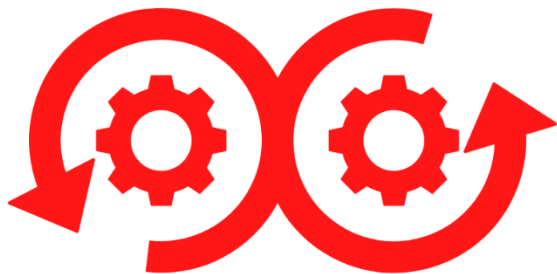
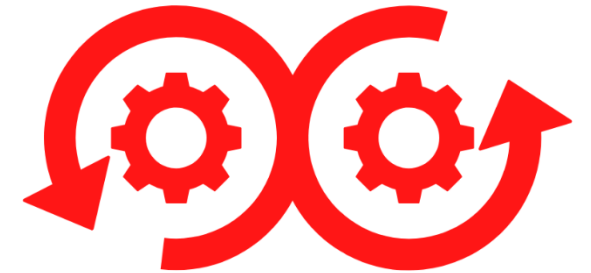


# Certified Jenkins Engineer

## Prep sheet

V1.1 - 7-2020





## Certified Jenkins Engineer

Exam prep sheet by Ammett

v1.1 - 7.2020

### Recommended training

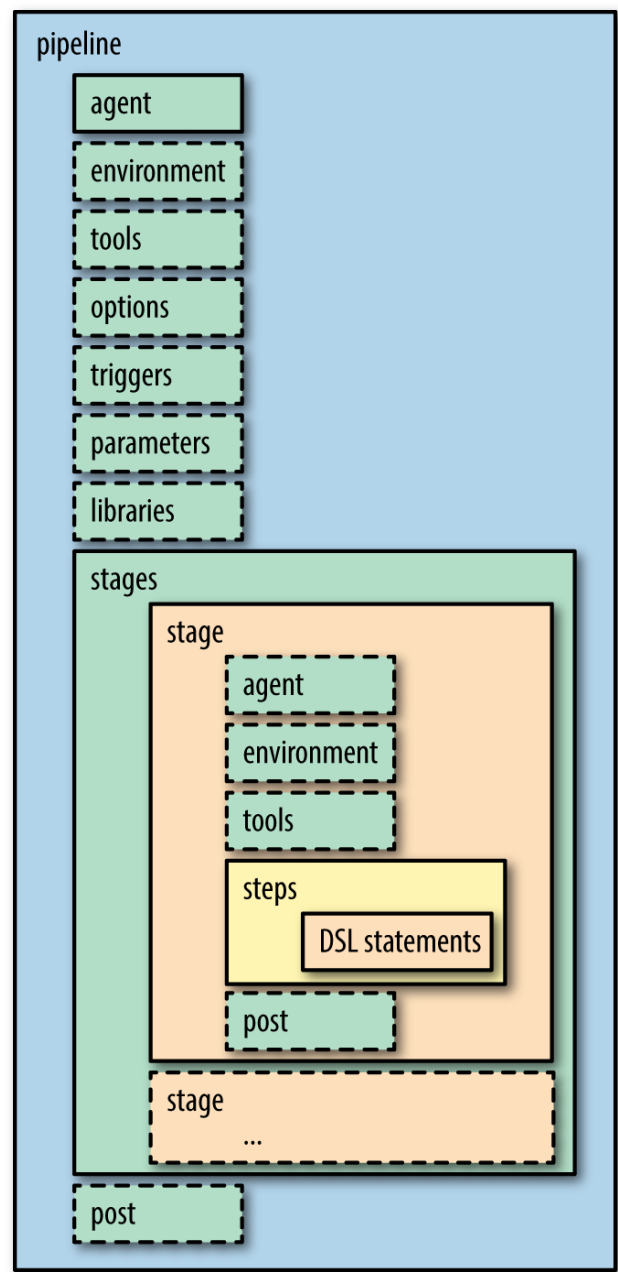
1) CloudBees University

2) CJE prep Course

Installation Wizard	Master URL	Manage Jenkins Page	Plugins	Folders	Jobs	EXAM
<p><b>What it is</b></p> <p>This is a GUI you get when installing Jenkins using one of the recommended methods</p>	<p><b>What it is</b></p> <p>This is the name for your master Jenkins server</p>	<p><b>What it is</b></p> <p>Allows you to configure settings on your server</p>	<p><b>What it is</b></p> <p>Tools that add value to Jenkins experience an add functionality</p>	<p><b>What it is</b></p> <p>This plugin allows users to create "folders" to organize jobs</p>	<p><b>What it is</b></p> <p>They all refer to runnable tasks that are controlled / monitored by Jenkins.</p>	<p><b>Review documents</b></p> <p><a href="#">Installing Jenkins</a></p> <p><a href="#">Folders</a></p> <p><a href="#">Best practices</a></p> <p><a href="#">Video</a></p> <p><a href="#">Most out of Jenkins</a></p> <p><b>My experience</b></p> <p>All these topics are valid and will present themselves in the exam. They are basic so play around in UI and get acquainted.</p>
<p><b>What you must know</b></p> <ul style="list-style-type: none"><li>• How to install</li><li>• Post-Install setup wizard</li><li>• Plugins(suggested or select)</li><li>• Unlocking Jenkins</li><li>• Default location of admin password</li></ul>	<p><b>What you must know</b></p> <ul style="list-style-type: none"><li>• Default <code>http://localhost:8080/</code></li><li>• Convention is <code>http://yourhost.yourdomain/jenkins/</code></li></ul>	<p><b>What you must know</b></p> <ul style="list-style-type: none"><li>• How to navigate to it.</li><li>• What options can you configure in this area</li></ul>	<p><b>What you must know</b></p> <ul style="list-style-type: none"><li>• Option to setup</li><li>• How to Downgrade</li><li>• Locate plugins (see your plugins)</li><li>• Options in first setup</li><li>• Install with a proxy</li></ul>	<p><b>What you must know</b></p> <ul style="list-style-type: none"><li>• How to create</li><li>• What can be defines</li><li>• What can be limited</li><li>• Organization folders (Github Organisations)</li></ul>	<p><b>What you must know</b></p> <ul style="list-style-type: none"><li>• How to create jobs</li></ul>	
<p><b>Key Points</b></p> <p>You should be familiar with installing and default task and options</p>	<p><b>Key Points</b></p> <p>Know the default and how you can name you own server</p>	<p><b>Key Points</b></p> <p>Straight forward and basic</p>	<p><b>Key Points</b></p> <p>Spend some time exploring an experimenting with these a lot of variation in the questions</p>	<p><b>Key Points</b></p> <ul style="list-style-type: none"><li>• Credentials, views, jobs, shared libraries</li></ul>		
Free Style Jobs	Pipeline jobs	Build	Build Triggers	Stage	Parameter	EXAM
<p><b>What it is</b></p> <p>Freestyle build jobs are general-purpose build jobs, which provides maximum flexibility. It can be used for any type of project.</p>	<p><b>What it is</b></p> <p>Jenkins Pipeline (or simply "Pipeline" with a capital "P") is a suite of plugins, which supports implementing and integrating <i>continuous delivery pipelines</i> into Jenkins.</p>	<p><b>What it is</b></p> <p>Result of one run of a Project. Typically, this stage of the Pipeline will be where source code is assembled, compiled, or packaged.</p>	<p><b>What it is</b></p> <p>Triggers define what causes a jenkins job to start building. A criteria for triggering a new Pipeline run or Build.</p>	<p><b>What it is</b></p> <p>A stage block defines a conceptually distinct subset of tasks performed through the entire Pipeline</p>	<p><b>What it is</b></p> <p>Build parameters can be used to store configuration options or data that should not live in source code</p>	<p><b>Review documents</b></p> <p><a href="#">Getting started with pipelines</a></p> <p><a href="#">Define parameters</a></p> <p><b>My experience</b></p> <p><b>You will get question of Jobs, pipeline, triggers and parameters. Be familiar if you can't figure these out don't do the exam.</b></p>
<p><b>What you should know</b></p> <ul style="list-style-type: none"><li>• No additional plugins necessary</li><li>• The section UI what you can do (e.g to run batch and shell commands)</li></ul>	<p><b>What you should know</b></p> <ul style="list-style-type: none"><li>• Types of pipeline</li><li>• DSL</li><li>• How to setup</li><li>• Pipelines support these: Code, Durable, Pausable, versatile, Extensible</li></ul>	<p><b>What you should know</b></p> <ul style="list-style-type: none"><li>• How to setup</li><li>• Build types (stable, unstable)</li><li>• Where does builds take place (directory)</li><li>• Building public cloud advantages</li></ul>	<p><b>What you should know</b></p> <ul style="list-style-type: none"><li>• What is a trigger</li><li>• How to configure downstream builds and trigger the options</li></ul>	<p><b>What you should know</b></p> <ul style="list-style-type: none"><li>• Know what it is</li><li>• Learn to read stage format</li></ul>	<p><b>What you should know</b></p> <ul style="list-style-type: none"><li>• How to configure in GUI</li><li>• How to configure CLI (-p Key)</li><li>• In DSL can be applied at pipeline block or each stage</li></ul>	
	<p><b>Key Points</b></p> <p><b>Read Pipeline Best Practices</b></p> <p>-Advantages of pipelines over Freestyle</p>	<p><b>Parameterized builds</b></p>			<p><b>Key Points</b></p> <p>1- How it works and benefits</p> <p>2- Parameter with no default value behaviour</p>	

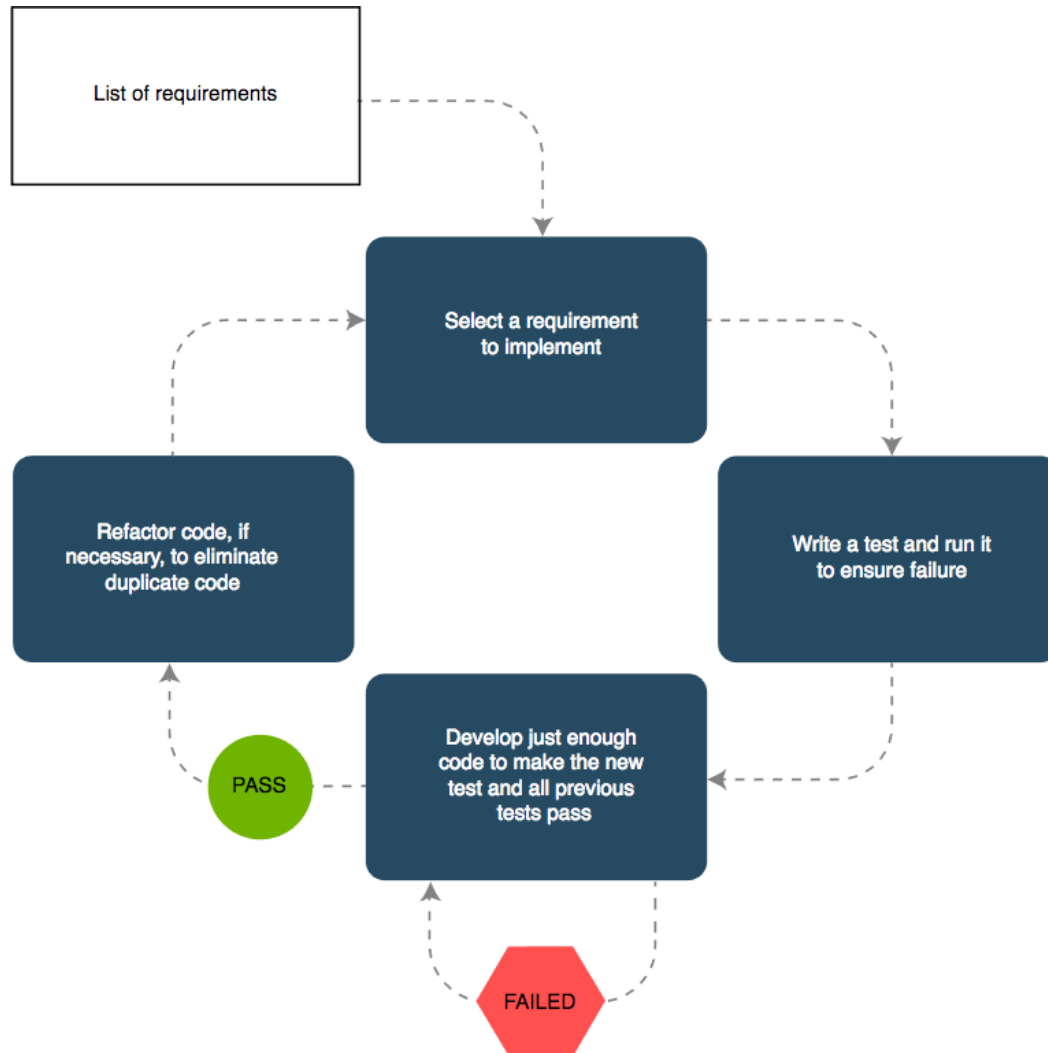
CI Continuous Integration	CD Continuous Delivery	CDE Continuous Deployment	Artifact	Fingerprints	Binary reuse	EXAM
<b>What it is</b> Allow developer to continual commit	<b>What it is</b> The ability to delay jobs at any time.	<b>What it is</b> Allows automatic deployment to production	<b>What it is</b> An immutable file generated during a Build or Pipeline run which is archived onto the Jenkins Master for later retrieval by users.	<b>What it is</b> Jenkins supports <b>file fingerprinting</b> to track dependencies.	<b>What it is</b> Basically reusing an artifact across a pipeline	<b>Review documents</b> <a href="#">Fingerprints</a> <a href="#">archiveArtifacts</a> <a href="#">Copy Artifacts</a>  <b>Video</b> <a href="#">Versioning Build Artifacts</a>  <b>My experience</b> You should know the differences between CI, CD, CDE, building, storing, tracking, controlling artifacts will pick you up a point of 4.
<b>What you must know</b> <ul style="list-style-type: none"><li>• What it is</li><li>• Difference from Continuous Delivery</li><li>• Difference from Continuous Deployment</li><li>• Best practices</li></ul>	<b>What you must know</b> <ul style="list-style-type: none"><li>• Difference from Continuous Integration</li><li>• Difference from Continuous Deployment</li><li>• Best practices</li></ul>	<b>What you must know</b> <ul style="list-style-type: none"><li>• What it is</li><li>• Difference from Continuous Integration</li><li>• Difference from Continuous Delivery</li></ul>	<b>What you must know</b> <ul style="list-style-type: none"><li>• How to influence number</li><li>• Know where they are save by default</li><li>• Best way to store artifacts</li><li>• archiveArtifacts() arguments</li></ul>	<b>What you must know</b> <ul style="list-style-type: none"><li>• What they do and purpose (tracking etc)</li><li>• Where they are stored</li></ul>	<b>What you must know</b> <ul style="list-style-type: none"><li>• Same source</li><li>• Shorter time (don't have to rebuild the artifact)</li><li>• Control versions</li><li>• Know the benefits</li></ul>	
<b>Key Points</b> Fundamental have a clear idea in your mind what it is	<b>Key Points</b> Fundamental have a clear idea in your mind what it is	<b>Key Points</b> Fundamental have a clear idea in your mind what it is				
Declarative pipelines	When conditionals Declarative pipelines	Post section Declarative pipelines	Global Pipeline	Scripted Pipelines	Shared libraries	EXAM
<b>What it is</b> In Declarative Pipeline syntax, the pipeline block defines all the work done throughout your entire Pipeline.	<b>What it is</b> The when directive allows the Pipeline to determine whether the stage should be executed depending on the given condition. The when directive must contain at least one condition.	<b>What it is</b> The post section defines one or more additional steps that are run upon the completion of a Pipeline's.	<b>What it is</b> Sharable libraries available for any Pipeline jobs running on the system. These are trusted.	<b>What it is</b> In Scripted Pipeline syntax, one or more node blocks do the core work throughout the entire Pipeline	<b>What it is</b> A Shared Library is defined with a name, a source code retrieval method such as by SCM, and optionally a default version.	<a href="#">Main difference between jobs</a> <a href="#">Pipelines with plugins</a> <a href="#">Pipeline syntax</a> <a href="#">Shared Libraries</a> <b>Video</b> <a href="#">Declarative pipelines</a> <a href="#">Jenkins World DP</a>
<b>What you should know</b> <ul style="list-style-type: none"><li>• DSL,</li><li>• Difference between declarative and scripted (important)</li><li>• pipeline {     } }</li></ul>	<b>What you should know</b> <ul style="list-style-type: none"><li>• What it does</li><li>• The built-in conditions (branch, not, expression, changeset, buildingTag, changelog, etc)</li></ul>	<b>What you should know</b> <ul style="list-style-type: none"><li>• Know the conditions (always, changed, fixed, success, unstable, etc)</li><li>• Know the key factors</li></ul>	<b>What you should know</b> <ul style="list-style-type: none"><li>• How to setup (Manage Jenkins, Configure System option)</li><li>• Where can script be saved(git, github, subversion and legacy SCM)</li><li>• @Library('my-shared-library@1.0')</li></ul>	<b>What you should know</b> <ul style="list-style-type: none"><li>• Difference between scripted and declarative</li><li>• Written in a limited form of groovy</li></ul>	<b>What you should know</b> <ul style="list-style-type: none"><li>• Know the benefits</li><li>• Where it can be shared (Global, folder, Automatic)</li><li>• Folder SL are not trusted</li></ul>	
<b>Know recommended practices</b> <b>Key Points</b> - Learn everything about these important for exam	<b>Key Points</b> <a href="#">Read for when</a>	<b>Key Points</b> <a href="#">Post section conditions</a>				

From Jenkins 2: Up and running Declarative Pipelines structure



Replaceable build nodes	Gradle Continuous Delivery	ANT Continuous Deployment	Maven	Groovy	Notification	EXAM
<b>What it is</b> Node that can be replaced or rebuild	<b>What it is</b> Gradle is an open-source build automation tool focused on flexibility and performance. Gradle build scripts are written using a <a href="#">Groovy</a> or <a href="#">Kotlin</a> DSL	<b>What it is</b> Ant is a Java library and command-line tool whose mission is to drive processes described in build files as targets and extension points dependent upon each other.	<b>What it is</b> Maven is a software project management and comprehension tool. Maven can manage a project's build.	<b>What it is</b> Groovy is a <b>powerful, optionally typed</b> and <b>dynamic</b> language	<b>What it is</b> Alerts sent based on various actions completed.	<b>Review documents</b> <a href="#">Architecting for scale</a>  <b>Video</b> <a href="#">Configure email in Jenkins</a>  <b>My experience</b> Notifications can come in a variety of way so get some good practice on options. Understand scaling and build nodes.
<b>What you must know</b> <ul style="list-style-type: none"><li>• Note the benefits</li><li>• How they assist the master</li><li>• Configuration options</li><li>• Fungible agents</li></ul>		<b>What you must know</b> <ul style="list-style-type: none"><li>• Know it's linkage to Jenkins</li></ul>	<b>What you must know</b> <ul style="list-style-type: none"><li>• Know it's linkage to Jenkins</li></ul>	<b>What you must know</b> <ul style="list-style-type: none"><li>• Syntax relative to DSL pipeline etc</li></ul>	<b>What you must know</b> <ul style="list-style-type: none"><li>• Know where to go to set up</li><li>• Know action (Alert developer who broke, everyone)</li><li>• How to Configure server to send email notifications</li></ul>	
					<b>Key Points</b> How to set up email notification and other types. Try a few configurations	
TDD Test driven Deployment	GIT Integrations	Master	SCM	Agent	Kibana	EXAM
<b>What it is</b> Test-Driven Development (TDD) is a technique for building software that guides software development by writing tests.	<b>What it is</b> The git plugin provides fundamental git operations for Jenkins projects. It can poll, fetch, checkout, branch, list, merge, tag, and push repositories.	<b>What it is</b> The central, coordinating process which stores configuration, loads plugins, and renders the various user interfaces for Jenkins	<b>What it is</b> Source code management (SCM) is used to track modifications to a source code repository.	<b>What it is</b> Declarative Pipeline-specific syntax that instructs Jenkins to allocate an executor (on a node) and workspace for the entire Pipeline	<b>What it is</b> <b>Kibana</b> is an open source data visualization dashboard for <a href="#">Elasticsearch</a> . It provides visualization capabilities on top of the content indexed on an Elasticsearch cluster.	<b>Scaling</b> <a href="#">Git Hub Demo</a>  <b>My experience</b> <b>Know the master setup</b> , optimization, security and hardware as you will get a question on it. SCM (Git, GITHUB etc) understand the integration these questions can be tricky.
<b>What you should know</b> <ul style="list-style-type: none"><li>• Know what is TTD</li><li>• Know the steps in order</li></ul>	<b>What you should know</b> <ul style="list-style-type: none"><li>• Integration</li><li>• Options available</li><li>• Syntax</li><li>• GitHub organizations</li></ul>	<b>What you should know</b> <ul style="list-style-type: none"><li>• Security implication</li><li>• Impact on performance design for high availability</li><li>• Share load source/destination checks</li><li>• Minimum requirements</li><li>• Calculate concurrent builds</li></ul>	<b>What you should know</b> <ul style="list-style-type: none"><li>• What it is</li><li>• How to use it</li><li>• Integration options</li><li>• How does it notify other system (webhook)</li><li>• Know different types of tools (git, github, gitlabs, <a href="#">Subversion</a>, <a href="#">perforce</a>)</li></ul>	<b>What you should know</b> <ul style="list-style-type: none"><li>• <b>Syntax in DSL</b></li><li>• What it is</li><li>• What it does</li><li>• Agent directives (any, none, label, node, docker, dockerfile, Kubernetes)</li></ul>	<b>What you should know</b> <ul style="list-style-type: none"><li>• <b>General awareness</b></li></ul>	
	<b>Key Points</b> <a href="#">GIT plugin must read</a>	<b>Key Points</b> <a href="#">Read -Security implications-</a>  <a href="#">-Hardware-</a>	<b>Key Points</b> This is important how to integrate and how it updates and alerts	<b>Key Points</b> <a href="#">Read agent directives</a>		

## TDD Model



E-mail Notification

X ?

Recipients

abc@mail.com

Whitespace-separated list of recipient addresses. May reference build parameters like \$PARAM. E-mail will be sent when a build fails, becomes unstable or returns to stable.

☒ Send e-mail for every unstable build

☐ Send separate e-mails to individuals who broke the build

?

Add post-build action ▼

Save

Apply

General

Source Code Management

Build Triggers

Build Environment

Build

Post-build Actions

Add Branch

Repository browser

(Auto)

?

Additional Behaviours

☐ Multiple SCMs

Build Triggers

☐ Build after other project builds

☐ Build periodically

☐ Build when another project builds

☐ Poll SCM

(Auto)

AssemblaWeb

FishEye

Kiln

Microsoft Team Foundation Server/Visual Studio Team Services

bitbucketweb

cgit

gitblit

githubweb

?

?

?



Non distributed build security	Junit Continuous Delivery	xUnit Continuous Deployment	Indicators	Input step	Secrets	EXAM
<b>What it is</b> Non distributed build architecture all is run on the master	<b>What it is</b> This provides a publisher that consumes XML test reports generated during the builds. It provides some graphical visualization of the historical test.	<b>What it is</b> xUnit plugin is a viable alternative that supports JUnit and many other test result file formats	<b>What it is</b> Give you various messages in a graphical format	<b>What it is</b> This step pauses Pipeline execution and allows the user to interact and control the flow of the build.	<b>What it is</b> Secrets refer to authentication credentials like passwords, API keys, tokens	<b>Review documents</b> <a href="#">xUnit-pg 36</a> <a href="#">Using credentials input step</a>  <b>My experience</b> These topics are represented on the exam. Junit and xUnit are similar. Building on the master only is not recommended in production. Input may be necessary in some builds, know your UI indicator meanings.
<b>What you must know</b> <ul style="list-style-type: none"><li>What is the security concern</li><li>What factors affect performance</li></ul>	<b>What you must know</b> <ul style="list-style-type: none"><li>Hot to configure (important)</li><li>What it reports</li></ul>	<b>What you must know</b> <ul style="list-style-type: none"><li>Alternative to Junit</li><li>functionality</li></ul>	<b>What you must know</b> <ul style="list-style-type: none"><li>Meaning of indicators</li><li>How are they</li></ul>	<b>What you must know</b> <ul style="list-style-type: none"><li>How it works</li><li>How to configure</li><li>Valid input steps</li></ul>	<b>What you must know</b> <ul style="list-style-type: none"><li>How to manage secrets</li><li>Pass credentials</li></ul>	
<b>Read Implications</b>			<b>Key Points</b> Be familiar with them (cloudy, sunny, partial)	<b>Key Points</b> <a href="#">Read input steps</a>	<a href="#">Read Storing secrets</a>  <a href="#">Read Credentials</a>	
Security advisories	Manage access	Disable SetWizard	Test masters Test Instances	HTTP Proxy	Acceptance test	EXAM
<b>What it is</b> A security advisory is a public announcement with information about security issues, including workarounds and fixes	<b>What it is</b> Section in Jenkins for managing user etc	<b>What it is</b> Can be used for automated deployments.	<b>What it is</b> A test master is a Jenkins master used solely for testing configurations and plugins in a non-production environment.	<b>What it is</b> An HTTP Proxy serves two intermediary roles as an HTTP Client and an HTTP Server for security, management, and caching functionality	<b>What it is</b> Is a test conducted to determine if the requirements of a specification or contract are met	<b>Test instances</b> <a href="#">Disable Setup Wizard</a>  <b>My experience</b> Security questions will be featured. Please get familiar with various security functionality and how it is handled/configured in Jenkins.
<b>What you should know</b> <ul style="list-style-type: none"><li>Where there available</li><li>How are the announced</li><li>Public google group <a href="#">jenkinssci-advisories</a></li></ul>	<b>What you should know</b> <ul style="list-style-type: none"><li>Where it located</li><li>What actions can be done in the area</li></ul>	<b>What you should know</b> <ul style="list-style-type: none"><li>jenkins.install.runSetupWizard</li><li>How it works</li><li>What it does and doesn't do</li></ul>	<b>What you should know</b> <ul style="list-style-type: none"><li>What it does</li><li>Discovered problem with upgrades</li><li>Doesn't break you environment</li></ul>	<b>What you should know</b> <ul style="list-style-type: none"><li>How to configure HTTP proxy</li><li>How HTTP proxy work</li></ul>	<b>What you should know</b> <ul style="list-style-type: none"><li>Know what they are used for</li></ul>	
<b>Key Points</b> <a href="#">Read security</a>		<b>Key Points</b> 1- What are the implications on the master	<b>Key Points</b> If you log into an instance you won't see the public IP (these can change)	<b>Key Points</b> <a href="#">Configure HTTP proxy</a>		

Unit test	Intergration test	Functional testing	Manage Users	Metrics plugin	Node	EXAM
<b>What it is</b> unit testing is a software testing method by which individual units of source code,	<b>What it is</b> This is the phase in software testing in which individual software modules are combined and tested as a group	<b>What it is</b> Functional testing usually describes <i>what</i> the system does	<b>What it is</b> Users have to be managed by administrators. There are several ways to do this.	<b>What it is</b> Metrics provides a powerful toolkit of ways to measure the behaviour of critical components <b>in your production environment.</b>	<b>What it is</b> A node is a machine which is part of the Jenkins environment and is capable of executing a Pipeline	<b>Video</b> <b>RBAC</b>  <b>My experience</b> These are simple part of Jenkins that you should be aware of since they may have basic questions on them.
<b>What you must know</b> <ul style="list-style-type: none"><li>Know what they are used for</li></ul>	<b>What you must know</b> <ul style="list-style-type: none"><li>Know what they are used for</li></ul>	<b>What you must know</b> <ul style="list-style-type: none"><li>Know what they are used for</li></ul>	<b>What you must know</b> <ul style="list-style-type: none"><li>Know various ways to manager users</li><li>Know RBAC</li></ul>	<b>What you must know</b> <ul style="list-style-type: none"><li>What it does</li><li>Types of metrics gauge, counter, meter, histogram, timer</li></ul>	<b>What you must know</b> <ul style="list-style-type: none"><li>What it is</li><li>It's importance in Scripted pipelines</li><li>Can be detached and reused</li></ul>	
<b>Key Points</b> Memorise all the test types			<b>Read</b> - RBAC	<b>Key Points</b> Metric plugin read		
Step	Unstable build	Stable build	Project based Security	Using ssh to launch an agent		EXAM
<b>What it is</b> A single task. This is fundamentally, a step tells Jenkins <i>what</i> to do at a particular point in time	<b>What it is</b> A build is unstable if it was built successfully and one or more publishers report it unstable.	<b>What it is</b> A build is stable if it was built successfully and no publisher reports it as unstable	<b>What it is</b> Project-based security lets you build on the matrix-based security model we just discussed, and apply it to individual projects.	<b>What it is</b> Configuring an agent to use the SSH connector is the preferred and the most stable way to establish master-agent communication. Jenkins has a built-in SSH client implementation.		<b>My experience</b> These may be a bit tricky but shouldn't be over looked in your preparation either.
<b>What you should know</b> <ul style="list-style-type: none"><li>What a step does</li></ul>	<b>What you should know</b> <ul style="list-style-type: none"><li>Be familiar with what they are</li></ul>	<b>What you should know</b> <ul style="list-style-type: none"><li>Be familiar with what they are</li></ul>	<b>What you should know</b> <ul style="list-style-type: none"><li>How it works</li><li>How to configure</li><li>Control user access on project</li><li>Do not inherit permission (issues)</li></ul>	<b>What you should know</b> <ul style="list-style-type: none"><li>the public key of the master is part of the set of the authorized keys on the agent</li><li>Once the host and SSH key is defined for a new agent Know the different methods</li></ul>		
			<b>Read</b> Managing security	<b>Read-</b> Configure Master /agent communication		



Approximate Weight of Each Section for CJE and CCJE			
Section Title	# Questions	CJE	CCJE
Jenkins Fundamentals	10	17%	11%
Jenkins Administration	25	42%	28%
Jenkins Build Technologies: Pipeline	18	30%	20%
Jenkins Build Technologies: Freestyle	7	11%	7%
CloudBees Core Features (CCJE exam only)	30	N/A	34%
Total Number of Questions		60 (90 minutes)	90 (120 minutes)
Total		100%	100%
Total		100%	100%
Total Number of Questions		60 (90 minutes)	90 (120 minutes)
exam only)			
CloudBees Core Features (CCJE	30	N/A	34%
Freestyle			
Jenkins Build Technologies:	7	11%	7%
Administration			

Thanks for reviewing

Please visit the official certification outline [HERE](#)  
CloudBee University [HERE](#)

ps. These are my notes and tips that helped me pass the exam. I tried to keep them light and not too comprehensive. The requirements may change as technology evolves.

The knowledge is free it just cost me some time to put together. So please share with your network who may be interested in Jenkins.

Check out the Start Cloud Now platform with other guides [HERE](#)

Bonne Journée