC (Liquid-tight Flexible Non Conduit) Area of Raceway and Number of Con	nd USE uit Cable, Flat 7 it) :) al ne d Conduit metallic
8.	f. g. h. j. k. Racev a. b. c. d. e. f. g. h. i. j. k. l. m. n.	Nonmetallic-sheathed Cable, Types N NMS Service Entrance Cables, Types SE ar Underground Feeder and Branch Circ Type UF Mineral Insulated, Type MI Flat Cable Assemblies, Type FC, and Conductor Cable, Type FCC Medium Voltage Cable, Type MV vays and Boxes General Raceway Requirements General Raceway Requirements General Box Requirements Pull Boxes Conduit Fittings Type RMC (Rigid Metal Conduit) Type EMT (Electric Metallic Conduit) Type FMC (Intermediate Metal Conduit) Type FMC (Rigid Nonmetallic Conduit) Type FMC (Flexible Metal Conduit) Type FMC (Liquid-tight Flexible Met Conduit) Type HDPE (High-density Polyethyler Conduit) Type NUCC (Nonmetallic Undergroun with Conductors) Type LFNC (Liquid-tight Flexible Non Conduit)	nd USE uit Cable, Flat 7 it) :) al ne d Conduit metallic duct

	q.	Box Volume and Fill	
r	r.	Auxiliary Gutters, Busways, Concrete	and
		Nonconcrete Raceways	
	5.	Metal and Nonmetallic Wireways	
	t.	Surface Metal and Nonmetallic Racev	vays
	u. v.	Underfloor Raceways Cabletrays	
		Il Occupancies and Equipment	
		ding Swimming Pools)	10
	a.	Wiring in Class I, II, and III	
		Hazardous Locations	
ł	<b>b.</b>	Wiring in Commercial Garages and Fu	Jel
		Dispensing Facilities	
C	с.	Wiring in Bulk Storage Plants, Paint,	and Spray
		Areas	
	d. e.	Special Occupancies Wiring in Health Facilities and Places	of
	-	Assembly	01
f	f.	Wiring of Mobile Home, Mobile Home	Parks.
	•	RVs, and RV Parks	
\$	g.	Wiring of Floating Buildings	
- I	h.	Wiring to Swimming Pools, Fountains	, and Hot
		Tubs	
		oltage, Alarms, Signaling Systems,	
		ommunications	2
č	a.	Remote Control or Signaling	
	b.	Circuits Communication Circuits	
	c.	Equipment Operating at 50 volts or L	<b>655</b>
		Fiber Optics	033
	e.	Photovoltaics	
f	F.	Remote Controls	
5	g.	Fire Alarms	
H	h.	Circuit Wiring for an Emergency Syste	em
		Communications Systems Wiring	
-		ng and Signs	10
	a.	Fixture Installation Fixture Grounding	
L		2	
	b.		
	с.	Fixture Wiring Fluorescent Fixtures	
c	c. d.	Fluorescent Fixtures	
e	c. d. e.	Fluorescent Fixtures Fixture Construction Requirements	
e f	c. d.	Fluorescent Fixtures	s Than 30
e f	c. d. e. f.	Fluorescent Fixtures Fixture Construction Requirements Recessed Fixtures Lighting Systems that Operate at Les volts	s Than 30
6 1 1	c. d. e. f. g.	Fluorescent Fixtures Fixture Construction Requirements Recessed Fixtures Lighting Systems that Operate at Les volts Neon Lighting and Electric Signs	s Than 30
4 1 1 2. Saf	c. d. e. f. g. <u>h.</u> fety	Fluorescent Fixtures Fixture Construction Requirements Recessed Fixtures Lighting Systems that Operate at Les volts Neon Lighting and Electric Signs	s Than 30
2. Saf	c. d. e. f. g. <u>h.</u> ety a.	Fluorescent Fixtures Fixture Construction Requirements Recessed Fixtures Lighting Systems that Operate at Les volts Neon Lighting and Electric Signs	1
2. Saf	c. d. e. f. g. <u>h.</u> fety	Fluorescent Fixtures Fixture Construction Requirements Recessed Fixtures Lighting Systems that Operate at Les volts Neon Lighting and Electric Signs Job Site Sanitation Responsibility for Providing Personal	1
2. Saf	c. d. e. f. g. <u>h.</u> ety a.	Fluorescent Fixtures Fixture Construction Requirements Recessed Fixtures Lighting Systems that Operate at Les volts Neon Lighting and Electric Signs Job Site Sanitation Responsibility for Providing Personal Protective Equipment	1
2. Saf	c. d. e. f. g. h. fety a. b.	Fluorescent Fixtures Fixture Construction Requirements Recessed Fixtures Lighting Systems that Operate at Les volts Neon Lighting and Electric Signs Job Site Sanitation Responsibility for Providing Personal Protective Equipment Excavation Safety	1
2. Saf	c. d. e. f. g. <u>h.</u> ety a.	Fluorescent Fixtures Fixture Construction Requirements Recessed Fixtures Lighting Systems that Operate at Les volts Neon Lighting and Electric Signs Job Site Sanitation Responsibility for Providing Personal Protective Equipment Excavation Safety Emergency Action Plans	1
2. Saf	c. d. e. f. g. <u>h.</u> éety a. b. c. d.	Fluorescent Fixtures Fixture Construction Requirements Recessed Fixtures Lighting Systems that Operate at Les volts Neon Lighting and Electric Signs Job Site Sanitation Responsibility for Providing Personal Protective Equipment Excavation Safety Emergency Action Plans Safety Training Requirements Ventilation	1
2. Saf	c. d. e. f. g. h. fety a. b. c. d. e.	Fluorescent Fixtures Fixture Construction Requirements Recessed Fixtures Lighting Systems that Operate at Les volts Neon Lighting and Electric Signs Job Site Sanitation Responsibility for Providing Personal Protective Equipment Excavation Safety Emergency Action Plans Safety Training Requirements Ventilation First Aid Kit Requirements	4
2. Saf	c. d. e. f. g. h. fety a. b. c. d. e. f. g.	Fluorescent Fixtures Fixture Construction Requirements Recessed Fixtures Lighting Systems that Operate at Les volts Neon Lighting and Electric Signs Job Site Sanitation Responsibility for Providing Personal Protective Equipment Excavation Safety Emergency Action Plans Safety Training Requirements Ventilation First Aid Kit Requirements Use of Personal Protective Equipmen	4
2. Saf	c. d. e. f. g. h. fety a. b. c. d. e. f. g.	Fluorescent Fixtures Fixture Construction Requirements Recessed Fixtures Lighting Systems that Operate at Les volts Neon Lighting and Electric Signs Job Site Sanitation Responsibility for Providing Personal Protective Equipment Excavation Safety Emergency Action Plans Safety Training Requirements Ventilation First Aid Kit Requirements Use of Personal Protective Equipmen Signs, Signals, and Barricades	4
2. Saf 1 2. Saf 1 2. Saf 1 1 1 1 1	c. d. e. f. g. h. fety a. c. d. e. f. g. h. i. j.	Fluorescent Fixtures Fixture Construction Requirements Recessed Fixtures Lighting Systems that Operate at Les volts Neon Lighting and Electric Signs Job Site Sanitation Responsibility for Providing Personal Protective Equipment Excavation Safety Emergency Action Plans Safety Training Requirements Ventilation First Aid Kit Requirements Use of Personal Protective Equipmen Signs, Signals, and Barricades Tools and Equipment	4
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2. Saf 1 2. Saf 2. Saf 1 3 4 1 1 1 1 1	c. d. e. f. g. h. f. g. d. e. f. g. h. i. j. k. l. m.	Fluorescent Fixtures Fixture Construction Requirements Recessed Fixtures Lighting Systems that Operate at Les volts Neon Lighting and Electric Signs Job Site Sanitation Responsibility for Providing Personal Protective Equipment Excavation Safety Emergency Action Plans Safety Training Requirements Ventilation First Aid Kit Requirements Use of Personal Protective Equipmen Signs, Signals, and Barricades Tools and Equipment Ladders Workplace Illumination Scaffolds	4 t
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13.	Motor	Motors and Transformers				
	а.	Motors Used in Dwellings	0			
	b.	Motor Branch Circuits in Industrial an	d			
		Commercial Locations				
	с.	Feeder Transformers				
	<b>d</b> .	Use of Transformers				

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:

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

Hard copy can be purchased from Mancomm.com. <u>https://mancomm.com/29-cfr-1926-osha-</u> <u>construction-industry-regulations-standards/</u>. 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, <u>http://www.psionlinestore.com</u> (See order form at the end of the Candidate Information Bulletin.)

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

#### **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.

#### 80 Scored Items - 210 minutes - 70% Correct to Pass

Тор	ic Info	rmation #	of Items
1.	Gener	ral Knowledge	4
	а.	Permits and Inspections	4
	<b>b</b> .	Preservation of Structural Integrity	v
	с.	Needs analysis and estimate	
2.	Gener	al Electrical Knowledge	
	a.	Voltage, Durrent, and Resistance in Series, Parallel, and	12
	L	Combination Circuits Power Used in a Circuit	
	b.		n. Circuit
	с.	Power Lost (called Heat Lost) in A	ny Circuit
	d.	Fundamental AC Theory	
	e. f.	Fundamental Three-phase AC Theo Cost of Power Used in a Circuit	Jry
	-		
	g. h.	System Troubleshooting and Testin Use of the National Electrical Code	
	n. i.	Understanding and Application of	
	1.	Used by the NEC	Deminitions
	4	Temporary Wiring	
	j.		
<u> </u>	k.	Elevators and Escalators	
3.		ical Installation Requirements	10
	а.	Approved Methods of Installation	10
	· .	of Electrical Equipment	6 EL
	ь.	Approved Methods of Installation of	of Electrical
		Equipment in Excess of 600 volts	
4.		es, Feeders, and Branch Circuits	10
	а.	Services	10
	b.	Voltage Drop for Branch Circuits or Feeders	
	с.	Services in Excess of 600 volts	
	d.	Feeders	
	e.	Outside Branch Circuits and Feede	ers
	f.	Branch Circuits	
	g.	Space-heating, Snow-melting, and	Ріре-
	Ι.	heating Circuits	
	h.	Air-conditioning and Refrigeration	Equipment
5.		urrent Protection	0
	а.	NEC Overcurrent Protection	8
		Requirements	
6.	Groun	iding and Bonding	0
	а.	General Requirements	8
	ь.	Grounding Electrode Conductors	
	с.	Equipment Grounding Conductors	
7.	Condu	actors and capies	
7.	Condu a.		8
7.			<b>8</b>

с.	Select Conductor	
<b>d</b> .	Armored Cable, Type AC	
е.	Metal-clad Cable, Type MC	
f.	Nonmetallic-sheathed Cable, Types N NMS	NM, NMC,
g.	Service Entrance Cables, Types SE an	nd USE
h.	Underground Feeder and Branch	
j.		and Flat
k.		
		6
		v
-		
-		
-		
T.		
g.		:)
h.		
i.	Type LFMC (Liquid-tight Flexible Met	al
	Conduit)	
j.	Type FMT (Flexible Metallic Tubing)	
<b>k.</b>	Type HDPE (High-density Polyethylen	e
	Conduit)	
I.	Type NUCC (Nonmetallic Undergroun	d
		-
m.	Type LFNC (Liquid-tight Flexible Non	metallic
	· · · · · · · · · · · · · · · · · · ·	
n.		nduct
		oxes
р.	Box Volume and Fill	
<b>q</b> .	Auxiliary Gutters, Busways, Concrete	e, and
	Nonconcrete Raceways	
r.	Metal and Nonmetallic Wireways	
s.	Surface Metal and Nonmetallic Racev	vavs
t.	Underfloor Raceways	· ·
u.	Cabletrays	
Specia	al Occupancies and Equipment	
	al Occupancies and Equipment	4
(İnclu	ding Swimming Pools)	4
	ding Swimming Pools) Wiring of Mobile Home, Mobile	4
(Inclua) a.	ding Swimming Pools) Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks	4
(İnclu	ding Swimming Pools) Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Required Wiring to Swimming Pools,	4
(Inclue a. b.	ding Swimming Pools) Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Required Wiring to Swimming Pools, Fountains, and Hot Tubs	4
(Incluation of the second seco	ding Swimming Pools) Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Required Wiring to Swimming Pools, Fountains, and Hot Tubs Yoltage, Alarms, Signaling Systems,	
(Incluation of the second seco	ding Swimming Pools) Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Required Wiring to Swimming Pools, Fountains, and Hot Tubs Yoltage, Alarms, Signaling Systems, ommunications	4
(Incluation of the second seco	ding Swimming Pools) Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Required Wiring to Swimming Pools, Fountains, and Hot Tubs Yoltage, Alarms, Signaling Systems,	
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(Inclue a. b. Low V and Ce a. b.	ding Swimming Pools) Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Required Wiring to Swimming Pools, Fountains, and Hot Tubs Yoltage, Alarms, Signaling Systems, ommunications Remote Control or Signaling Circuits Communication Circuits	2
(Inclua a. b. Low V and Ca a.	ding Swimming Pools) Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Required Wiring to Swimming Pools, Fountains, and Hot Tubs Yoltage, Alarms, Signaling Systems, ommunications Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or L	2
(Inclue a. b. Low V and Co a. b. c. d.	ding Swimming Pools) Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Required Wiring to Swimming Pools, Fountains, and Hot Tubs Yoltage, Alarms, Signaling Systems, ommunications Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or L Fiber Optic	2
(Incluia, b. Low V and Ca a. b. c. d. e.	ding Swimming Pools) Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Required Wiring to Swimming Pools, Fountains, and Hot Tubs Voltage, Alarms, Signaling Systems, ommunications Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or L Fiber Optic Photovoltaics	2
(Include) b. Low V and Co a. b. c. d. e. f.	ding Swimming Pools) Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Required Wiring to Swimming Pools, Fountains, and Hot Tubs Voltage, Alarms, Signaling Systems, ommunications Remote Control or Signaling Circuits Communication Circuits Equipment Operating at 50 volts or L Fiber Optic Photovoltaics Remote Control	2
(Incluia, b. Low V and Ca a. b. c. d. e. f. g.	ding Swimming Pools) Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Required Wiring to Swimming Pools, Fountains, and Hot Tubs Yoltage, 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	2 ess
(Include) b. Low V and Co a. b. c. d. e. f.	ding Swimming Pools) Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Required Wiring to Swimming Pools, Fountains, and Hot Tubs Voltage, 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	2 ess
(Include) a. b. Low V and Co a. b. c. d. e. f. g. h. i.	ding Swimming Pools) Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Required Wiring to Swimming Pools, Fountains, and Hot Tubs Yoltage, 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	2 ess s
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(Incluia, b. Low V and Ca a. b. c. d. e. f. g. h. i. Lighti	ding Swimming Pools) Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks 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	2 ess s
(Inclu- a. b. Low V and C a. b. c. d. e. f. g. h. i. Lighti a.	ding Swimming Pools) Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks 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	2 ess s
(Incluia, b. b. and Ca a. b. c. d. e. f. g. h. i. Lighti a. b.	ding Swimming Pools) Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks 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	2 ess s
(Inclu- a. b. Low V and C a. b. c. d. e. f. g. h. i. Lighti a. b. c. d.	ding Swimming Pools) Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks 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	2 ess s
(Incluia, b. b. Low V and Ca a. b. c. d. e. f. g. h. i. Lighti a. b. c.	ding Swimming Pools) Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks 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	2 ess s
	f. g.h. j. k. d.e. f.g.h. i. j.k. l. m. o.p.q. r.s.t.	<ul> <li>f. Nonmetallic-sheathed Cable, Types I NMS</li> <li>g. Service Entrance Cables, Types SE ar</li> <li>h. Underground Feeder and Branch Cable, Type UF</li> <li>i. Mineral Insulated, Type MI</li> <li>j. Flat Cable Assemblies, Type FC, Conductor Cable, Type FCC</li> <li>k. Medium Voltage Cable, Type MV</li> <li>Raceways and Boxes</li> <li>a. General Raceway Requirements</li> <li>b. General Box Requirements</li> <li>c. Pull Boxes and Conduit Fittings</li> <li>d. Type RMC (Rigid Metal Conduit)</li> <li>e. Type EMT (Electric Metallic Conduit)</li> <li>f. Type RMC (Rigid Nonmetallic Conduit)</li> <li>f. Type RNC (Rigid Nonmetallic Conduit)</li> <li>i. Type FMC (Flexible Metal Conduit)</li> <li>j. Type FMC (Flexible Metal Conduit)</li> <li>i. Type FMC (Flexible Metallic Tubing)</li> <li>k. Type HDPE (High-density Polyethyler Conduit)</li> <li>j. Type LFNC (Liquid-tight Flexible Non Conduit with Conductors)</li> <li>m. Type LFNC (Liquid-tight Flexible Non Conduit)</li> <li>n. Area of Raceways and Number of Cor (Conduit Fill)</li> <li>o. Outlet, Device, Pull, and Junction Bo Box Volume and Fill</li> <li>q. Auxiliary Gutters, Busways, Concrete Nonconcrete Raceways</li> <li>r. Metal and Nonmetallic Wireways</li> <li>s. Surface Metal and Nonmetallic Racew</li> <li>t. Underfloor Raceways</li> </ul>

		30 volts
12.	Safety	
	a.	
	b.	
		Protective Equipment
	с.	
	d.	· · · · · · · · · · · · · · · · · · ·
	е.	
	f.	Ventilation
	g.	First Aid Kit Requirements
	ĥ.	Use of Personal Protective Equipment
	i.	Signs, Signals, and Barricades
	j.	Tools and Equipment
		Ladders
		Workplace Illumination
	<b>m.</b>	Scaffolds
	n.	Requirements for Work Around Toxic Materials
	ο.	Material Cleanup and Disposal
	р.	Material Safety Data Sheets (MSDS)
	<b>q.</b>	Handling and Storing Materials
U.	<b>r.</b>	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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- 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. <u>https://mancomm.com/29-cfr-1926-osha-</u> <u>construction-industry-regulations-standards/</u>. 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, <u>http://www.psionlinestore.com</u> (See order form at the end of the Candidate Information Bulletin.)

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

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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.

80 Scored Items - 210 minutes - 70% Correct to Pass

Тор	ic Info	rmation #	of Items			
1.	Gener	al Knowledge	4			
	а.	Permits and Inspections	4			
	ь.	Preservation of Structural Integri	ty			
	с.	Needs Analysis and Estimate				
2.	Gener	al Electrical Knowledge				
	а.	Voltage, Current, and Resistance	12			
		in Series, Parallel, and				
		Combination Circuits				
	ь.	Power Used in a Circuit				
	с.		Any Circuit			
	-	I. Fundamental AC Theory				
	е.		Fundamental Three-phase AC Theory			
	f.	Cost of Power Used in a Circuit				
	g.					
	h.					
	i.	i. Understanding and Application of Definitions				
		Used by the NEC				
	j.	Temporary Wiring				
	k.	Elevators and Escalators				
3.		ical Installation Requirements				
	а.	Approved Methods of Installation	10			
		of Electrical Equipment				
	b.	Approved Methods of Installation				
		Equipment in Excess of 600 volts				
4.		es, Feeders, and Branch Circuits				
	а.		10			
	ь.	Voltage Drop for Branch Circuits				
		or Feeders				

	с.	Services in Excess of 600 volts	
	d.	Feeders	
	e.	Outside Branch Circuits and Feeders	
	f.	Branch Circuits	
	g.	<ul> <li>Space-heating, Snow-melting and Pipe-heating Circuits</li> </ul>	
	h.	Air-conditioning and Refrigeration Equipment	
5.		surrent Protection	
5.	a.	NEC Overcurrent Protection 8	
	~.	Requirements	
6.	Groun	nding and Bonding	
	а.	General Requirements 8	
	ь.	Grounding Electrode Conductors	
	с.	Equipment Grounding Conductors	
7.	Condu	actors and Cables	
	а.	Install Underground Conductors	
		and Cables	
	ь.	Perform Vertical Installations	
	C.	Select Conductor	
	d. e.	Armored Cable, Type AC Metal-clad Cable, Type MC	
	f.	Nonmetallic-sheathed Cable, Types NM, NMC,	
1	l	NMS	
	g.	Service Entrance Cables, Types SE and USE	
1	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 FCC	
0	k.	Medium Voltage Cable, Type MV	
8.		vays and Boxes	
	a. b.	General Raceway Requirements General Box Requirements 6	
	р. с.	Pull Boxes and Conduit Fittings	
	d.	Type RMC (Rigid Metal Conduit)	
	e.	Type EMT (Electric Metallic Conduit)	
	f.	Type IMC (Intermediate Metal Conduit)	
	g.	Type RNC (Rigid Nonmetallic Conduit)	
	h.	Type FMC (Flexible Metal Conduit)	
	i.	Type LFMC (Liquid-tight Flexible Metal	
		Conduit)	
	j.	Type FMT (Flexible Metallic Tubing)	
	к.	Conduit)	
	ι.	Type NUCC (Nonmetallic Underground Conduit	
		with Conductors)	
	<b>m.</b>	Type LFNC (Liquid-tight Flexible Nonmetallic	
1		Conduit)	
1	n.	Area of Raceways and Number of Conduct	
1		(Conduit Fill)	
1	0.	Outlet, Device, Pull, and Junction Boxes	
	р.	Box Volume and Fill Auxiliary Gutters, Busways, Concrete, and	
1	q۰	Nonconcrete Raceways	
	r.	Metal and Nonmetallic Wireways	
1	s.	Surface Metal and Nonmetallic Raceways	
1	t.	Underfloor Raceways	
	u.	Cabletrays	
	Specia	al Occupancies and Equipment	
9.			
9.	(İnclu	ding Swimming Pools) 4	
9.		Wiring of Mobile Home, Mobile	
9.	(Inclu a.	Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks	
9.	(İnclu	Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Required Wiring to Swimming Pools,	
	(İnclu a. b.	Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Required Wiring to Swimming Pools, Fountains, and Hot Tubs	
9. 10.	(İnclu a. b. Low V	Wiring of Mobile Home, Mobile Home Parks, RVs, and RV Parks Required Wiring to Swimming Pools,	

	а.	Remote Control or Signaling Circuits
	b.	Communication Circuits
	с.	Equipment Operating at 50 volts or Less
	d.	Fiber Optic
	е.	Photovoltaics
	f.	Remote Control
	g.	Fire Alarms
	h.	Circuit Wiring for Emergency Systems
	i.	Communications Systems Wiring
11.	Lightin	ng and Signs
	a.	Fixtures Installation 4
	<b>b</b> .	Fixtures Grounding
	с.	Fixture Wiring
	<b>d</b> .	Fluorescent Fixtures
	е.	Fixture Construction Requirements
	f.	Recessed Fixtures
	g.	Lighting Systems that Operate at Less Than 30
		volts
12.	Safety	
	а.	Job Site Sanitation 4
	<b>b</b> .	Responsibility for Providing Personal
		Protective Equipment
	с.	Excavation Safety
	<b>d</b> .	Emergency Action Plans
	е.	Safety Training Requirements
	f.	Ventilation
	g.	First Aid Kit Requirements
	h.	Use of Personal Protective Equipment
	i.	Signs, Signals, and Barricades
	j.	Tools and Equipment
	k.	Ladders
	l. –	Workplace Illumination
	<b>m.</b>	Scaffolds
	n.	Requirements for Work Around Toxic Materials
	о.	Material Cleanup and Disposal
	р.	Material Safety Data Sheets (MSDS)
	<b>q</b> .	Handling and Storing Materials
	1	

#### r. Fall Protection

#### **REFERENCE LIST**

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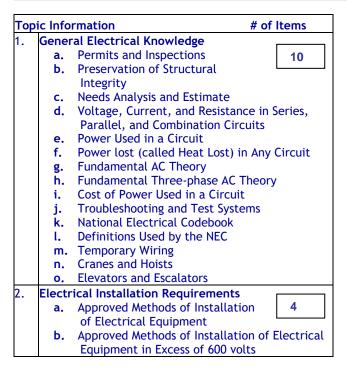
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#### **REFINERY ELECTRICAL JOURNEYMAN**

#### SCOPE OF WORK

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



3.	Servio	es, Feeders, and Branch Circuits	
	а.	Services	6
	ь.	Voltage Drop for Branch Circuits	
		or Feeders	
	с.	Services in Excess of 600 volts	
	d.	Feeders	
	e.	Outside Branch Circuits and Feeder	S
	f.	Branch Circuits	<b>.</b> .
	g.	Space-heating, Snow-melting, and I	-ipe-
	L	heating Circuits	-
	h.	Air-conditioning and Refrigeration E	quipment
4.	overc a.	urrent Protection NEC Overcurrent Protection	6
	а.	Requirements	-
5.	Grour	Iding and Bonding	_
J.	a.	General Requirements	10
	а. b.	Required Sizes of Grounding Electro	nde
	5.	Conductors	
	с.	Required Sizes of Equipment Ground	ding
		Conductors	5
6.	Condu	ictors and Cables	
	a.	Underground Conductors and	6
		Cables	
	b.	Vertical Installations	
	с.	Selecting Conductors	
	d.	Armored Cable, Type AC	
	e.	Metal-clad Cable, Type MC	
	f.	Nonmetallic-sheathed Cable, Types	NM, NMC,
		NMS	
	g.	Service Entrance Cables, Types SE a	
	h.	Underground Feeder and Branch Cir	cuit Cable
		Type UF	
	i.	Mineral Insulated, Type MI	
	j.	Flat Cable Assemblies, Type FC, and	d Flat
	k.	Conductor Cable, Type FCC Medium Voltage Cable, Type MV	
7.		vays and Boxes	
<i>'</i> .	a.	General Raceway Requirements	6
	b.	General Box Requirements	0
	с.	Pull Boxes	
	d.	Conduit Fittings	
	e.	Type RMC (Rigid Metal Conduit)	
	f.	Type EMT (Electric Metallic Conduit	:)
	g.	Type IMC (Intermediate Metal Cond	
	ĥ.	Type RNC (Rigid Nonmetallic Condu	
	i.	Type FMC (Flexible Metal Conduit)	
	j.	Type LFMC (Liquid-tight Flexible Me	etal
		Conduit)	
	<b>k.</b>	Type FMT (Flexible Metallic Tubing)	)
	ι.	Type HDPE (High-density Polyethyle	ene
		Conduit)	
	и. т.	Conduit) Type NUCC (Nonmetallic Undergrou	
	m.	Conduit) Type NUCC (Nonmetallic Undergrou with Conductors)	ind Condui
		Conduit) Type NUCC (Nonmetallic Undergrou with Conductors) Type LFNC (Liquid-tight Flexible No	ind Condui
	m. n.	Conduit) Type NUCC (Nonmetallic Undergrou with Conductors) Type LFNC (Liquid-tight Flexible No Conduit)	ind Condui
	m.	Conduit) Type NUCC (Nonmetallic Undergrou with Conductors) Type LFNC (Liquid-tight Flexible No Conduit) Area of Raceway and Number of Co	ind Condui
	m. n. o.	Conduit) Type NUCC (Nonmetallic Undergrou with Conductors) Type LFNC (Liquid-tight Flexible No Conduit) Area of Raceway and Number of Co (Conduit Fill)	nd Condui nmetallic nduct
	m. n. o. p.	Conduit) Type NUCC (Nonmetallic Undergrou with Conductors) Type LFNC (Liquid-tight Flexible No Conduit) Area of Raceway and Number of Co (Conduit Fill) Outlet, Device, Pull, and Junction E	nd Condui nmetallic nduct
	m. n. o. p. q.	Conduit) Type NUCC (Nonmetallic Undergrou with Conductors) Type LFNC (Liquid-tight Flexible No Conduit) Area of Raceway and Number of Co (Conduit Fill) Outlet, Device, Pull, and Junction E Box Volume and Fill	ind Condui inmetallic nduct Boxes
	m. n. o. p.	Conduit) Type NUCC (Nonmetallic Undergrou with Conductors) Type LFNC (Liquid-tight Flexible No Conduit) Area of Raceway and Number of Co (Conduit Fill) Outlet, Device, Pull, and Junction E Box Volume and Fill Auxiliary Gutters, Busways, Concret	ind Condui inmetallic nduct Boxes
	m. n. o. p. q. r.	Conduit) Type NUCC (Nonmetallic Undergrou with Conductors) Type LFNC (Liquid-tight Flexible No Conduit) Area of Raceway and Number of Co (Conduit Fill) Outlet, Device, Pull, and Junction E Box Volume and Fill Auxiliary Gutters, Busways, Concret Nonconcrete Raceways	ind Condui inmetallic nduct Boxes
	m. n. o. p. q. r. s.	Conduit) Type NUCC (Nonmetallic Undergrou with Conductors) Type LFNC (Liquid-tight Flexible No Conduit) Area of Raceway and Number of Co (Conduit Fill) Outlet, Device, Pull, and Junction E Box Volume and Fill Auxiliary Gutters, Busways, Concret Nonconcrete Raceways Metal and Nonmetallic Wireways	ind Condui inmetallic nduct Boxes te and
	m. n. o. p. q. r.	Conduit) Type NUCC (Nonmetallic Undergrou with Conductors) Type LFNC (Liquid-tight Flexible No Conduit) Area of Raceway and Number of Co (Conduit Fill) Outlet, Device, Pull, and Junction E Box Volume and Fill Auxiliary Gutters, Busways, Concret Nonconcrete Raceways	ind Condui inmetallic nduct Boxes te and

8.	Low V	/oltage, Alarms, Signaling Systems,	
	and C	ommunications	4
	а.	Remote Control or Signaling	
		Circuits	
	<b>b.</b>	Communication Circuits	
	с.	Equipment Operating at 50 volts or L	ess
	d.	Fiber Optics	
	e.	Photovoltaics	
	f.	Remote Controls	
	g.	Fire Alarms	
	h.	Circuit Wiring for an Emergency Syste	em
	i.	Communications Systems Wiring	
9.		ing and Signs	
1.	a.	Fixture Installation	4
	b.	Fixture Grounding	
	с.	Fixture Wiring	
		-	
	d.	Fluorescent Fixtures	
	e.	Fixture Construction Requirements	
	f.	Recessed Fixtures	<b>T</b> I 20
	g.	Lighting Systems that Operate at Les	s Than 30
		volts	
	h.		
10.	Safety	•	5
	а.	Job Site Sanitation	3
	ь.	Responsibility for Providing Personal	
		Protective Equipment	
	с.	Excavation Safety	
	<b>d</b> .	Emergency Action Plans	
	е.	Safety Training Requirements	
	f.	Ventilation	
	g.	First Aid Kit Requirements	
	ĥ.	Use of Personal Protective Equipmen	t
	i.	Signs, Signals, and Barricades	
	j.	Tools and Equipment	
	k.	Ladders	
	ι.	Workplace Illumination	
	m.	Scaffolds	
1	n.	Requirements for Work Around Toxic	Materials
1	0.	Material Cleanup and Disposal	
1	р.	Material Safety Data Sheets (MSDS)	
1	р. q.	Handling and Storing Materials	
1	r.	Fall Protection	
11.		rs and Transformers	
	a.	Motors Used in Dwellings	4
1	a. b.	Motor Branch Circuits in Industrial ar	
1	υ.	Commercial Locations	iu iu
1	-	Feeder Transformers	
1	c.		
42	d.	Use of Transformers	
12.		dous Locations	35
1		Hazardous Location Classifications	
1		Hazardous Materials	
1		Equipment used in Hazardous Locatio	ns
1		Ventilation and Seals	
1		Underground Wiring	
	f.	Fuel Dispensing Location Requirement	ts
L		race pispensing cocación requirement	

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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:

- 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, <u>www.iccsafe.org</u>, with Oklahoma Revisions found at <u>http://ok.gov/oubcc/Codes\_&\_Rules/Adopted\_Buildin</u> <u>g\_Codes</u>
- Code of Federal Regulations 29 CFR Part 1926 (OSHA), with latest available amendments, Candidates can access the Government website with this link <u>https://www.osha.gov/laws-</u> regs/regulations/standardnumber/1926

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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, <u>www.uglys.net</u>
- Hazardous Locations, 2005, International Association of Electrical Inspectors, (800) 786-4234, <u>www.iaei.org</u>

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#### MECHANICAL BUSINESS AND LAW

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

Тор	ic Info	rmation	# of	ltems
1.	Biddir	ng and Estimating		10
	а.	General Estimating		10
	ь.	Bid		
2.	Proje	ct Management and Supervision	n	
	а.	General Project Oversight		7
	b.	Oversee Budget		
	с.			
	d.	Oversee Materials Control		
		Manage Jobsite Safety		
	f.			
		Potentially Hazardous Material	S	
	n. i.	Environmental Protection		
	j.			
2	k.			
3.	Contra			5
	a.	Terminology Required Elements/Component	te	3
	b.		LS .	
	c.	Contract Types Change Orders		
	d.	Standardized Documents		
	e. f	Interpretation		
	г. а	Warranties		
	h.			
	i.			
4.	Finan			
٠.	a.	Business Organization		8
	ч.	Characteristics, Advantages, a	nd	
		Disadvantages	in a	
	ь.	Business Start-up		
	с.			
	d.			
	е.	Accounts Receivable		
	f.	Accounts Payable		
	g.	Balance Sheet		
	ĥ.	Income Statement		
	i.	Taxes on Company Income		
	j.	Obtaining Financing		
	<b>k.</b>	Checking Account		
	ι.	Financial Ratios		
5.		and Personnel		5
	а.	ADA		3
	b.	Labor Standards		1/202 11
	с.	Requirements for Non-citizer	ns and	a/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		· ·
L	b.	Bonds		

7.	Payro a.	oll and Payroll Taxes Taxes	5
	ь.	Forms and Due Dates	
8.	Licen	sing Requirements	
	а.	Required Insurance/Bonds	6
	<b>b</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 Mechanical Licensing Act, Oklahoma Statutes, Title 59, Chapter 43A, Oklahoma Construction Industries Board, 2401 N.W. 23rd Street, Suite 2F, Oklahoma City, OK 73107, <u>www.ok.gov/cib</u>
- 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, <u>www.ok.gov/cib</u>
- 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, <u>www.ok.gov/cib</u>
- 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, <u>www.nascla.org</u>
- 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, <u>www.ok.gov/cib</u> 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

Тор			# of Items
1.		al Fuel Gas Piping Knowledg tions, and Regulations	je, 10
	а.	Testing and Inspection	
	ь.	Pipe Material Properties and Rec	uirements
2.	Pipe S	izing	12
3.	Pipe I	nstallation	
	a.	Indoor and Outdoor Installati Requirements	on <b>15</b>
	ь.	Gas Pressure Regulators	
	с.		
	d.	Hangers and Supports	
	e.	Direction Changes	
	f.		
	g.		
	n. i.	Valves and Controls Outlets	
	j.	Drip Legs and Sediment Traps	
	k.	Piping Protection	
4.	Safety		
	a. (	- · · ·	3
	ь.		
	с.	Excavation Safety	
	<b>d.</b>	Ventilation and Confined Space	
	е.	Safety Training	
	f.	First Aid Kits	
	g.	PPE	
	h.	· · · · · · · · · · · · · · · · · · ·	
	i.		
	j.	Ladders and Scaffolds	
	k. I.	Tools and Equipment MSDS	
L	ι.	כעכוא	

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

- 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 <u>http://ok.gov/oubcc/Codes & Rules/Adopted Buildin</u> g\_Codes/
- Code of Federal Regulations 29 CFR Part 1926 (OSHA), with latest available amendments, Candidates can access the Government website with this link <u>https://www.osha.gov/laws-</u> regs/regulations/standardnumber/1926

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

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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

Το	opic Information # o			f Items	
1.		al Fuel Gas Piping Knowledg tions, and Regulations	ge,	8	
	a.	Testing and Inspection			
	b.	Pipe Material Properties and Rec	uire	ments	
2.	Pipe S				
		5		4	
3.	Pipe II	nstallation			
	a.	Indoor and Outdoor Installati Requirements	on	15	
	ь.	Gas Pressure Regulators			
	с.	Structural Safety			
		Hangers and Supports			
		Direction Changes			
	f.	Concealed Locations			
	g.	Joints and Connections			
	ĥ.	Valves and Controls			
	i.	Outlets			
	j.	Drip Legs and Sediment Traps			
	<b>k.</b>	Piping Protection			
4.	Safety	,			
	а.	Excavations		3	
	b.	Ventilation and Confined Space			
	с.	PPE			
		Signs, Signals and Barricades			
	-	Fall Protection			
	f.	Ladders and Scaffolds			
	g.				
	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

Το	Topic Information # o		# of Items
1.	Gene	ral Knowledge and Definitions	6
2.	Estim	ating and Plan Reading	
	а.	Plan Reading	7
	b.	-	
	с.	Material Estimates	
3.	Pipe /	Materials, Uses, and Properties	
	a.	Material Properties and Selection	n <b>5</b>
	b.	Pipe Sizing	
4.	Pipin	g Installation and Fitting	
	a.	Indoor and Outdoor Piping	8
	b.	Pipe Welding	
	с.	Pipe Brazing and Soldering	
	<b>d.</b>	Mechanical Joints	
	е.	Threaded Joints	
		Compression Fittings	
		Chemical Adhesives	
	h.	Tube Bending	
	i.	- · · · · · · · · · · · · · · · · · · ·	
-	ј.	Line Labeling	
5.	Hange	ers and Supports	
	а.	Measure and Install Pipe Support	s 5
6.	Valve	s and Controls	6
	а.		O
	b.	Valve and Control Installation	
	с.	Maintenance and Troubleshootin	g

# 7. Safety a. Contractor Responsibilities b. Safety Training c. Ventilation and Confined Space d. First Aid Kits e. Personal Protective Equipment (PPE) f. Material Safety Data Sheets (MSDS) c. Toxic Materials

- g. Toxic Materials
- h. Fall Protection
- i. Lockout/Tagout
- j. Ladders and Scaffolds

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

- 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, <u>www.cengage.com</u>
- 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, <u>www.asme.org</u>
- 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

Το	oic Infor	# of Items		
1.	Genera	al Knowledge and Definitions	6	
2.	Plan R	Plan Reading		
3.	Pipe M a.	aterials, Uses, and Properties Material Properties and Selectior	n 5	
	b.	Pipe Sizing		
4.	a. b. c. d. e. f. g.	Installation and Fitting Indoor and Outdoor Piping Pipe Welding Pipe Brazing and Soldering Mechanical Joints Threaded Joints Compression Fittings Chemical Adhesives Tube Bending System Testing Line Labeling	8	
5.		rs and Supports Measure and Install Pipe Support:	s <b>5</b>	
6.	a. b.	and Controls Valve Selection Valve and Control Installation Maintenance and Troubleshooting	<b>5</b>	
7.	Safety a. b.	Ventilation and Confined Space Personal Protective Equipment (F Material Safety Data Sheets (MSD	3 PPE)	
		Toxic Materials Fall Protection	,	

- f. Lockout/Tagout
- g. Ladders and Scaffolds

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This examination is OPEN BOOK.

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

 Pipefitter's Handbook, 1967, 3rd Edition, Forest R. Linsey, Industrial Press, Inc., <u>www.industrialpress.com</u>

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

Тор	oic Info	rmation	# of Items	
1.	Gene	ral Knowledge	13	
	а.	Tools and Equipment	15	
	b.	Materials		
	с.	Welding		
	d.	Blueprints and Plan Reading		
	е.	Air Properties and Behavior		
	f.	Testing, Adjusting and Balanc	ing (TAB)	

2.		Sizing, Design, and Hanging and	
	Suppo	rt Requirements	6
	а.	Duct Sizing	
	<b>b.</b>	Duct Design	
	с.	Hangers and Supports	
3.	Duct F	abrication and Installation	
	а.	Rectangular Metal Ducts	13
	<b>b</b> .	Oval and Flexible Metal Ducts	
	с.	Fiberglass Ducts	
	d.	Duct Accessories and Exterior Compo	onents
4.	Plenur	ns	
			6
5.	Applia	nce Venting and Combustion Air	
	а.	Venting and Combustion Air Sizing	5
	<b>b</b> .	Clearance to Combustibles	
	с.	Equipment Installation	
	<b>d</b> .	Vent and Combustion Air Supply Terr	nination
6.	Ventila	ation and Exhaust Devices	
	а.	Device Selection and Installation	14
	<b>b</b> .	Exhaust Ducts	
	с.	Exhaust System Terminations	
	<b>d</b> .	Exhaust Fans	
	е.	Auxiliary Equipment	
	f.	Solid Fuel Systems	
	g.	Downdraft Appliance Ventilation	
7.	Safety		3
	а.	Contractor Responsibilities	<b>.</b>
	<b>b.</b>	Safety Training	
	с.	First Aid Kits	
	d.	Personal Protective Equipment (PPE)	)
	е.	Signs, Signals, and Barricades	
	f.	Ladders	
	g.	Fall Protection	
		Lockout/Tagout	
	i.	MSDS	

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This examination is OPEN BOOK.

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

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

- 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, <u>www.naima.org</u>
- Code of Federal Regulations 29 CFR Part 1926 (OSHA), with latest available amendments, Candidates can access the Government website with this link <u>https://www.osha.gov/laws-</u> regs/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, <u>http://www.psionlinestore.com</u>

- HVAC Duct Construction Standards, Metal and Flexible, 2005, 3rd edition, Sheet Metal and Air Conditioning Contractors' National Association, Inc., (703) 803-2980, <u>www.smacna.org</u>
- 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

Тор	ic Info	# of Items	
1.	Gener	al Knowledge	12
	а.	Tools and Equipment	12
	<b>b.</b>	Materials	
	с.	Welding	
	<b>d.</b>	Blueprints and Plan Reading	
	е.	Air Properties and Behavior	
	f.	Testing, Adjusting and Balanci	ing (TAB)

2.		Sizing, Design, and Hanging and	
		rt Requirements	4
	а.	Duct Sizing	
	ь.	Duct Design	
	с.	<b>y</b> 11	
3.	Duct F	Fabrication and Installation	
	а.	Rectangular Metal Ducts	10
	b.		
		Fiberglass Ducts	
	<b>d.</b>	Duct Accessories and Exterior Compo	onents
4.	Plenu	ms	
			4
5.	Applia	nce Venting and Combustion Air	_
	а.	Venting and Combustion Air Sizing	5
	ь.	Clearance to Combustibles	
		Equipment Installation	
	<b>d.</b>	Vent and Combustion Air Supply Ter	mination
6.	Ventil	ation and Exhaust Devices	40
	а.	Device Selection and Installation	12
	<b>b.</b>	Exhaust Ducts	
	с.	Exhaust System Terminations	
	<b>d</b> .	Exhaust Fans	
	е.	Auxiliary Equipment	
	f.	Solid Fuel Systems	
	g.	Downdraft Appliance Ventilation	
7.	Safety	,	3
	а.	Contractor Responsibilities	3
	b.	Safety Training	
	с.	First Aid Kits	
	d.		)
	е.		
	f.		
	g.	Fall Protection	
	ň.		
	i.	MSDS	

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- 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
- HVAC Duct Construction Standards, Metal and Flexible, 2005, 3rd edition, Sheet Metal and Air Conditioning Contractors' National Association, Inc., (703) 803-2980, <u>www.smacna.org</u>
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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

1.		rmation # of ical Knowledge and Controls	Items
1.		General Electrical Theory and	15
	a.	Knowledge	
	L.	5	
	b.	Motors	
	с.	D/C Circuits	
	d.	A/C Circuits	
	-	Controls	
2.	Natur		
	а.	Piping Valves	12
	ь.	Connectors	
	с.	Accessories	
	<b>d</b> .	Hangers and Supports	
	е.	Sizing	
	f.	Materials	
	g.	Testing	
3.	Air Di	stribution Systems	
	а.	Duct Definitions	15
	b.	Sizing and Design	
	с.	Duct Assembly and Installation	
	d.	Hangers and Supports	
	e.	Duct Materials and Shapes	
	f.	Duct Insulation	
	g.	Fire and Smoke Control	
	b.	Hoods and Exhaust Systems	
	i.	Testing and Balancing	
		Ventilation Requirements	
	j. k.	Plans and Symbols	
4.			
4.		eration and Air Conditioning	20
	Syster		20
	a.	Theory	
	b.	Refrigerants	
	с.	Equipment Sizing and Design	
	d.	Equipment and Components	
	е.	Piping	
	f.	Equipment Installation	
	g.	System Operation, Troubleshooting,	and
		Maintenance	
5.	Heati	ng Systems	4.5
	а.	Heating Theory and Types	15
	ь.	Combustion Air	
	с.	Vents and Chimneys	
	d.	Equipment Sizing	
	е.	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 Em	nplovees
	ь.	Safety Training Requirements	
	с.	Adequate Ventilation for Employees	
	d.	First Aid Kit Requirements	
	e.	Use of Personal Protective Equipmen	t
	f.		ic .
		Material Safety Data Sheets (MSDS)	Motorials
	g.	Requirements for Work Around Toxic	materials
	h.	Fall Protection	
		Lockout/Tagout Procedures	
	i.		
	і. ј. k.	Ladders Scaffolds	

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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

- 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, <u>www.cengage.com</u>
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questions, but are allowed in the test area under the same physical conditions as the other books:

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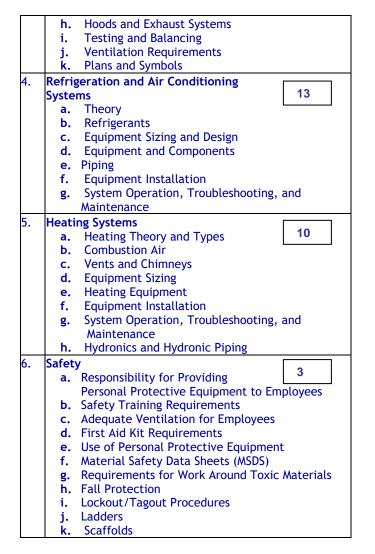
#### HVACR JOURNEYMAN LIMITED

#### 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

Тор	oic Info	rmation	# of	ltems
1.	Electr	rical Knowledge and Controls		15
	a.	General Electrical Theory Knowledge	and	15
	b.	Motors		
	с.	D/C Circuits		
	d.	A/C Circuits		
	е.	Controls		
2.	Natur	al Gas		
	а.	Piping Valves		9
	<b>b.</b>	Connectors		
	с.	Accessories		
	d.	Hangers and Supports		
	е.	Sizing		
	f.	Materials		
		Testing		
	h.	Installation and Assembly		
3.	Air Di	stribution Systems		
	а.	Duct Definitions		10
	<b>b.</b>	Sizing and Design		
	с.	Duct Assembly and Installation		
		Hangers and Supports		
		Duct Materials and Shapes		
	f.	Duct Insulation		
	g.	Fire and Smoke Control		



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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, <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

- Mathematics for Plumbers and Pipefitters, Lee Smith, 8th Edition, 2013, <u>www.cengage.com</u>
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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	Passing %	Passing	Time
Questions		(Raw)	Allowed

90	70	63	240 minutes
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Гор	oic Info	rmation	# of Items
	Electr	rical Knowledge and Controls	45
	а.	General Electrical Theory and	15
		Knowledge	
	b.	Motors	
	-	D/C Circuits	
	d.	A/C Circuits	
		Controls	
2.		al Gas	
	a.	Piping Valves	12
	b.	Connectors Accessories	
	d.	Hangers and Supports	
	e.	Sizing	
	f.	Materials	
		Testing	
3.		stribution Systems	
	a.	Duct Definitions	25
	b.	Sizing and Design	
	с.	Duct Assembly and Installation	I
	d.	Hangers and Supports	
	е.	Duct Materials and Shapes	
	f.	Duct Insulation	
	g.	Fire and Smoke Control	
	h.	Hoods and Exhaust Systems	
	i.	Testing and Balancing	
	j.	Ventilation Requirements	
	<b>k.</b>	Plans and Symbols	
4.		geration and Air Conditioning	20
	Syste		20
	a.	Theory	
	b.	Refrigerants	
	с. d.	Equipment Sizing and Design Equipment and Components	
	e.	Piping	
	f.	Equipment Installation	
	g.	System Operation, Troubleshoe	oting, and
	5.	Maintenance	oung, and
5.	Heati	ng Systems	
	а.	Heating Theory and Types	15
	ь.	Combustion Air	
	с.	Vents and Chimneys	
	d.	Equipment Sizing	
	e.	Heating Equipment	
	f.	Equipment Installation	
	g.	System Operation, Troubleshoe	oting, and
		Maintenance	
	<u>h.</u>	Hydronics and Hydronic Piping	
5.	Safety		3
	а.	Responsibility for Providing	_
	L	Personal Protective Equipmen	t to Employees
	b.	Safety Training Requirements Adequate Ventilation for Empl	00000
	с. d.	First Aid Kit Requirements	Uyees
	e.	Use of Personal Protective Equ	inment
	f.	Material Safety Data Sheets (M	
	г. g.	Requirements for Work Around	Toxic Materials
	у. h.	Fall Protection	i i onici materiats
	i.	Lockout/Tagout Procedures	
	j.	Ladders	

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#### HVACR JOURNEYMAN UNLIMITED

#### SCOPE OF WORK

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

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

	h.	Hoods and Exhaust Systems
	i.	Testing and Balancing
	j.	Ventilation Requirements
	<b>k.</b>	Plans and Symbols
4.	Refrig	eration and Air Conditioning
	Syster	ns 16
	а.	Theory
	<b>b.</b>	Refrigerants
	с.	Equipment Sizing and Design
	<b>d.</b>	Equipment and Components
		Piping
	f.	Equipment Installation
	g.	System Operation, Troubleshooting, and
		Maintenance
5.	Heati	ng Systems
	а.	Heating Theory and Types 10
	<b>b.</b>	Combustion Air
	с.	Vents and Chimneys
	<b>d.</b>	Equipment Sizing
	е.	Heating Equipment
	f.	
	g.	System Operation, Troubleshooting, and
		Maintenance
	h.	Hydronics and Hydronic Piping
6.	Safety	
	а.	Responsibility for Providing 3
		Personal Protective Equipment to Employees
	<b>b.</b>	Safety Training Requirements
	с.	Adequate Ventilation for Employees
	<b>d.</b>	First Aid Kit Requirements
	е.	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
	<b>k.</b>	Scaffolds

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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. <u>Temporary tabs</u>, 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

Тор	oic Info	ormation	# of Items
1.	Elect	rical Knowledge and Controls	20
	а.	General Electrical Theory and	20
		Knowledge	
	<b>b</b> .	Motors	
	с.	A/C and D/C Circuits	
	d.	Meters	
	е.	Controls	
	f.	Relays	
2.	Refrig	gerants	10
	а.	Refrigerant Types	10
	<b>b</b> .	Refrigerant Systems	
	с.	Refrigerant Theory	
3.	Pipin	5	5
	a.	Piping Supports	3
	<b>b</b> .	Piping Materials and Sizes	
	с.	Piping Pressure Tests	
4.	Refrig	geration Equipment and	
	Comp	onents	20
	а.	Valves	
	b.	Compressors	
	с.	Condensers	
	d.	Evaporators	
	е.	Receivers	
	f.	Accumulators	
	g.	Expansion Devices	
	h.		
5.	Re	frigeration Systems Operations	
	а.	-,	20
	ь.	Systems Operations	
	с.	System Installation, Maintenance	e, and
		Repair	
6.	Safet		5
	а.	Safety Training Requirements	Э
	ь.	Ventilation Requirements	
	с.	First Aid Kit Requirements	
	d.	Use of Personal Protective Equ	
	е.	Material Safety Data Sheets (M	
	f.	Requirements for Work Around	Toxic
		Materials	
	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\_Buildin g\_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

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

	f.	Relays	
2.	Refri	gerants	5
	а.	Refrigerant Types	•
	b.	Refrigerant Systems	
	с.	Refrigerant Theory	
3.	Pipin	g	5
	а.	Piping Supports	<b>v</b>
	b.	Piping Materials and Sizes	
	с.	Piping Pressure Tests	
4.	Refrig	geration Equipment and	
	Comp	onents	17
	а.	Valves	
	b.	Compressors	
	с.	Condensers	
		Evaporators	
	е.	Receivers	
	f.	Accumulators	
	g.	Expansion Devices	
	h.	Dryers	
5.	Re	frigeration Systems Operations	
	а.	Systems Troubleshooting	15
	b.	Systems Operations	
	с.	System Installation, Maintenance, ar	nd Repair
6.	Safet	у	3
	а.	Safety Training Requirements	3
	<b>b</b> .	Ventilation Requirements	
	с.	First Aid Kit Requirements	
	<b>d</b> .	Use of Personal Protective Equipmer	nt
	е.	Material Safety Data Sheets (MSDS)	
	f.	Requirements for Work Around Toxic	:
		Materials	
	g.	Lockout/Tagout Procedures	
	h.	Ladders	

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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

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

2	1 1 0	
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

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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, <u>www.iccsafe.org</u>, with Oklahoma Revisions found at <u>http://ok.gov/oubcc/Codes & Rules/Adopted Buildin</u> <u>g\_Codes</u>
- 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, <u>www.ok.gov/cib</u>
- SMACNA Symbols Sheet, located under testing information, <u>www.ok.gov/cib</u>

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

Тор	ic 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
REF	ERENCE LIST	

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#### PLUMBING BUSINESS AND LAW

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

Topic Information		rmation	# of Items	
1.	1. Bidding and Estimating a. General Estimating		10	
	b. Bid			

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

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- 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, <u>www.ok.gov/cib</u>
- 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, <u>www.ok.gov/cib</u>
- 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, <u>www.nascla.org</u> 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, <u>www.ok.gov/cib</u> 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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#### 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	ltems
1.		al Plumbing edge and Regulations	10
	а.	Head Pressure	
	b.	Pipe Joints	
	с.	Solvent Welded Pipe Joints	
	d.	Calculations of Area and Volume	
	e.	Calculations of Water Supply Frictio	n Loss
	f.	Permits and Inspections	
	g.	Job Costs	
	ĥ.	Notches and Bore Holes in Structural	Members
	i.	Fire Integrity	
	j.	Pipe Offsets Test Systems	
	<b>k.</b>	Condensate Disposal Trenching, Exca	vation, and
		Backfill	
	l.	Fitting Identification	
2.	Piping	, Valves, and Control Valves	
	а.	PVC Piping and Connections	8
	b.	CPVC Piping and Connections	
	с.	Galvanized Piping and Connections	
	d.	Copper Tubing and Connections	
	e.	Copper Piping and Connections	
	f.	Polyethylene Piping and Connections	
	g.	PEX Piping and Connections	
	h.	Underground Piping and Connections	
	i.	Cast Iron Piping and Connections	
	j.	Steel Piping and Connections	
	k. l.	Connecting Dissimilar Materials Valves and Control Valves	
3.			
з.	a.	es and Equipment Identify Minimum Plumbing Needs	8
	а.	for Structures/Facilities	•
	b.	Install Fixtures and Associated Equip	ment
4.	-	Supply	
	a.	Water Supply and Distribution	10
	~.	Lines	_
	ь.	Protection of Potable Water Supply	
	с.		
5.	Drains	and Sewers	
	а.	Drain and Sewer Pipe	10
	ь.	•	
	с.	Sewer and Drain Cleanouts	
	d.	Sewage Ejectors and Sump Pumps	
	е.	Health Care Plumbing	
	f.	Drain and Waste Piping	
	g.	Storm Drainage	
6.	Vents		42
	а.	Vent Installation	13
1	1		

	b.	Developed Length	
7.	Traps,		5
	-	l Waste	
	a.	Traps	
	b. c.	Interceptors and Separators Indirect and Special Waste	
8.		tric Analysis	
	а.	Isometric Drawings	7
9.	Fuel G		
	a.	Gas Distribution Pipe Sizing	10
	b.	Gas Pressure Regulators	
	с.	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 Confined Spaces	
	k.	Combustion Air	
	m.	Chimneys and Vents	
	n.	Permits and Inspections for Gas	
	0.	Cost Estimates for Gas	
	р.	Outdoor Gas Supply Piping	
	р. q.	Testing and Inspection of Gas System	IS
	r.	Pipe Material Requirements	
10.	Safety		
	a. (	Responsibility for Providing	4
		Personal Protective Equipment	
	b.	Excavation Safety	
	с.	Employee Protection in Trer Excavations	nches and
	d.	Safety Training Requirements	
	е.	Adequate Ventilation for Employees	
	f.	First Aid Kit Requirements	
	g.	Use of Personal Protective Equipmen	t
	ĥ.	Signs, Signals, and Barricades As Req	
	i.	Tools and Equipment Requirements	
	j.	Ladder Use in Accordance with Requi	irements
	<b>k.</b>	Workplace Illumination	
	ι.	Scaffold Use in Accordance with Requ	
	m.	Requirements for Work Around Toxic	
	n.	Appropriate Material Cleanup and Dis	sposal
	ο.	Material Safety Data Sheets (MSDS)	
	р.	Handling and Storing Materials	
	<b>q.</b>	Fall Protection	

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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, 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

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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 Questions	Passing %	Passing (Raw)	Time Allowed	
85	75	64	180 minutes	
Topic Informa	ation	#	of Items	

1.       General Plumbing       10         Knowledge and Regulations       10         a.       Head Pressure         b.       Pipe Joints         c.       Solvent Welded Pipe Joints         d.       Catculations of Area and Volume         e.       Calculations of Water Supply Friction Loss         f.       Permits and Inspections         g.       Job Costs         h.       Notches and Bore Holes in Structural Members i.         f.       Frie Integrity         j.       Pipe Offsets Test Systems         k.       Condensate Disposal Trenching, Excavation, and Backfill         l.       Fitting Identification         2. <b>Piping, Valves, and Control Valves</b> a.       PVC Piping and Connections         c.       Galvarized Piping and Connections         c.       Copper Tubing and Connections         g.       PEX Piping and Connections         i.       Cast Iron Piping and Connections         j.       Steel Piping and Connections         k.       Connecting Dissimilar Materials         l.       Underground Piping and Connections         s.       Cast Iron Piping and Connections         k.       Connecting Dissimilar Materials			
a.       Head Pressure         b.       Pipe Joints         c.       Solvent Welded Pipe Joints         d.       Calculations of Area and Volume         e.       Calculations of Water Supply Friction 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, Excavation, and Backfill         1.       Fitting Identification         2.       Piping, Valves, and Connections         a.       PVC Piping and Connections         c.       Galvanized Piping and Connections         c.       Copper Piping and Connections         e.       Copper Piping and Connections         f.       Polyethylene Piping Connections         g.       PEX Piping and Connections         h.       Underground Piping and Connections         i.       Cast Iron Piping and Connections         k.       Connecting Dissimilar Materials         l.       Underground Piping and Connections         s.       Steel Piping and Connections         k.       Connecting Dissimilar Materials	1.		10
b. Pipe Joints         c. Solvent Welded Pipe Joints         d. Calculations of Area and Volume         e. Calculations of Water Supply Friction 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, Excavation, and Backfill         l. Fitting Identification         2. Pipe QfSets Test Systems         a. PVC Piping and Connections         g. Opper Tubing and Connections         g. Copper Tubing and Connections         e. Copper Tubing and Connections         f. Copper Tubing and Connections         g. PEX Piping and Connections         f. Cost Iron Piping and Connections         i. Cast Iron Piping and Connections         j. Steel Piping and Connections         k. Connecting Dissimilar Materials         l. Valves and Control Valves         3.         Fixtures and Equipment         a. Identify Minimum Plumbing Needs         for Structures/Facilities         b. Install Fixtures and Associated Equipment         4.         Water Supply         a. Water Supply and Distribution         10         Lines			
<ul> <li>c. Solvent Welded Pipe Joints</li> <li>d. Calculations of Area and Volume</li> <li>e. Calculations of Area Supply Friction Loss</li> <li>f. Permits and Inspections</li> <li>g. Job Costs</li> <li>h. Notches and Bore Holes in Structural Members</li> <li>i. Fire Integrity</li> <li>j. Pipe Offsets Test Systems</li> <li>k. Condensate Disposal Trenching, Excavation, and Backfill</li> <li>I. Fitting Identification</li> <li>2. Piping, Valves, and Connections</li> <li>a. PVC Piping and Connections</li> <li>c. Galvanized Piping and Connections</li> <li>d. Copper Tubing and Connections</li> <li>e. Copper Piping and Connections</li> <li>f. Copter Tubing and Connections</li> <li>g. PEX Piping and Connections</li> <li>g. PetX Piping and Connections</li> <li>h. Underground Piping and Connections</li> <li>h. Underground Piping and Connections</li> <li>h. Contecting Dissimilar Materials</li> <li>I. Valves and Control Valves</li> <li>3. Fixtures and Associated Equipment</li> <li>a. Identify Minimum Plumbing Needs for Structures/Facilities</li> <li>b. Install Fixtures and Associated Equipment</li> <li>4. Water Supply and Distribution 10</li> <li>Lines</li> <li>b. Protection of Potable Water Supply</li> <li>c. Sewer and Drain Cleanouts</li> <li>d. Sewage Ejectors and Sump Pumps</li> <li>e. Health Care Plumbing</li> <li>f. Drain and Sewers</li> <li>c. Sewer and Sepiration 13</li> <li>a. Vent Installation</li> <li>a. Developed Length</li> <li>7</li> <li>7</li> <li>9. Fuel Gas         <ul> <li>a. Interceptors, Indirect, and 5</li> <li>a. Inscribution Pipe Sizing</li> <li>b. Indirect and Special Waste</li> </ul> </li> <li>8. Isometric Drawings         <ul> <li>7</li> <li>7</li> </ul> </li> <li>9. Fuel Gas         <ul> <li>a. Interceptors and Separators</li> <li>b</li></ul></li></ul>			
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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, Excavation, and Backfill         l.       Fitting Identification         2.       Piping, Valves, and Connections         a.       PVC Piping and Connections         b.       CPVC Piping and Connections         c.       Galvanized Piping Connections         d.       Copper Piping and Connections         f.       Petx Piping and Connections         f.       Polyethylene Piping Connections         g.       Steel Piping and Connections         j.       Steel Piping and Connections			
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<ul> <li>i. Fire Integrity         <ul> <li>j. Pipe Offsets Test Systems</li> <li>k. Condensate Disposal Trenching, Excavation, and Backfill             <ol> <li>Fitting Identification</li></ol></li></ul></li></ul>		<b>3</b>	
<ul> <li>j. Pipe Offsets Test Systems</li> <li>k. Condensate Disposal Trenching, Excavation, and Backfill</li> <li>I. Fitting Identification</li> <li>2. Piping, Valves, and Control Valves         <ul> <li>a. PVC Piping and Connections</li> <li>B. CPVC Piping and Connections</li> <li>c. Galvanized Piping and Connections</li> <li>c. Copper Tubing and Connections</li> <li>d. Copper Piping and Connections</li> <li>e. Copper Piping and Connections</li> <li>f. Polyethylene Piping Connections</li> <li>g. PEX Piping and Connections</li> <li>i. Cast Iron Piping and Connections</li> <li>i. Cast Iron Piping and Connections</li> <li>j. Steel Piping and Connections</li> <li>i. Cast Iron Piping and Connections</li> <li>g. Textures and Equipment</li> <li>a. Identify Minimum Plumbing Needs for Structures/Facilities</li> <li>b. Install Fixtures and Associated Equipment</li> </ul> </li> <li>4. Water Supply and Distribution 10         <ul> <li>Lines</li> <li>b. Protection of Potable Water Supply</li> <li>c. Backflow</li> </ul> </li> <li>5. Drains and Sewers         <ul> <li>a. Drain and Sewer Pipe</li> <li>b. Building Sewers</li> <li>c. Sewer and Drain Cleanouts</li> <li>d. Sewage Ejectors and Sump Pumps</li> <li>e. Health Care Plumbing</li> <li>f. Drain and Waste Piping</li> <li>g. Storm Drainage</li> </ul> <li>6. Vents         <ul> <li>a. Interceptors, Indirect, and 5</li> <li>g. Storm Drainage</li> <li>f. Indirect and Special Waste</li> <li>a. Interceptors and Separators</li> <li>b. Indirect and Special Waste</li> <li>8. Insometric Drawings</li> <li>7</li> </ul> <li>9. Fuel Gas</li></li></li></ul>			Members
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a.       PVC Piping and Connections       8         b.       CPVC Piping and Connections       6         c.       Galvanized Piping and Connections       6         d.       Copper Tubing and Connections       7         e.       Copper Piping and Connections       6         g.       PEX Piping and Connections       6         h.       Underground Piping and Connections       6         i.       Cast Iron Piping and Connections       6         j.       Steel Piping and Connections       8         i.       Cast Iron Piping and Connections       8         j.       Steel Piping and Connections       8         j.       Steel Piping and Connections       8         j.       Cast Iron Piping and Connections       8         j.       Cast Iron Piping and Connections       8         j.       Cast Iron Piping and Connections       8         j.       Steel Piping and Connections       8         j.       Steel Piping and Connections       8         j.       Steel Piping and Connections       8         j.       Steel Piping and Connections       8         j.       Steel Piping and Connections       8         j.       Interceut	2		
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<ul> <li>c. Galvanized Piping and Connections</li> <li>d. Copper Tubing and Connections</li> <li>e. Copper Piping and Connections</li> <li>f. Polyethylene Piping Connections</li> <li>g. PEX Piping and Connections</li> <li>g. PEX Piping and Connections</li> <li>i. Cast Iron Piping and Connections</li> <li>j. Steel Piping and Connections</li> <li>k. Connecting Dissimilar Materials</li> <li>I. Valves and Control Valves</li> <li>Fixtures and Equipment         <ul> <li>a. Identify Minimum Plumbing Needs for Structures/Facilities</li> <li>b. Install Fixtures and Associated Equipment</li> </ul> </li> <li>Water Supply         <ul> <li>a. Water Supply and Distribution Lines</li> <li>b. Protection of Potable Water Supply</li> <li>c. Sewer and Drain Cleanouts</li> <li>d. Sewage Ejectors and Sump Pumps</li> <li>e. Health Care Plumbing</li> <li>f. Drain and Sewers</li> <li>c. Sewer and Drain Cleanouts</li> <li>d. Sewage Ejectors and Sump Pumps</li> <li>e. Health Care Plumbing</li> <li>f. Drain and Waste Piping</li> <li>g. Storm Drainage</li> </ul> <li>6. Vents         <ul> <li>a. Vent Installation</li> <li>a. Traps</li> <li>a. Interceptors, Indirect, and Special Waste</li> <li>a. Interceptors and Separators</li> <li>b. Indirect and Special Waste</li> </ul> <li>8. Isometric Analysis         <ul> <li>a. Isometric Drawings</li> <li>7</li> </ul> </li> <li>9. Fuel Gas         <ul> <li>a. Gas Distribution Pipe Sizing</li> <li>b. Gas Pressure Regulators</li> <li>c. Hangers and Supports</li> <li>d. Direction Changes</li> <li>e. Concealed Locations</li> <li>f. Joints and Connections</li> <li>g. Valves</li></ul></li></li></li></ul>			8
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<ul> <li>e. Copper Piping and Connections</li> <li>f. Polyethylene Piping Connections</li> <li>g. PEX Piping and Connections</li> <li>i. Cast Iron Piping and Connections</li> <li>i. Cast Iron Piping and Connections</li> <li>j. Steel Piping and Connections</li> <li>k. Connecting Dissimilar Materials</li> <li>l. Valves and Control Valves</li> </ul> 3. Fixtures and Equipment <ul> <li>a. Identify Minimum Plumbing Needs for Structures/Facilities</li> <li>b. Install Fixtures and Associated Equipment</li> </ul> 4. Water Supply <ul> <li>a. Water Supply and Distribution 10</li> <li>Lines</li> <li>b. Protection of Potable Water Supply</li> <li>c. Backflow</li> </ul> 5. Drains and Sewers <ul> <li>a. Drain and Sewer Pipe</li> <li>b. Building Sewers</li> <li>c. Sewer and Drain Cleanouts</li> <li>d. Sewage Ejectors and Sump Pumps</li> <li>e. Health Care Plumbing</li> <li>f. Drain and Waste Piping</li> <li>g. Storm Drainage</li> </ul> 6. Vents <ul> <li>a. Vent Installation</li> <li>a. Developed Length</li> </ul> 7. Traps, Interceptors, Indirect, and Special Waste <ul> <li>a. Interceptors and Separators</li> <li>b. Indirect and Special Waste</li> </ul> 8. Isometric Analysis <ul> <li>a. Isometric Drawings</li> <li>7</li> </ul> 9. Fuel Gas <ul> <li>a. Gas Distribution Pipe Sizing</li> <li>b. Gas Pressure Regulators</li> <li>c. Hangers and Supports</li> <li>d. Direction Changes</li> <li>e. Concealed Locations</li> <li>f. Joints and Connections</li> <li>g. Valves</li> <li>h. Location of Outlets</li> </ul>			
f.       Polyethylene Piping Connections         g.       PEX Piping and Connections         h.       Underground Piping and Connections         i.       Cast Iron Piping and Connections         j.       Steel Piping and Connections         k.       Connecting Dissimilar Materials         l.       Valves and Control Valves         3.       Fixtures and Equipment         a.       Identify Minimum Plumbing Needs       8         for Structures/Facilities       b.       Install Fixtures and Associated Equipment         4.       Water Supply       a.       Water Supply and Distribution       10         Lines       b.       Protection of Potable Water Supply       c.       Backflow         5.       Drains and Sewers       10       10         Lines       10       10       10         b.       Building Sewers       10       10         c.       Sewer and Drain Cleanouts       13       13         d.       Sewage Ejectors and Sump Pumps       13       13         e.       Health Care Plumbing       13       13         a.       Vents       13       13       14         a.       Vent Installation       13       14<			
<ul> <li>g. PEX Piping and Connections</li> <li>h. Underground Piping and Connections</li> <li>i. Cast Iron Piping and Connections</li> <li>j. Steel Piping and Connections</li> <li>k. Connecting Dissimilar Materials</li> <li>l. Valves and Control Valves</li> </ul> 3. Fixtures and Equipment <ul> <li>a. Identify Minimum Plumbing Needs</li> <li>for Structures/Facilities</li> <li>b. Install Fixtures and Associated Equipment</li> </ul> 4. Water Supply <ul> <li>a. Water Supply and Distribution</li> <li>Lines</li> <li>b. Protection of Potable Water Supply</li> <li>c. Backflow</li> </ul> 5. Drains and Sewers <ul> <li>a. Drain and Sewer Pipe</li> <li>b. Building Sewers</li> <li>c. Sewer and Drain Cleanouts</li> <li>d. Sewage Ejectors and Sump Pumps</li> <li>e. Health Care Plumbing</li> <li>f. Drain and Waste Piping</li> <li>g. Storm Drainage</li> </ul> 6. Vents <ul> <li>a. Vent Installation</li> <li>a. Dreeloped Length</li> </ul> 7. Traps <ul> <li>Interceptors and Separators</li> <li>b. Indirect and Special Waste</li> </ul> 8. Isometric Analysis <ul> <li>a. Isometric Drawings</li> <li>f. Gas Distribution Pipe Sizing</li> <li>b. Gas Pressure Regulators</li> <li>c. Hangers and Supports</li> <li>d. Direction Changes</li> <li>e. Concealed Locations</li> <li>f. Joints and Connections</li> <li>g. Valves</li> <li>h. Location of Outlets</li> </ul>			
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b. Protection of Potable Water Supply         c. Backflow         5.       Drains and Sewers         a. Drain and Sewer Pipe       10         b. Building Sewers       10         c. Sewer and Drain Cleanouts       10         d. Sewage Ejectors and Sump Pumps       10         e. Health Care Plumbing       1         f. Drain and Waste Piping       13         g. Storm Drainage       13         6.       Vents         a. Vent Installation       13         a. Developed Length       5         7.       Traps, Interceptors, Indirect, and Special Waste         a. Traps       a. Interceptors and Separators         b. Indirect and Special Waste       7         9.       Fuel Gas       7         a. Isometric Drawings       7         9.       Fuel Gas       10         a. Gas Distribution Pipe Sizing       10         b. Gas Pressure Regulators       10         c. Hangers and Supports       0. Direction Changes         e. Concealed Locations       1. Joints and Connections         g. Valves       h. Location of Outlets			
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f.       Drain and Waste Piping         g.       Storm Drainage         6.       Vents         a.       Vent Installation         a.       Developed Length         7.       Traps, Interceptors, Indirect, and Special Waste         a.       Traps         a.       Traps         a.       Traps         a.       Traps         a.       Traps         a.       Interceptors and Separators         b.       Indirect and Special Waste         8.       Isometric Analysis         a.       Isometric Drawings         7       9.         Fuel Gas       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			
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<ul> <li>7. Traps, Interceptors, Indirect, and Special Waste <ul> <li>a. Traps</li> <li>a. Interceptors and Separators</li> <li>b. Indirect and Special Waste</li> </ul> </li> <li>8. Isometric Analysis <ul> <li>a. Isometric Drawings</li> </ul> </li> <li>9. Fuel Gas <ul> <li>a. Gas Distribution Pipe Sizing</li> <li>b. Gas Pressure Regulators</li> <li>c. Hangers and Supports</li> <li>d. Direction Changes</li> <li>e. Concealed Locations</li> <li>f. Joints and Connections</li> <li>g. Valves</li> <li>h. Location of Outlets</li> </ul> </li> </ul>			
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 b. Gas Pressure Regulators c. Hangers and Supports d. Direction Changes e. Concealed Locations f. Joints and Connections g. Valves h. Location of Outlets	7.		
<ul> <li>a. Traps         <ul> <li>a. Interceptors and Separators</li> <li>b. Indirect and Special Waste</li> </ul> </li> <li>8. Isometric Analysis         <ul> <li>a. Isometric Drawings</li> </ul> </li> <li>9. Fuel Gas             <ul> <li>a. Gas Distribution Pipe Sizing</li> <li>b. Gas Pressure Regulators</li> <li>c. Hangers and Supports</li> <li>d. Direction Changes</li> <li>e. Concealed Locations</li> <li>f. Joints and Connections</li> <li>g. Valves</li> <li>h. Location of Outlets</li> </ul> </li> </ul>	1		5
<ul> <li>a. Interceptors and Separators</li> <li>b. Indirect and Special Waste</li> <li>8. Isometric Analysis         <ul> <li>a. Isometric Drawings</li> </ul> </li> <li>9. Fuel Gas         <ul> <li>a. Gas Distribution Pipe Sizing</li> <li>b. Gas Pressure Regulators</li> <li>c. Hangers and Supports</li> <li>d. Direction Changes</li> <li>e. Concealed Locations</li> <li>f. Joints and Connections</li> <li>g. Valves</li> <li>h. Location of Outlets</li> </ul> </li> </ul>			
b.       Indirect and Special Waste         8.       Isometric Analysis <ul> <li>a.</li> <li>Isometric Drawings</li> <li>7</li> </ul> 9.       Fuel Gas <ul> <li>a.</li> <li>Gas Distribution Pipe Sizing</li> <li>b.</li> <li>Gas Pressure Regulators</li> <li>c.</li> <li>Hangers and Supports</li> <li>d.</li> <li>Direction Changes</li> <li>e.</li> <li>Concealed Locations</li> <li>f.</li> <li>Joints and Connections</li> <li>g.</li> <li>Valves</li> <li>h.</li> <li>Location of Outlets</li> </ul>			
<ul> <li>8. Isometric Analysis <ul> <li>a. Isometric Drawings</li> </ul> </li> <li>9. Fuel Gas <ul> <li>a. Gas Distribution Pipe Sizing</li> <li>b. Gas Pressure Regulators</li> <li>c. Hangers and Supports</li> <li>d. Direction Changes</li> <li>e. Concealed Locations</li> <li>f. Joints and Connections</li> <li>g. Valves</li> <li>h. Location of Outlets</li> </ul> </li> </ul>			
<ul> <li>a. Isometric Drawings</li> <li>7</li> <li>9. Fuel Gas <ul> <li>a. Gas Distribution Pipe Sizing</li> <li>b. Gas Pressure Regulators</li> <li>c. Hangers and Supports</li> <li>d. Direction Changes</li> <li>e. Concealed Locations</li> <li>f. Joints and Connections</li> <li>g. Valves</li> <li>h. Location of Outlets</li> </ul> </li> </ul>	8.		
9. Fuel Gas a. Gas Distribution Pipe Sizing b. Gas Pressure Regulators c. Hangers and Supports d. Direction Changes e. Concealed Locations f. Joints and Connections g. Valves h. Location of Outlets	l í		7
<ul> <li>a. Gas Distribution Pipe Sizing</li> <li>b. Gas Pressure Regulators</li> <li>c. Hangers and Supports</li> <li>d. Direction Changes</li> <li>e. Concealed Locations</li> <li>f. Joints and Connections</li> <li>g. Valves</li> <li>h. Location of Outlets</li> </ul>			
<ul> <li>b. Gas Pressure Regulators</li> <li>c. Hangers and Supports</li> <li>d. Direction Changes</li> <li>e. Concealed Locations</li> <li>f. Joints and Connections</li> <li>g. Valves</li> <li>h. Location of Outlets</li> </ul>	9.		
<ul> <li>c. Hangers and Supports</li> <li>d. Direction Changes</li> <li>e. Concealed Locations</li> <li>f. Joints and Connections</li> <li>g. Valves</li> <li>h. Location of Outlets</li> </ul>			10
<ul> <li>d. Direction Changes</li> <li>e. Concealed Locations</li> <li>f. Joints and Connections</li> <li>g. Valves</li> <li>h. Location of Outlets</li> </ul>			
<ul> <li>e. Concealed Locations</li> <li>f. Joints and Connections</li> <li>g. Valves</li> <li>h. Location of Outlets</li> </ul>			
<ul><li>f. Joints and Connections</li><li>g. Valves</li><li>h. Location of Outlets</li></ul>			
<ul><li>g. Valves</li><li>h. Location of Outlets</li></ul>			
h. Location of Outlets			
		3	
i. Drip Leg and Sediment Traps			
		i. Drip Leg and Sediment Traps	

	j.	Water Heaters and Other Appliances
	<b>k.</b>	Confined Spaces
	l.	Combustion Air
	m.	Chimneys and Vents
	n.	Permits and Inspections for Gas
	ο.	Cost Estimates for Gas
	р.	Outdoor Gas Supply Piping
	q.	Testing and Inspection of Gas Systems
	<b>r.</b>	Pipe Material Requirements
10.	Safety	
	a.	Responsibility for Providing 4
		Personal Protective Equipment
	b.	Excavation Safety
	с.	Employee Protection in Trenches and
		Excavations
	d.	Safety Training Requirements
	е.	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
		Workplace Illumination
	ι.	Scaffold Use in Accordance with Requirements
	<b>m.</b>	Requirements for Work Around Toxic Materials
	<b>n.</b>	Appropriate Material Cleanup and Disposal
	ο.	Material Safety Data Sheets (MSDS)
	р.	Handling and Storing Materials
1	<b>q.</b>	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.

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 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

https://www.osha.gov/lawsregs/regulations/standardnumber/1926

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

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#### RESIDENTIAL JOURNEYMAN PLUMBING AND NATURAL GAS

#### 85 Scored Items - 180 minutes - 75% Correct to Pass

Тор	oic Info	rmation #	f of Items
1.	Gener	al Plumbing Knowledge and	
	Regula	ations	10
	а.	Calculate Area and Volume	
	<b>b.</b>	General Code Requirements	
	с.	Plumbing Definitions	
	d.	Notches and Holes in Structural A	<b>Nembers</b>
		Test Systems	
		Water Column	
	g.	Pipe Offsets	
2.		g, Valves, and Control Valves	
	а.	Piping Connections	8
	b.	Cast Iron Piping	L
		Copper Piping and Tubing	
		Steel Piping	
		PVC, CPVC, Plastic and PEX Pipin	g
	f.	Valves	
3.	Fixtur	es and Equipment	<b></b>
	а.	Fixture Installation	8
	b.	Install Water Heaters	L
	с.	Requirements for Fixtures	
4.	Water	<sup>-</sup> Supply	
	a.	Water Supply and Distribution Lines	10
	<b>b.</b>	Protection of Potable Water Supp	oly
	6	Backflow	-

5.	Drains	and Sewers	
	а.	Drain and Sewer Pipe	10
		Building Sewers	
	с.	Sewer and Drain Cleanouts	
		DFUs	
		Drain and Water Piping	
6.	Vents		13
	а.	Vent Installation	15
	b.	Wet Venting	
7.		, Interceptors, Indirect, and	
		al Waste	5
	а.		
		Indirect Waste	
	с.	Traps	
8.	Isome	tric Analysis	
	а.	Isometric Drawings	7
9.	Fuel C	Gas	
	а.	Gas Piping Conduit	10
	<b>b.</b>	General Gas Piping and Valves	
	с.	Piping Supports and Hangars	
		Pipe Sizing	
	е.	Testing	
	f.	Installaion and Joining Gas Pipe	
	g.	Threads	
10.	Safety	/	
		Construction Activitites	4
	<b>b.</b>	Ladders	
1	1	Fall Arrest Systems	
	с.	Fall Arrest Systems	

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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, <u>www.iccsafe.org</u>, with Oklahoma Revisions found at <u>http://ok.gov/oubcc/Codes & Rules/Adopted Buildin</u> <u>g\_Codes</u>
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Code of Federal Regulations - 29 CFR Part 1926 Selections by PSI, with latest available amendments, 866-589-3088, <u>http://www.psionlinestore.com</u>

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

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#### RESIDENTIAL CONTRACTOR PLUMBING AND NATURAL GAS

85 Scored Items - 180 minutes - 75% Correct to Pass

o	oic Info	rmation	# of Items
	Gener	al Plumbing Knowledge and	
	Regula	ations	10
	h.	Calculate Area and Volume	
	i.	General Code Requirements	
	ј.	Plumbing Definitions	
		Notches and Holes in Structura	al Members
		Test Systems	
		Water Column	
	n.	Pipe Offsets	
	Piping	g, Valves, and Control Valves	
	g.	Piping Connections	8
		Cast Iron Piping	
		Copper Piping and Tubing	
	j.	Steel Piping	
	<b>k.</b>	PVC, CPVC, Plastic and PEX Pi	ping
	-	Valves	
•		es and Equipment	
		Fixture Installation	8
		Install Water Heaters	
	f.	Requirements for Fixtures	
•		Supply	40
	d.	Water Supply and Distribution Lines	10
	е.	Protection of Potable Water Su	upply
	f.	Backflow	
	Drains	s and Sewers	10
	f.	Drain and Sewer Pipe	10
	g.	Building Sewers	

	h. i. j.		
6.		Vent Installation Wet Venting	13
7.	Specia d. e.	, <b>Interceptors, Indirect, and</b> al Waste Ejector Pumps Indirect Waste Traps	5
8.	lsome b.	<b>tric Analysis</b> Isometric Drawings	7
9.	k. l. m.	Gas Piping Conduit	10
10.	e.	Construction Activitites Ladders Fall Arrest Systems	4

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

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

Topic Information			# of	ltems	
1.	Biddi	ng and Estimating		10	
	а.	General Estimating		10	
	ь.	Bid			
2.	Proje	ct Management and Supervision			
	а.	General Project Oversight		7	
	<b>b.</b>	Oversee Budget			
	с.	Oversee Quality Control			
	<b>d</b> .	Oversee Materials Control			
	е.	Manage Jobsite Safety			
	f.				
	g.	Potentially Hazardous Materials			
	h.	Environmental Protection			
	i.	Submittals and Reports			
	j.	Ethics			
	<b>k.</b>	Liens			
3.	Contr	Contracts			
	а.	Terminology		5	
	<b>b.</b>	Required Elements/Components			
		Contract Types			
		Change Orders			
		Standardized Documents			
	f.	Interpretation			
	g.	Warranties			
		Documents/Inclusions			
	i.	Other Obligations			
4.	Finan	cial			
	а.	Business Organization		8	
		Characteristics, Advantages, an	d		
		Disadvantages			
	ь.				
	с.	Accounting Method			

	d.	Cash Flow Terminology
	е.	Accounts Receivable
	f.	
		Balance Sheet
	h.	Income Statement
	i.	Taxes on Company Income
	j.	Obtaining Financing
		Checking Account
	l. –	Financial Ratios
5.	Labor	and Personnel
	а.	ADA 5
	<b>b.</b>	Labor Standards
	с.	Requirements for Non-citizens and/or Non-
		residents
	d.	Workers' Compensation
	е.	Federal or State OSHA
	f.	New Hires
	g.	Personnel Record Keeping
	h.	Other Requirements
6.	Risk M	anagement
	а.	Insurance 4
	<b>b.</b>	Bonds
7. Payroll and Payroll Taxes		l and Payroll Taxes 5
	а.	Taxes
	b.	Forms and Due Dates
8.	Licens	ing Requirements
	а.	Required Insurance/Bonds 6
	<b>b</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 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, <u>www.ok.gov/cib</u>
- 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, <u>www.ok.gov/cib</u> 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, <u>www.nascla.org</u>

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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	
5.	and Sheet Metal Flashing	9
4.	Moisture and Energy Control	6
5.	Repairs and Reroofing	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), <u>www.smacna.org/store</u>
- International Building Code, 2018, International Code Council, (800) 786-4452, <u>www.iccsafe.org</u> with Oklahoma Revisions <u>http://ok.gov/oubcc/Codes\_&\_Rules/Adopted\_Buildin</u> g\_Codes/
- NRCA Roofing Manual: Membrane Roofing Systems, 2023, The National Roofing Contractors Association, (866) 275-6722, <u>www.nrca.net</u>
- 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, <u>www.nrca.net</u>
- Code of Federal Regulations 29 CFR Part 1926 (OSHA), with latest available amendments, Candidates can access the Government website with this link <u>https://www.osha.gov/laws-</u> regs/regulations/standardnumber/1926

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