LPI 117-201 Combination Fried Rice

LPI 201 Exam
178 + 6 more filling the blanks and 19 other more questionable Questions

Exam A are all multiple choice questions
Exam C are "Fill in the blank" type questions
Exams A and C are (as far as I can tell) relevant to the 201 exam and correct.

Exam B contains some questions that are to be taken with caution. They might be wrong and/or irrelevant to the 201 exam.

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2. 201.2 Compiling a kernel
3. 201.3 Patching a kernel
4. 201.4 Customize, build and install a custom kernel
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Exam A

QUESTION 1
What is the minimum number of disks required in a RAID5 array?

A. 1
B. 2
C. 3
D. 4
E. 5

Correct Answer: C
Section: 204.1 Configuring RAID
Explanation

Explanation/Reference:
See http://en.wikipedia.org/wiki/RAID

RAID 5: Block-level striping with distributed parity. Minimum 3 disks.

QUESTION 2
A server has three disks of 80GB each and must manage a database with 4 million records of 30KB each. The best configuration for this server, with the criteria being performance, configurability and flexibility, is:

A. Use just LVM
B. Use RAID1 over LVM
C. Use LVM over RAID5
D. Use LVM over RAID1
E. Use RAID5 over LVM

Correct Answer: C
Section: 204.3 Logical Volume Manager
Explanation

Explanation/Reference:
RAID1 would not be performance enhancing (Mirroring), as would the default LVM (linear). So use a RAID5 for redundancy and performance and use LVM for added configurability and flexibility

A striped LVM only would work too, I guess, if you need no redundancy at all.

QUESTION 3
The correct command sequence to create logical volumes on a Linux system is:

A. lvcreate, pvcreate, vgcreate, mount, mke2fs
B. pvcreate, vgcreate, lvcreate, mke2fs, mount
C. vgcreate, lvcreate, pvcreate, mount, mke2fs
D. mke2fs, pvcreate, vgcreate, lvcreate, mount
E. pvcreate, lvcreate, vgcreate, mount, mke2fs

Correct Answer: B
Section: 204.3 Logical Volume Manager
Explanation

Explanation/Reference:

See http://www.tldp.org/HOWTO/LVM-HOWTO/anatomy.html

You need to create the Physical Volumes first, then the Volume Group (consisting of PVs), then the Logical Volumes, which you need to format and mount.

QUESTION 4
What is the usable disk space of a RAID 5 array of five 18GB drives with one drive dedicated as a spare?

A. 18GB
B. 36GB
C. 54GB
D. 72GB
E. 90GB

Correct Answer: C
Section: 204.1 Configuring RAID
Explanation

Explanation/Reference:
See http://en.wikipedia.org/wiki/RAID

RAID5 capacity is available disks - 1. 5 disks - 1 - 1 spare = 3 disks. 3 x 18 = 54

QUESTION 5
You decide to use the logical volume manager (LVM) to manage four 4GB disk drives. After creating the volume group, how would you create a 10GB logical volume called big-app?

A. vgcreate -p 10g -n /dev/vg01/big-app
B. vgcreate -l 2560 /dev/vg01/big-app
C. mklvm -v 10240 -n /dev/vg01/big-app
D. lvcreate -v 10240 /dev/vg01/big-app
E. lvcreate -l 2560 vg01 -n big-app

Correct Answer: E
Section: 204.3 Logical Volume Manager
Explanation

Explanation/Reference:
From the man pages:
lvcreate - create a logical volume in an existing volume group
-l, --extents LogicalExtentsNumber[%{VG|PVS|FREE}]
   Gives the number of logical extents to allocate for the new logical volume. This can also be expressed as a percentage of the total space in the Volume Group with the suffix %VG, of the remaining free space in the Volume Group with the suffix %FREE, or of the remaining free space for the specified PhysicalVolume(s) with the suffix %PVS
-n, --name LogicalVolumeName
   The name for the new logical volume. Without this option a default names of "lvol#" will be generated where # is the LVM internal number of the logical volume.

QUESTION 6
What is the purpose of vgextend?

A. Extend a volume group's footprint on disk
B. Add physical volumes to a volume group
C. Increase the number of days between scheduled error checking

D. Create a volume group which uses all available space on disk

Correct Answer: B
Section: 204.3 Logical Volume Manager
Explanation

Explanation/Reference:
From the man pages:
   vgextend - add physical volumes to a volume group

QUESTION 7
Which RAID level provides the most redundancy?

A. RAID4
B. RAID5
C. RAID1
D. RAID0

Correct Answer: C
Section: 204.1 Configuring RAID
Explanation

Explanation/Reference:
See http://en.wikipedia.org/wiki/RAID

a,b) only 1 disk may fail, regardless how many disks are in the RAID
d) no disk may fail
c) n - 1 disks may fail

QUESTION 8
Which pseudo-file contains information on the status of software RAID devices?

A. /proc/raidstat
B. /proc/mdstatus
C. /proc/raidstatus
D. /proc/mdstat
E. /proc/raid/status

Correct Answer: D
Section: 204.1 Configuring RAID
Explanation

Explanation/Reference:
From the man pages:
/proc/mdstat If you're using the /proc filesystem, /proc/mdstat lists all active md devices with information about them. mdadm uses this to find arrays when --scan is given in Misc mode, and to monitor array reconstruction on Monitor mode.

QUESTION 9
What information does the file modules.dep provide?

A. A list of all modules available to the kernel.
B. A list of modules required by each module.
C. A list of devices and their module name.

D. A list of modules compiled for this kernel.

E. A list of modules the kernel needs to run.

Correct Answer: B
Section: 201.5 Manage/Query kernel at runtime
Explanation

Explanation/Reference:
From the man pages:

The modules.dep.bin as generated by module-init-tools depmod, lists the dependencies for every module in the directories under /lib/modules/version, where modules.dep.bin (or the human readable version modules. dep) is also located. It is used by utilities such as modprobe. The binary version will be used by default, if it was generated by a compatible version of depmod, with fallback to the generic modules.dep.
These files are not intended for editing or use by any additional utilities as their format is subject to change in the future. You should use the modinfo(8) command to obtain information about modules in a future proof and compatible fashion rather than touching these files.

QUESTION 10
Before compiling a new kernel, what needs to be done?

A. Compile kernel modules

B. Configure the kernel options

C. Delete old kernel sources

D. Change to runlevel 1

E. All of the above

Correct Answer: B
Section: 201.2 Compiling a kernel
Explanation

Explanation/Reference:
see http://www.faqs.org/docs/Linux-HOWTO/Kernel-HOWTO.html#impatient

QUESTION 11
On a system with separate partitions for /, /usr, /var, /tmp, which filesystem[s] can safely be mounted read-only?

A. /var, /usr

B. /var

C. /usr, /, /tmp

D. /usr

E. /tmp

Correct Answer: D
Section: 203.1 Operating the Linux filesystem
Explanation

Explanation/Reference:
/tmp and /var both need to be written to. /usr is the most static of the directories (excluding /usr/local)

QUESTION 12
Which of the following best describes the format of the /etc/fstab file?

A. mount point; device name; filesystem type; mount options; dump filesystem; fsck order

B. device name; mount point; filesystem type; mount options; dump filesystem; fsck order

C. mount point; filesystem type; device name; mount options; dump filesystem; fsck order

D. device name; mount point; mount options; filesystem type; dump filessystem; fsck order

E. device name; filesystem type; mount point; mount options; dump filesystem; fsck order

Correct Answer: B
Section: 203.1 Operating the Linux filesystem
Explanation

Explanation/Reference:
From the man pages:

The first field, (fs_spec), describes the block special device or remote filesystem to be mounted.
The second field, (fs_file), describes the mount point for the filesystem. For swap partitions, this field should be specified as `none'.
The third field, (fs_vfstype), describes the type of the filesystem.
The fourth field, (fs_mntops), describes the mount options associated with the filesystem.
The fifth field, (fs_freq), is used for these filesystems by the dump(8) command to determine which filesystems need to be dumped.
The sixth field, (fs_passno), is used by the fsck(8) program to determine the order in which filesystem checks are done at reboot time.

QUESTION 13
Which of the following is a valid location in the automount configuration, when a Windows share needs to be made available to the system?

A. \\server\sharename

B. ://server/sharename

C. server:/sharename

D. :server/sharename

E. \\\\server\\sharename

Correct Answer: B
Section: 203.4 udev Device Management
Explanation

Explanation/Reference:
From the man pages:

EXAMPLE
```
      kernel    -ro,soft,intr      ftp.kernel.org:/pub/linux
      boot      -fstype=ext2       :/dev/hda1
      windoze   -fstype=smbfs       ://windoze/c
      removable -fstype=ext2        :/dev/hdd
      cd        -fstype=iso9660,ro  :/dev/hdc
      floppy    -fstype=auto        :/dev/fd0
      server    -rw,hard,intr       / -ro myserver.me.org:/ \
                        /usr myserver.me.org:/usr \
                        /home myserver.me.org:/home
```

In the first line we have a NFS remote mount of the kernel directory on ftp.kernel.org. This is mounted read-only. The second line mounts an ext2 volume on a local ide drive. The third makes a share exported from a Windows machine available for automounting. The rest should be fairly self-explanatory. The last entry (the last three lines) is an example of a multi-map (see below).

QUESTION 14

What script is included with the kernel source to patch a kernel?

A. patch
B. patch-kernel
C. apply-patch
D. update-kernel

Correct Answer: B
Section: 201.3 Patching a kernel
Explanation

Explanation/Reference:
see http://book.opensourceproject.org.cn/distrib/ubuntu/unleashed/opensource/0672329093/ch35lev1sec6.
html

It is possible to patch a kernel to the newest Linux kernel version as opposed to downloading the entire source
code. This choice can be beneficial for those who are not using a high-speed broadband connection. (A typical
compressed kernel source file is nearly 30MB for a download time of about 10 minutes on a 512Kb DSL
connection; adjust accordingly for your connection.) Whether you are patching existing sources or
downloading the full source, the end results will be identical.

Patching the kernel is not a mindless task. It requires the user to retrieve all patches from her current version
to the version she wants to upgrade to. For example, if you are currently running 2.6.1 (and have those
sources) and want to upgrade to 2.6.8, you must retrieve the 2.6.2 and 2.6.3 patch sets, and so on. Once
downloaded, these patches must be applied in succession to upgrade to 2.6.8. This is more tedious than
downloading the entire source, but useful for those who keep up with kernel hacking and want to perform
incremental upgrades to keep their Linux kernel as up-to-date as possible.

To patch up to several versions in a single operation, you can use the patch-kernel script located in the kernel
source directory for the kernel version you currently use. This script applies all necessary version patches to
bring your kernel up to the latest version.

The format for using the patch-kernel script looks like this:

```
patch-kernel source_dir patch_dir stopversion
```

QUESTION 15
Which command would you use to apply a diff file to an original?

A. patch > diff-file
B. patch < diff-file
C. patch << diff-file
D. cat diff-file >> kernel
E. cat diff-file << kernel

Correct Answer: B
Section: 201.3 Patching a kernel
Explanation

Explanation/Reference:
from the man pages:

SYNOPSIS
```
    patch [options] [originalfile [patchfile]]
    but usually just
    patch -pnum < patchfile
```

QUESTION 16
One of the IDE hard drives in a server is transferring data very slowly. What command must be run to enable DMA on it?

A. hdparm -d /dev/hda

B. hdparm --dma /dev/hda

C. hdparm --dma /dev/hda1

D. hdparm -d /dev/hda1

E. hdparm -d1 /dev/hda

Correct Answer: E
Section: 204.2 Adjusting Storage Device Access
Explanation

Explanation/Reference:
hdparm provides a command line interface to various kernel interfaces supported by the Linux SATA/PATA/ SAS "libata" subsystem and the older IDE river subsystem. Many newer (2008 and later) USB drive enclosures now also support "SAT" (SCSI-ATA Command Translation) and therefore may also work with hdparm.   Eg. recent WD "Passport" models and recent NexStar-3 enclosures. Some options may work correctly only with the latest kernels.

-d   Disable/enable the "using_dma" flag for this drive. This option now works with most combinations of drives and PCI interfaces which support DMA and which are known to the kernel IDE driver. It is also a good idea to use the appropriate **-X option in combination with -d1** to ensure that the drive itself is programmed for the correct DMA mode, although most BIOSs should do this for you at boot time. Using DMA nearly always gives the best performance, with fast I/O throughput and low CPU usage.

QUESTION 17
What happens when the Linux kernel can't mount the root filesystem when booting?

A. An error message is shown, showing which device couldn't be mounted or informing that init couldn't be found.

B. An error message is shown and the system reboots after a keypress.

C. An error message is shown and the system boots in maintenance mode.

D. An error message is shown and the administrator is asked to specify a valid root filesystem to continue the boot process.

E. An error message is shown, stating that the corresponding kernel module couldn't be loaded.

Correct Answer: A
Section: 202.1 Customizing startup and boot processes
Explanation

Explanation/Reference:

QUESTION 18
You have written a little startup script (/usr/local/bin/startup.sh) that should automatically execute when entering runlevel 3. According to the standards, how can this best be achieved?

A. chmod 700 /usr/local/bin/startup.sh; cd/etc/init.d/rc3.d/; ln -s /user/local/bin/startup.sh

B. chmod 700 /usr/local/bin/startup.sh; cd/etc/init.d/rc3.d/; ln -s /usr/local/bin/startup.sh S99startup.sh

C. chmod 700 /usr/local/bin/startup.sh; cd/etc/init.d/rc3.d/; ln /user/local/bin/startup.sh

D. chmod 700 /usr/local/bin/startup.sh; cd/etc/init.d/rc3.d/; ln -s /user/local/bin/startup.sh /usr/locl/bin/startup. sh

E. chmod 700 /usr/local/bin/startup.sh; cp /user/local/bin/startup.sh /etc/init.d/rc3.d/S99Startup.sh

Correct Answer: B
Section: 202.1 Customizing startup and boot processes
Explanation

Explanation/Reference:
see http://www.linux-tutorial.info/modules.php?name=ManPage&sec=7&manpage=init.d

QUESTION 19
What command is used to create an ISO9660 filesystem that can be properly accessed from a Windows 95/98 machine?

A. mkisofs -l -o backup.iso /home/joe
B. mkisofs -J -T -r -o backup.iso /home/joe
C. mkisofs -D -T -o backup.iso /home/joe
D. mkisofs -j -T -o backup.iso /home/joe
E. mkisofs -d -T -o backup.iso /home/joe

Correct Answer: B
Section: 203.3 Creating and configuring filesystem options
Explanation

Explanation/Reference:
see http://linux.about.com/library/cmd/blcmdl8_mkisofs.htm

-J   Generate Joliet directory records in addition to regular iso9660 file names. This is primarily useful when the discs are to be used on Windows-NT or Windows-95 machines.
-T   Generate a file TRANS.TBL in each directory on the CDROM, which can be used on non-Rock Ridge capable systems to help establish the correct file names.
-o filename   is the name of the file to which the iso9660 filesystem image should be written.
----
actually you can leave the "-r" option, since you wouldn't need Rock Ridge on a Windows Machine.

QUESTION 20
In order to find all library dependencies of /usr/bin/foo, which of the following statement is true?

A. Running ldconfig against /usr/bin/foo will show the required libraries
B. Running ldd against /usr/bin/foo will show the required libraries
C. It's necessary to compile the program again to check the library dependencies of foo.
D. The ls -la command has to be run in the /usr/bin directory, to show all library dependencies of foo.
E. Library dependencies are shown in the /usr/lib directory.

Correct Answer: B
Section: 206.1 Make and install programs from source
Explanation

Explanation/Reference:
From the man pages:
ldd prints the shared libraries required by each program or shared library specified on the command line.

QUESTION 21
The user' quotas on the server were reduced from 200MB to 100MB. Besides sending emails to all users, it was requested that a message should communicate the change every time a user access the server. Which of the following is the correct method to configure this?

A. Put the message text in the /etc/login-message file
B. Put the message text in the /etc/motd file
C. Put the message text in the /etc/default/login file.
D. Put the message text in the /etc/passwd file, after all users entries.
E. There is no way to do this because the administrator has no permission to change the .bash_profile file for each user.

Correct Answer: B
Section: 205.4 Notify users on system-related issues
Explanation

Explanation/Reference:
From the man pages

The contents of /etc/motd are displayed by login(1) after a successful login but just before it executes the login shell.

This message of course is not shown on GUIs!

QUESTION 22
A GRUB boot loader installed in the MBR was accidentally overwritten. After booting with a rescue CD-ROM, how can the lost GRUB first stage loader be recovered?

A. Use dd to restore a previous backup of the MBR
B. Install LILO since there is no easy way to recover GRUB
C. Running mformat will create a new MBR and fix GRUB using info from grub.conf
D. Run grub-install after verifying that grub.conf is correct.
E. Run fdisk --mbr /dev/had assuming that the boot harddisk is /dev/hda.

Correct Answer: D
Section: 202.2 System recovery
Explanation

Explanation/Reference:
From the man pages:
grub-install copies GRUB images into /boot/grub (or /grub on NetBSD and OpenBSD), and uses grub-setup to install grub into the boot sector.

QUESTION 23
Why is the root file system mounted read-only during boot and remounted with write permission later on?

A. Because if problems with the root file system are detected during the boot, fsck can be run, without risk of damage.
B. Because this way crackers cannot collect information about root with boot sniffers
C. To avoid writing to the disk, unless the root password is known.
D. To avoid other operating systems overwriting the Linux root partition
E. Because the disk has its own write protection that cannot change by the operating system.

Correct Answer: A
Section: 202.1 Customizing startup and boot processes
Explanation

Explanation/Reference:

QUESTION 24
Following the instructions contained in the README file of an application, the make command was executed but the following message was displayed on the screen:

make: *** No targets specified and no makefile found. Stop.

Which are the TWO possible causes for this problem?

A. The make command is being executed in the wrong location.
B. The user has no write permission to the Makefile, so he cannot execute the make command correctly.
C. The make command was executed in the right place but the command to generate the Makefile was not properly executed.
D. The make command is not installed in the system.
E. The development libraries needed by make are not installed on the system.

Correct Answer: AC
Section: 206.1 Make and install programs from source
Explanation

Explanation/Reference:

QUESTION 25
It is possible to configure kernel parameters at runtime (e.g. the maximum size of the shared memory segment (shmmax)). In which TWO ways can this be changed to 2GB (2147483648 Bytes) on a running system?

A. Edit /etc/shmmax and set the parameter to 2147483648.
B. sysctl shmmax=2147483648.
C. sysctl kernel.shmmax=2147483648
D. echo 2147483648 > /proc/sys/kernel/shmmax
E. export kernel.shmmax=2147483648

Correct Answer: CD
Section: 201.5 Manage/Query kernel at runtime
Explanation

Explanation/Reference:

QUESTION 26
To make a system backup, the simplest and fastest way is to use the tar command. Select the correct alternative below that shows the three tar parameters that create, list and expand a tar file respectively.

A. --create --list --extract
B. --compose --list --expand
C. -c -t -e
D. -c -l -x

Correct Answer: A
Section: 206.2 Backup operations
Explanation

Explanation/Reference:
From the man pages:

-c, --create   create a new archive
-t, --list   list the contents of an archive
-x, --extract, --get   extract files from an archive

QUESTION 27
A Linux machine freezes during boot. To boot directly to a shell prompt so that editing of files and manual starting of services is possible which command line must be passed to the kernel for the boot process?

A. init=/bin/bash
B. 1
C. runlevel=1
D. sh
E. /bin/sh

Correct Answer: A
Section: 202.2 System recovery
Explanation

Explanation/Reference:
see http://en.wikipedia.org/wiki/Init#Skipping_init

In Linux systems, with most modern bootloaders (such as LILO or GRUB), users can change which process the kernel spawns at the end of its initialization from the normal default of /sbin/init. This is generally done by typing init=/foo/bar at the bootloader's prompt. Appending init=/bin/bash, for example, will bring up a single root shell, without a password.

QUESTION 28
Which ONE of the following wireless tools can be used to check the wireless network link quality?

A. iwconfig
B. iwlink
C. iwscan
D. iwifi

Correct Answer: A
Section: 205.1 Basic networking configuration
Explanation

Explanation/Reference:
see http://en.wikipedia.org/wiki/Wireless_tools_for_Linux

QUESTION 29
A network client has an ethernet interface configured with an IP address in the subnet 192.168.0.0/24. This subnet has a router, with the IP address 192.168.0.1, that connects this subnet to the Internet. What needs to be done on the client to enable it to use the router as its default gateway?

A. Run route add default gw 192.168.0.1 eth1.
B. Run route add gw 192.168.0.1 eth1.
C. Run ifconfig eth0 defaultroute 192.168.0.1.
D. Add "defaultroute 192.168.0.1" to /etc/resolv.conf.
E. Run route add defaultgw=192.168.0.1 if=eth0.

Correct Answer: A
Section: 205.1 Basic networking configuration
Explanation

Explanation/Reference:
From the man pages:

route add default gw mango-gw
adds a default route (which will be used if no other route matches). All packets using this route will be gatewayed through "mango-gw". The device which will actually be used for that route depends on how we can reach "mango-gw" - the static route to "mango-gw" will have to be set up before.

QUESTION 30
What is the command to add another IP address to an interface that already has (at least) one IP address?

A. ifconfig eth0:1 192.168.1.2
B. ifconfig eth0 192.168.1.2
C. ipconfig eth0:1 192.168.1.2
D. ipconfig eth0 192.168.1.2
E. ifconfig eth0:sub1 192.168.1.2

Correct Answer: AE
Section: 205.1 Basic networking configuration
Explanation

Explanation/Reference:
From the man pages:
ifconfig - configure a network interface

The interface is usually a driver name followed by a unit number, for example eth0 for the first Ethernet interface. If your kernel supports alias interfaces, you can specify them with eth0:0 for the first alias of eth0. You can use them to assign a second address.

QUESTION 31
Which of these tools can provide the most information about DNS queries?

A. dig
B. nslookup
C. host
D. named-checkconf
E. named-checkzone

Correct Answer: A
Section: 205.3 Troubleshooting network issues
Explanation

Explanation/Reference:
dig - DNS lookup utility
nslookup - query Internet name servers interactively
host - DNS lookup utility
named-checkconf - named configuration file syntax checking tool
named-checkzone - zone file validity checking tool

QUESTION 32

What command must be used to create an ext3 file-system?

A. mkext3fs
B. mkjfs
C. mke3fs
D. mke2fs
E. mkext2fs

Correct Answer: D
Section: 203.1 Operating the Linux filesystem
Explanation

Explanation/Reference:
also: mkfs -t ext3 or mkfs.ext3
if you call mke2fs you actually need option -J to enable journalling otherwise ext2 will be used.

QUESTION 33
What needs to be done to enable 32 bit I/O transfer mode for (E)IDE disks, on a system running a 2.4 series
Linux kernel?

A. The Linux kernel must be recompiled.
B. The sysctl utility must be used.
C. The hdparm utility must be used.
D. This feature isn't supported in 2.4 series kernels.
E. This feature is enabled by default in 2.4 series kernels

Correct Answer: C
Section: 203.1 Operating the Linux filesystem
Explanation

Explanation/Reference:
Explanation:
hdparm provides a command line interface to various hard disk ioctls supported by the stock Linux ATA/IDE
device driver subsystem. Some options may work correctly only with the latest kernels.

-c   Query/enable (E)IDE 32-bit I/O support. A numeric parameter can be used to enable/disable 32-bit I/O
support: Currently supported values include 0 to disable 32-bit I/O support, 1 to enable 32-bit data
transfers, and 3 to enable 32-bit data transfers with a special sync sequence required by many chipsets. The
value 3 works with nearly all 32-bit IDE chipsets, but incurs slightly more overhead. Note that "32-bit"
refers to data transfers across a PCI or VLB bus to the interface card only; all (E)IDE drives still have only a
16-bit connection over the ribbon cable from the interface card.

QUESTION 34
DNSSEC is used for?

A. Encrypted DNS queries between nameservers.
B. Cryptographic authentication of DNS zones.
C. Secondary DNS queries for local zones.
D. Defining a secure DNS section.
E. Querying a secure DNS section.

Correct Answer: B
Section: 207.1 Basic DNS server configuration
Explanation

Explanation/Reference:
see http://en.wikipedia.org/wiki/Domain_Name_System_Security_Extensions

DNSSEC was designed to protect Internet resolvers (clients) from forged DNS data, such as that created by DNS cache poisoning. All answers in DNSSEC are digitally signed. By checking the digital signature, a DNS resolver is able to check if the information is identical (correct and complete) to the information on the authoritative DNS server.

QUESTION 35
The following is an excerpt from the output of tcpdump -nli eth1 'udp':

```
13:03:17.277327 IP 192.168.123.5.1065 > 192.168.5.112.53: 43653+ A? lpi.org. (25)
13:03:17.598624 IP 192.168.5.112.53 > 192.168.123.5.1065: 43653 1/0/0 A
24.215.7.109 (41)
```

Which network service or protocol was used?

A. FTP
B. HTTP
C. SSH
D. DNS
E. DHCP

Correct Answer: D
Section: 205.2 Advanced Network Configuration and Troubleshooting
Explanation

Explanation/Reference:
192.168.5.112.53 shows that we connect to Port 53 and /etc/services specifies port 53 as DNS.

cat /etc/services
domain   53/tcp   # name-domain server
domain   53/udp

here is another example of tcpdump catching a DNS request and response:
```
11:17:44.585523 IP 10.1.112.106.48380 > 8.8.8.8.53: 7880+ A? www.google.at. (31)
11:17:44.621611 IP 8.8.8.8.53 > 10.1.112.106.48380: 7880 8/0/0 CNAME www.google.
com., CNAME www.l.google.com., A 209.85.135.103, A 209.85.135.147, A
209.85.135.105, A 209.85.135.104, A 209.85.135.99, A 209.85.135.106 (175)
```

QUESTION 36
During which stage of the boot process would this message be seen?
ide_setup: hdc=ide-scsi

A. Daemon initialization and setup.
B. Boot loader start and hand off to kernel.
C. Hardware initializiation and setup.
D. Kernel loading.

Correct Answer: D
Section: 202.1 Customizing startup and boot processes
Explanation

Explanation/Reference:
see http://www.learninglinuxkernel.com/Linux_Boot_Process.html

In the Kernel-Loading phase it re-initializes parallel ports, serial ports and all the on-board controllers like USB, IDE, SCSI, Serial, parallel, timers, RTC etc. These startup drivers are also called BSP drivers or Board Support Drivers.

QUESTION 37
After configuring a new 2.4 series kernel, all dependencies, such as included files, need to be created. How can this be achieved?

A. make dependencies
B. make clean
C. make mrproper
D. make dep
E. make test

Correct Answer: D
Section: 201.2 Compiling a kernel
Explanation

Explanation/Reference:
/usr/src/linux# make clean
If you've already built the system and are making minor changes, not wanting to re-compile all the objects again, skip this step. If you want to be a purist and make sure you're starting absolutely fresh, do this step.

/usr/src/linux# make mrproper
This completely cleans out your binary directories. I only do this if I've really screwed something up. Note that **this deletes your .config** file, so you might want to rename it first! I hardly ever do this.

/usr/src/linux# make dep
This determines all the header file dependencies. Do this whenever you've made a change to the configuation.

QUESTION 38
Considering the following kernel IP routing table now, which of the following commands must be remove the route to the network 10.10.1.0/24?

Kernel IP routing table
```
Destination      Gateway         Genmask         Flags Metric Ref Use Iface
200.207.199.162  0.0.0.0         255.255.255.255 UH    0      0   0   ppp0
172.16.87.0      0.0.0.0         255.255.255.0   U     0      0   0   eth0
192.168.246.0    0.0.0.0         255.255.255.0   U     0      0   0   eth1
10.10.1.0        192.168.246.11  255.255.255.0   UG    0      0   0   eth1
127.0.0.0        0.0.0.0         255.0.0.0       U     0      0   0   lo
0.0.0.0          200.207.199.162 0.0.0.0         UG    0      0   0   ppp0
```

A. route del 10.10.1.0
B. route del 10.10.1.0/24
C. route del -net 10.10.1.0/24
D. route del 10.10.1.0/24 gw 192.168.246.11
E. route del -net 10.10.1.0

Correct Answer: C
Section: 205.1 Basic networking configuration
Explanation

Explanation/Reference:

Either specify net in CIDR notation or specify parameter netmask

QUESTION 39
Some users are unable to connect to specific local hosts by name, while accessing hosts in other zones works as expected. Given that the hosts are reachable by their IP addresses, which is the default log file that could provide hints about the problem?

A. /var/named/log
B. /var/lib/named/dev/log
C. /var/log/bind_errors
D. /var/log/bind/errors
E. /var/log/messages

Correct Answer: E
Section: 207.1 Basic DNS server configuration
Explanation

Explanation/Reference:
BIND uses syslogd before a valid logging clause is available so named.conf parse errors and other information will appear in /var/log/messages (depending on syslog.conf) prior to, or in the absence of, a valid logging clause.

On Ubuntu Systems this is equal to `/var/log/syslog`.

QUESTION 40
If the command arp -f is run, which file will be read by default?

A. /etc/hosts
B. /etc/ethers
C. /etc/arp.conf
D. /etc/networks
E. /var/cache/arp

Correct Answer: B
Section: 205.1 Basic networking configuration
Explanation

Explanation/Reference:
from the man pages:
arp - manipulate the system ARP cache

-f filename, --file filename
Similar to the -s option, only this time the address info is taken from file filename. This can be used if ARP entries for a lot of hosts have to be set up. The name of the data file is very often /etc/ethers, but this is not official. If no filename is specified /etc/ethers is used as default.

QUESTION 41
What is the difference between zImage and bzImage targets when compiling a kernel?

A. zImage is compressed using gzip, bzImage is compressed using bzip2
B. zImage is for 2.4 series kernels, bzImage is for 2.6 series kernels
C. zImage is loaded into low memory, bzImage is loaded into high memory
D. zImage is limited to 64k, bzImage is not

Correct Answer: C

Section: 201.1 Kernel Components
Explanation

Explanation/Reference:
see http://www.ibiblio.org/oswg/oswg-nightly/oswg/en_US.ISO_8859-1/articles/alessandro-rubini/boot/boot/
zimage.html

QUESTION 42
A DNS server has the IP address 192.168.0.1. Which TWO of the following need to be done on a client
machine to use this DNS server?

A. Add nameserver 192.168.0.1 to /etc/resolv.conf
B. Run route add nameserver 192.168.0.1
C. Run ifconfig eth0 nameserver 192.168.0.1
D. Ensure that the dns service is listed in the hosts entry in the /etc/nsswitch.conf file
E. Run bind add nameserver 192.168.0.1

Correct Answer: AD
Section: 205.1 Basic networking configuration
Explanation

Explanation/Reference:
see http://en.wikipedia.org/wiki/Resolv.conf and http://en.wikipedia.org/wiki/Name_Service_Switch

QUESTION 43
The mailserver is currently called fred, while the primary MX record points to mailhost.example.org.

What must be done to direct example.org email towards fred?

A. Add an A record for mailhost to fred's IP address.
B. Add a CNAME record from mailhost to fred
C. Add another MX record pointing to fred's IP address.
D. Add a PTR record from mailhost to fred.

Correct Answer: A
Section: 207.1 Basic DNS server configuration
Explanation

Explanation/Reference:
If there is already an A record for mailhost.example.org you need to change this to freds ip address.

QUESTION 44
Which of these ways can be used to only allow access to a DNS server from specified networks/hosts?

A. Using the limit{...;};statement in the named configuration file.
B. Using the allow-query{...;};statement in the named configuration file.
C. Using the answer only{...;};statement in the named configuration file.
D. Using the answer{...;};statement in the named configuration file.
E. Using the query access{...;};statement in the named configuration file.

Correct Answer: B
Section: 207.2 Create and maintain DNS zones
Explanation

to allow a specific client access to the dns server use
```
allow-query { 192.168.0.1; };
```

alternatively you can use the acl-keyword

```
acl lan { 192.168.0.1; };
...
allow-query { lan; };
```

QUESTION 45
Which of these commands allows you to use shared libraries that are in /usr/local/lib?

A. export LD_PRELOAD=/usr/local/lib
B. export LD_LIBRARY_PATH=/usr/local/lib
C. ldconfig /usr/local/lib
D. ldd /usr/local/lib

Correct Answer: C
Section: 206.1 Make and install programs from source
Explanation

Explanation/Reference:
From the man pages:

ldconfig creates, updates, and removes the necessary links and cache (for use by the run-time linker, ld.so) to the most recent shared libraries found in the directories specified on the command line, in the file /etc/ld.so. conf, and in the trusted directories (/usr/lib and /lib). ldconfig checks the header and file names of the libraries it encounters when determining which versions should have their links updated. ldconfig ignores symbolic links when scanning for libraries.

----
ldd - print shared library dependencies

LD_PRELOAD - a whitespace-separated list of additional, user-specified, ELF shared libraries to be loaded before all others. This can be used to selectively override functions in other shared libraries. For set-user-ID/ set-group-ID ELF binaries, only libraries in the standard search directories that are also set-user-ID will be loaded.

LD_LIBRARY_PATH - a colon-separated list of directories in which to search for ELF libraries at execution- time. Similar to the PATH environment variable

QUESTION 46
Which TWO archiving formats are used to create an initramfs image?

A. gzip
B. tar
C. rar
D. cpio
E. bzip2

Correct Answer: AD
Section: 201.4 Customize, build and install a custom kernel
Explanation

Explanation/Reference:
see http://www.kernel.org/doc/Documentation/filesystems/ramfs-rootfs-initramfs.txt

All 2.6 Linux kernels contain a gzipped "cpio" format archive, which is extracted into rootfs when the kernel boots up.

QUESTION 47
After unpacking the source code for a Linux kernel, what is the first make command that should be run which will delete any current configuration and all generated files? This command will ensure that no inappropriate files were left in the kernel archive by the maintainer.

A. make depend
B. make distclean
C. make config
D. make clean
E. make mrproper

Correct Answer: B
Section: 201.2 Compiling a kernel
Explanation

Explanation/Reference:
see http://www.gnu.org/software/automake/manual/automake.html#Clean

QUESTION 48
Which script, in the linux/scripts directory, can be used to add up grades or updated code to the 2.6.xx kernel source code?

A. patch
B. patch-kernel
C. kernel-update
D. upgrade-kernel
E. upgrade

Correct Answer: B
Section: 201.3 Patching a kernel
Explanation

Explanation/Reference:
see http://answers.oreilly.com/topic/36-how-to-patch-a-linux-kernel/

QUESTION 49
What tool can you use to print shared library dependencies?

A. ldconfig
B. ldd
C. libdep
D. libpath
E. ldev

Correct Answer: B
Section: 206.1 Make and install programs from source
Explanation

Explanation/Reference:
from the man pages:

ldd - print shared library dependencies

QUESTION 50
Which of the following commands will copy one disk partition /dev/sda3 to /dev/sdb3?

A. dd if=/dev/sdb3 of =/dev/sda3 bs=4096 conv=notrunc
B. dd if=/dev/sda3 of=/dev/sdb3 bs=4096 conv=notrunc
C. dd --input /dev/sda3 --output /dev/sdb3 bs=4096 conv=notrunc
D. dd --input /dev/sdb3 --output /dev/sda3 bs=4096 conv=notrunc

Correct Answer: B
Section: 203.2 Maintaining a Linux filesystem
Explanation

Explanation/Reference:
From the man pages:
    dd - convert and copy a file

SYNOPSIS
    dd [OPERAND]...
    dd OPTION

DESCRIPTION
    Copy a file, converting and formatting according to the operands.

    bs=BYTES   read and write BYTES bytes at a time (also see ibs=,obs=)
    if=FILE   read from FILE instead of stdin
    of=FILE   write to FILE instead of stdout

QUESTION 51
After unpacking source code, what file is used by configure to create a final Makefile?

A. configure.in
B. configure.ac
C. Makefile.in
D. Makefile.tmpl

Correct Answer: C
Section: 206.1 Make and install programs from source
Explanation

Explanation/Reference:
see http://www.la-samhna.de/library/compile/configure.html

QUESTION 52
User Joseph has successfully extracted and compiled a program from source code. Installing the binaries produces errors. What is the most likely reason?

A. The source code was compiled for a different CPU
B. The permissions set in the /usr/bin directory are wrong
C. The binaries require root privileges to be installed
D. The wrong prefix was used during configuration of the source code

Correct Answer: C
Section: 206.1 Make and install programs from source
Explanation

Explanation/Reference:
/usr/local usually requires root privileges to write to

QUESTION 53
You have finished updating and resolving dependencies for some source code. What command should you run before recompiling the code into binary form?

A. make clean
B. make all
C. make dep
D. make install

Correct Answer: A
Section: 206.1 Make and install programs from source
Explanation

Explanation/Reference:
make all, make dep, make install compile the code; make clean is the only option that can be run before compiling.

QUESTION 54
How can you manually add an entry to your system's ARP cache?

A. Directly edit /etc/arp-cache
B. Run add-arp hostname FF:FF:FF:FF:FF:FF
C. Run ping -a hostname
D. Run arp -s hostname FF:FF:FF:FF:FF:FF
E. Edit arp.conf and restart arpd

Correct Answer: D
Section: 205.1 Basic networking configuration
Explanation

Explanation/Reference:
From the man pages:

-s hostname hw_addr, --set hostname
    Manually create an ARP address mapping entry for host hostname with hardware address set to hw_addr class, but for most classes one can assume that the usual presentation can be used. For the Ethernet class, this is 6 bytes in hexadecimal, separated by colons. When adding proxy arp entries (that is those with the publish flag set a netmask may be specified to proxy arp for entire subnets. This is not good practice, but is supported by older kernels because it can be useful. If the temp flag is not supplied entries will be permanent stored into the ARP cache.

QUESTION 55
You find that a host (192.168.1.4) being used on one of your client's networks has been compromised with a backdoor program listening on port 31337. Your client requests a list of originating IP addresses connecting to that port. Using a Linux workstation as traffic analyzer, which of the following commands would gather the data requested by the client?

A. tcpdump host 192.168.1.4 and port 31337 -w out
B. nmap host 192.168.1.4:31337
C. arpwatch -n 192.168.1.4/32 -p 31337 > capture
D. pcap -d 192.168.1.4:31337
E. ipwatch --syn 192.168.1.4 -p 31337 --1og=out

Correct Answer: A
Section: 205.3 Troubleshooting network issues
Explanation

Explanation/Reference:
tcpdump - dump traffic on a network

----
nmap - Network exploration tool and security / port scanner
http://en.wikipedia.org/wiki/Arpwatch
http://en.wikipedia.org/wiki/Pcap
http://www.scrounge.org/ipwatch/

QUESTION 56
Which tool can be used to control the runtime behaviour of udev?

A. udev
B. udevctl
C. udevadm
D. udevconfig
E. udevclient

Correct Answer: C
Section: 201.5 Manage/Query kernel at runtime
Explanation

Explanation/Reference:
From the man pages:

udevadm - udev management tool
udevadm expects a command and command specific options. It controls the runtime behavior of udev,
requests kernel events, manages the event queue, and provides simple debugging mechanisms.

QUESTION 57
What is the purpose of udevmonitor?

A. Listen to kernel events produced by a udev rule and print information to the console
B. Monitors the /dev directory for new devices
C. Monitors the udev process and prints performance statistics to the console
D. Communicates with D-Bus to setup new devices

Correct Answer: A
Section: 201.5 Manage/Query kernel at runtime
Explanation

Explanation/Reference:
udevmonitor was replaced by `udevadm monitor`.

QUESTION 58
What is the term for unmounting a filesystem, which cleans up all references to the filesystem, as soon as it is not in use any longer?

A. soft

B. strong

C. forced

D. lazy

E. delayed

Correct Answer: D
Section: 204.2 Adjusting Storage Device Access
Explanation

Explanation/Reference:
From the man pages:

umount - unmount file systems
-l   Lazy unmount. Detach the filesystem from the filesystem hierarchy now, and cleanup all references to the filesystem as soon as it is not busy anymore. (Requires kernel 2.4.11 or later.)

QUESTION 59
Which system files are updated as devices are mounted and unmount to provide information on the mounted devices and the options used? (Please specify TWO answers)

A. /proc/dtab

B. /etc/mtab

C. /etc/fstab

D. /proc/mounts

E. /proc/devices

Correct Answer: BD
Section: 203.2 Maintaining a Linux filesystem
Explanation

Explanation/Reference:
The programs mount and umount maintain a list of currently mounted file systems in the file /etc/mtab. If no arguments are given to mount, this list is printed.

see http://linux.web.cern.ch/linux/scientific5/docs/rhel/Deployment_Guide/s2-proc-mounts.html
similar to the contents of /etc/mtab, except that /proc/mount is more up-to-date.

QUESTION 60
On a Debian based system, which command can be used to stop the apache2 init script from running at boot time once the real script has been removed from /etc/init.d/?

A. update-rc.d -d apache2

B. update-rc.d apache2 delete

C. update-rc.d remove apache2

D. update-rc.d apache2 remove

E. update-rc.d delete apache2

Correct Answer: D
Section: 202.1 Customizing startup and boot processes

Explanation

Explanation/Reference:
see http://www.debuntu.org/how-to-manage-services-with-update-rc.d

QUESTION 61
Which command could be used to see the kernel messages created from the boot time until now?

A. initm
B. initmessage
C. initmsg
D. inittab
E. dmesg

Correct Answer: E
Section: 201.1 Kernel Components
Explanation

Explanation/Reference:
From the man pages:

dmesg - print or control the kernel ring buffer

QUESTION 62
A zone file on the DNS server has been updated. Which of the following commands will tell named to reload its zone files? (Please select TWO correct answers)

A. killall -HUP named
B. killall named
C. rndc reload
D. rndc flush
E. named-checkzone -r

Correct Answer: AC
Section: 207.2 Create and maintain DNS zones
Explanation

Explanation/Reference:
From the man pages:
Signals - In routine operation, signals should not be used to control the nameserver; rndc should be used instead.
SIGHUP   Force a reload of the server.

for more information on rndc see http://www.centos.org/docs/5/html/Deployment_Guide-en-US/s1-bind-rndc.html

QUESTION 63
Which hdparm command-line options will set an IDE hard disk to use both DMA and 32-bit I/O support?

A. -p 1 -A 1
B. -f -g
C. -L 1 -i 1
D. -d 1 -c 1

E. -L 1 -i 32

Correct Answer: D
Section: 203.3 Creating and configuring filesystem options
Explanation

Explanation/Reference:
From the man pages:
hdparm provides a command line interface to various hard disk ioctls supported by the stock Linux ATA/IDE device driver subsystem.

-c Query/enable (E)IDE 32-bit I/O support. A numeric parameter can be used to enable/disable 32-bit I/O support: Currently supported values include 0 to disable 32-bit I/O support, 1 to enable 32-bit data transfers, and 3 to enable 32-bit data transfers with a special sync sequence required by many chipsets.

-d Disable/enable the "using_dma" flag for this drive. This option now works with most combinations of drives and PCI interfaces which support DMA and which are known to the kernel IDE driver. It is also a good idea to use the appropriate -X option in combination with -d1 to ensure that the drive itself is programmed for the correct DMA mode, although most BIOSs should do this for you at boot time.

QUESTION 64
Which of the following applications utilize the device mapper? (Select TWO correct answers)

A. SELinux
B. LVM2
C. EVMS
D. GRUB
E. LILO

Correct Answer: BC
Section: 203.4 udev Device Management
Explanation

Explanation/Reference:
see http://en.wikipedia.org/wiki/Device_mapper

QUESTION 65
Why has mkinitrd been deprecated in favour of mkinitramfs in 2.6 series kernels? (Select TWO correct answers)

A. It isn't loaded until later in the boot process
B. An easy to use GUI is available for mkinitramfs
C. mkinitrd relies on devfs
D. SATA hard drives are unsupported

Correct Answer: CD
Section: 201.4 Customize, build and install a custom kernel
Explanation

Explanation/Reference:
see http://wiki.debian.org/InitrdReplacementOptions

Initrd-tools relies on **devfs** and on removed or deprecated /proc interfaces. It has no maintainer. Its CodingStyle is weird. There is **no support for sata**...

QUESTION 66
A Linux server is running in single user mode, but the problem that existed before is now fixed. What command is most appropriate to restore the server to service?

A. reboot
B. telinit 2
C. shutdown -r now
D. telinit 3
E. shutdown -h now

Correct Answer: D
Section: 202.1 Customizing startup and boot processes
Explanation

Explanation/Reference:
see http://en.wikipedia.org/wiki/Runlevel

```
ID    Name                         Description
1     Single-User Mode        Does not configure network interfaces, start
daemons, or allow non-root logins.
2     Multi-User Mode         Does not configure network interfaces or start
daemons.
3     Multi-User Mode with Networking    Starts the system normally.
4     Not used/User-definable  For special purposes.
5     X11                      As runlevel 3 + display manager.
```

QUESTION 67
The swap usage on a system needs to be checked. Which TWO commands can be used to display a swap usage summary?

A. swapconfig
B. cat /proc/swaps
C. swapon -s
D. swapshow
E. cat /etc/fstab

Correct Answer: BC
Section: 203.1 Operating the Linux filesystem
Explanation

Explanation/Reference:
From the man pages:
swapon, swapoff - enable/disable devices and files for paging and swapping
-s, --summary   Display swap usage summary by device. Equivalent to "cat /proc/swaps".

/proc/swaps provides a snapshot of every swap file name, the type of swap space, the total size, and the amount of space in use (in kilobytes). The priority column is useful when multiple swap files are in use. The lower the priority, the more likely the swap file is to be used.

QUESTION 68
To remove the patch patch-2.4.28.tar.bz2 from a kernel source tree, the command that must be used is:

A. bunzip2 ../patch-2.4.28.tar.bz2 | patch -rp1
B. bunzip2 -c ../patch-2.4.28.tar.bz2 | patch -Rp1
C. bunzip2 -c ../patch-2.4.28.tar.bz2 | unpatch -p1

D. bunzip2 ../patch-2.4.28.tar.bz2 | unpatch -p1

E. bunzip2 ../patch-2.4.28.tar.bz2 | patch -Rp1

F. bunzip2 -c ../patch-2.4.28.tar.bz2 | patch -rp1

Correct Answer: B
Section: 201.3 Patching a kernel
Explanation

Explanation/Reference:
bunzip2: -c --stdout   Compress or decompress to standard output.
patch: -R or --reverse   Assume that this patch was created with the old and new files swapped. patch attempts to swap each hunk around before applying it. Rejects come out in the swapped format.

QUESTION 69
Which of the following entries are NOT valid in /etc/raidtab?

A. superblock-persistent

B. chunk-size

C. nr-spare-disks

D. nr-raid-disks

Correct Answer: A
Section: 204.1 Configuring RAID
Explanation

Explanation/Reference:
From the man pages:

These are the possible entries in /etc/raidtab:

raiddev nr-raid-disks nr-spare-disks persistent-superblock parity-algorithm chunk-size size device raid-disk spare-disk parity-disk failed-disk

QUESTION 70
A pre-compiled module has been moved to /lib/modules/<kernel-version>, but 'modprobe -a <module-name>' fails to load it. What needs to be done to enable usage of this module?

A. make modules_install must be run.

B. depmod must be run.

C. The kernel must be re-compiled.

D. modules.conf or modprobe.conf must be edited.

E. The system must be rebooted.

Correct Answer: B
Section: 201.4 Customize, build and install a custom kernel
Explanation

Explanation/Reference:
From the man pages:
depmod - program to generate modules.dep and map files.

depmod creates a list of module dependencies by reading each module under /lib/modules/version and determining what symbols it exports and what symbols it needs. By default, this list is written to modules.dep, and a binary hashed version named modules.dep.bin, in the same directory. If filenames are given on the command line, only those modules are examined (which is rarely useful unless all modules are listed).

depmod also creates a list of symbols provided by modules in the file named modules.symbols and its binary hashed version, modules.symbols.bin.

modprobe expects an up-to-date modules.dep.bin file (or fallback human readable modules.dep file), as generated by the corresponding depmod utility shipped along with modprobe (see depmod(8)). This file lists what other modules each module needs (if any), and modprobe uses this to add or remove these dependencies automatically.

QUESTION 71
Which of the following commands should be used in a bash script that needs a variable containing the IP address of the eth0 interface? The output for the command ifconfig eth0 is shown below:

```
eth0 Link encap:Ethernet HWaddr 00:0C:29:CB:FA:30
inet addr:192.168.246.11 Bcast:192.168.246.255 Mask:255.255.255.0 UP BROADCAST
RUNNING MULTICAST MTU:1500 Metric:1
RX packets:4721 errors:0 dropped:0 overruns:0 frame:0 TX packets:3216 errors:0
dropped:0 overruns:0 carrier:0 collisions:0 txqueuelen:1000
RX bytes:445184 (434.7 Kb) TX bytes:512968 (500.9 Kb) Interrupt:185 Base
address:0x1080
```

A. IP=LANG= ifconfig eth0 | awk '{ print $2 }' | cut -f2
B. IP=`LANG= ifconfig eth0 | grep inet | cut -d: -f2 | awk { print $1 }`
C. IP=`LANG= ifconfig eth0 | awk '{ print $3 }'`
D. IP=$(LANG= ifconfig eth0 | grep inet | awk '{ print $2 }' | cut -d: -f2)
E. IP=$(LANG= ifconfig eth0 | grep inet | cut -d: -f2)

Correct Answer: D
Section: 205.2 Advanced Network Configuration and Troubleshooting
Explanation

Explanation/Reference:

QUESTION 72
You have elected to use the automounter and the autofs script. Your /etc/auto.master file contains the following:

/home /etc/auto.home
/project /etc/auto.project
/data yp:data.map

If you change the contents of /etc/auto.project to include a new source path what must be done to access the new path?

A. Shutdown and restart the local NFS client daemons
B. Run fsck on the affected mount point
C. Issue the /etc/init.d/autofs reload command
D. Add the newly mapped path to/etc/fstab
E. Nothing Simply access the newly mapped resource

Correct Answer: C
Section: 203.3 Creating and configuring filesystem options
Explanation

Explanation/Reference:
From the man pages:

/etc/init.d/autofs reload will check the current auto.master map against running daemons. It will kill those daemons whose entries have changed and then start daemons for new or changed entries. If a map is modified then the change will become effective immediately.

QUESTION 73
In order to find all library dependencies of /usr/bin/foo, which of the following statement is true?

A. Running ldconfig against /usr/bin/foo will show the required libraries
B. Running ldd against /usr/bin/foo will show the required libraries
C. It's necessary to compile the program again to check the library dependencies of foo.
D. The ls -la command has to be run in the /usr/bin directory, to show all library dependencies of foo.
E. Library dependencies are shown in the /usr/lib directory.

Correct Answer: B
Section: 206.1 Make and install programs from source
Explanation

Explanation/Reference:

QUESTION 74
How can DMA be enabled for the device /dev/hda?

A. echo "1" >/proc/ide/hda/dma
B. sysctl -w dev.ide.dma=1
C. dma add /dev/hda
D. hdparm -d 1 /dev/hda
E. insmod dma dev=/dev/hda

Correct Answer: D
Section: 203.3 Creating and configuring filesystem options
Explanation

Explanation/Reference:

QUESTION 75
To restore the kernel source to the previous, unpatched, version, which of the following commands could be used?

A. patch --restore
B. patch --remove
C. patch -U
D. patch --undo
E. patch -R

Correct Answer: E
Section: 201.3 Patching a kernel
Explanation

Explanation/Reference:
-R or --reverse

QUESTION 76
If the current directory is /root and the kernel source is located in /usr/src/linux, which of the following commands should be used to apply the patch /tmp/foopatch?

A. cat /tmp/foopatch | patch -p0
B. cd/usr/src/linux; cat/tmp/foopatch | patch -p0
C. cd/usr/src/linux; cat/tmp/foopatch | patch
D. cd/usr/src/linux; patch -p1 </tmp/foopatch
E. cd/usr/src/linux; patch -p1 >/tmp/foopatch

Correct Answer: D
Section: 201.3 Patching a kernel
Explanation

Explanation/Reference:
From the man pages:

patch takes a patch file patchfile containing a difference listing produced by the diff program and applies those differences to one or more original files, producing patched versions. Normally the patched versions are put in place of the originals. [...] If no original file origfile is specified on the command line, patch tries to figure out from the leading garbage what the name of the file to edit is.

QUESTION 77
A 2.6.9-ac1 kernel would be

A. an alpha kernel.
B. someone's patch to a stable kernel.
C. a stable kernel.
D. an unstable kernel.
E. someone's patch to an unstable kernel.

Correct Answer: B
Section: 201.4 Customize, build and install a custom kernel
Explanation

Explanation/Reference:
2.x is a stable kernel if x is an even number. Kernels are numbered like 2.6.37. (see www.kernel.org)

QUESTION 78
What command should be used to find out what PCI devices can be seen, without querying the kernel?

A. lspci -v
B. lspci -s
C. lspci -x
D. lspci -b
E. lspci -p

Correct Answer: D
Section: 201.5 Manage/Query kernel at runtime
Explanation

Explanation/Reference:
-b Bus-centric view. Show all IRQ numbers and addresses as seen by the cards on the PCI bus instead of as seen by the kernel.

QUESTION 79
Considering that a 2.4 series Linux kernel is being used, which kernel module must be loaded to enable CD burning with an IDE CD writer?

A. ide-cd
B. ide-cdrw
C. ide-cdb
D. ide-scsi
E. None of the above

Correct Answer: D
Section: 201.1 Kernel Components
Explanation

Explanation/Reference:
see http://linux.ardynet.com/idescsi.php3

QUESTION 80
What command must be used to create an ext3 filesystem?

A. mke2fs
B. mkext2fs
C. mke3fs
D. mkext3fs
E. mkjfs

Correct Answer: A
Section: 203.1 Operating the Linux filesystem
Explanation

Explanation/Reference:
From the man pages:

mke2fs - create an ext2/ext3/ext4 filesystem

QUESTION 81
The Linux kernel is loaded successfully by the boot loader. However, straight after the kernel mounts the root filesystem, the boot process stops and an error message regarding init is shown. Which of the following actions is the best one to be used in order to identify and fix the problem?

A. The administrator reboots the system with a recovery disk and checks the root file system for errors with fsck.
B. The administrator reboots the system with a recovery disk and restores from a backup.
C. The administrator reboots the system and tells the kernel, through the boot loader prompt, to use /bin/bash as the initial process.
D. The administrator reboots the system with a recovery disk and installs a new kernel.
E. The administrator reboots the system and tells init, through the boot loader prompt, to use a different runlevel.

Correct Answer: C
Section: 202.1 Customizing startup and boot processes
Explanation

QUESTION 82
A machine is running in single user mode and, as such, not all file-systems are accessible. What command must be run to make all of the other file-systems listed in /etc/fstab accessible?

A. mount --all
B. mountfs --all
C. mountfs -a
D. mount -a

Correct Answer: D
Section: 202.1 Customizing startup and boot processes
Explanation

Explanation/Reference:
from the man pages:

mount - mount a filesystem
-a, --all   Mount all filesystems (of the given types) mentioned in fstab.

QUESTION 83
What command is used to force a file-system check, when rebooting?

A. reboot-f
B. shutdown -f now
C. shutdown -c -r now
D. fsck -r
E. shutdown -F -r now

Correct Answer: E
Section: 202.1 Customizing startup and boot processes
Explanation

Explanation/Reference:
From the man pages:

shutdown - bring the system down
-r   Requests that the system be rebooted after it has been brought down.
-F   Force fsck on reboot. (see http://linux.die.net/man/8/shutdown)

-F is not available on Debian Systems

QUESTION 84
What command can be used on an existing (formatted) partition, to configure the interval between disk checks when mounting partitions?

A. mke2fs
B. e2fsck
C. e2fsckconfig
D. config2fs
E. tune2fs

Correct Answer: E
Section: 203.2 Maintaining a Linux filesystem
Explanation

Explanation/Reference:
From the man pages:

tune2fs - adjust tunable filesystem parameters on ext2/ext3/ext4 filesystems
-i interval-between-checks[d|m|w]   Adjust the maximal time between two filesystem checks. No suffix or d
will interpret the number interval-between-checks as days, m as months, and w as weeks. A value of zero will
disable the time-dependent checking.

QUESTION 85
Performing a DNS lookup with dig results in this answer:

```
;; QUESTION SECTION:
;5.123.168.192.in-addr.arpa.      IN  PTR
;; ANSWER SECTION:
5.123.168.192.in-addr.arpa. 600 IN  PTR linuserv.example.net.123.168.192.in-addr.
arpa.
;;AUTHORITY SECTION:
123.168.192.in-addr.arpa.    600 IN  NS  linuserv.example.net.
;; ADDITIONAL SECTION:
linuserv.example.net.        600 IN  A   192.168.123.5
```

What might be wrong in the zone definition?

A. Nothing. All seems to be good.
B. There's no "." after linuserv.example.net in the PTR record in the forward lookup zone file.
C. There's no "." after linuserv in the PTR record in the forward lookup zone file.
D. There's no "." after linuserv.example.net in the PTR record in the reverse lookup zone file.
E. The "." in the NS definition in reverse lookup zone has to be removed.

Correct Answer: D
Section: 207.1 Basic DNS server configuration
Explanation

Explanation/Reference:
The output was generated by the following dig:
`dig PTR 5.123.168.192.in-addr.arpa`

In the answer section the PTR entry has the default domain added to the actual domain name, indicating that
the PTR record in the reverse lookup zone file is specified incorrectly.

QUESTION 86
Which of the following commands will securely copy the directory ./fyf/ to /var/tmp/ on the remote host deltaur
using the remote user account kevin?

A. rsync -a -e ssh kevin@deltaur:/var/tmp/ fyf/
B. rsync -a -u kevin -e ssh fyf/ deltaur:/var/tmp/
C. rsync -a -u kevin -e ssh deltaur:/var/tmp/ fyf/
D. rsync -a -e ssh fyf/ kevin@deltaur:/var/tmp/

Correct Answer: D
Section: 206.2 Backup operations
Explanation

Explanation/Reference:
From the man pages:

rsync - a fast, versatile, remote (and local) file-copying tool
-a, --archive   archive mode; equals -rlptgoD (no -H,-A,-X)
-e, --rsh=COMMAND   specify the remote shell to use

QUESTION 87
Journalling doesn't appear to be working on an ext3 file-system. When booting, the following line appears:

VFS: Mounted root (ext2 filesystem) readonly.

What could be causing the problem?

A. An old version of e2fsprogs is installed.
B. The kernel does not contain ext3 support.
C. The file-system is specified as ext2 in/etc/fstab.
D. The system was not shut down cleanly.

Correct Answer: B
Section: 201.4 Customize, build and install a custom kernel
Explanation

Explanation/Reference:
The kernel is directed by the bootloader to load the root partition readonly by default - the /etc/fstab is not evolved at this time.

QUESTION 88
Your routing configuration relies on eth0 being a 3com card that requires the 3c59x module. What line must be added to modules configuration file, to ensure that eth0 always uses this module?

A. eth0=3c59x
B. alias eth0=3c59x
C. alias eth0 3c59x
D. set eth0 3c59x
E. set eth0=3c59x

Correct Answer: C
Section: 205.3 Troubleshooting network issues
Explanation

Explanation/Reference:
This job is now done by udev via /etc/udev/rules.d/
In older systems this is done via /etc/modprobe.d or other modprobe.conf files.

QUESTION 89
What backup arrangement should be used for an intranet web server the contents of which is updated fairly regularly by different staff?

A. Daily incremental backups with a weekly full backup tape sent off- site
B. Monthly full backups with the tape sent off-site
C. Daily full backups with all tapes sent off-site
D. Weekly full backups with all tapes sent off-site
E. Daily full backups with one tape sent off-site per week

Correct Answer: A
Section: 206.2 Backup operations
Explanation

Explanation/Reference:
Daily full backup for only fairly regularly updated data seems a bit overkill, so just do daily incrementals and weekly full backup to be on the safe side.

QUESTION 90
During which stage of the boot process would this message be seen?

Ide0: BM-DMA at 0xff00-0xff07, BIOS settings: hda:DMA, hdb:DMA

A. Boot loader start and hand off to kernel
B. Kernel loading
C. Hardware initialization and setup
D. Daemon initialization and setup

Correct Answer: C
Section: 202.1 Customizing startup and boot processes
Explanation

Explanation/Reference:
see http://www.snow.nl/dist/xhtmlc/ch14s02.html

QUESTION 91
Which of the following commands can be used to access the content of a ramdisk file (/boot/initrd) used by the kernel at boot time?

A. mount /boot/initrd /mnt/ -0 loop; cat /mnt
B. mkintird -d /boot/initrd; mount /boot/initrd /mnt/ -o loop
C. cp /boot/initrd /tmp/initrd.gz; mount /tmp/initrd /mnt/ -o loop
D. cp /boot/initrd /tmp/initrd.gz; gunzip initrd.gz; mount /tmp/initrd /mnt/ -o loop
E. cp /boot/initrd /tmp/initrd.gz; gunzip initrd.gz; mount /tmp/initrd /mnt/

Correct Answer: D
Section: 201.4 Customize, build and install a custom kernel
Explanation

Explanation/Reference:
This is the old initrd version. New initramfs is a zipped cpio archive which doesn't need to be mounted.

QUESTION 92
A BIND server should be upgraded to use TSIG. Which configuration parameters should be added, if the server should use the algorithm hmac-md5 and the key skrKc4DoTzi/tAkllPi7JZA== ?

A.
```
TSIG server.example.com.
algorithm hmac-md5;
secret "skrKc4DoTzi/tAkllPi7JZA==";
};
```
B.
```
key server.example.com. {
algorithm hmac-md5;
secret skrKc4DoTzi/tAkllPi7JZA==;
};
```

C. ```
key server.example.com. {
   algorithm hmac-md5;
   secret "skrKc4DoTzi/tAkllPi7JZA==";
   };
```
D. ```
key server.example.com. {
   algorithm=hmac-md5;
   secret="skrKc4DoTzi/tAkllPi7JZA==";
   };
```
E. ```
key server.example.com. {
   algorithm hmac-md5
   secret "skrKc4DoTzi/tAkI1Pi7JZA=="
   };
```

**Correct Answer:** C
**Section: 207.3 Securing a DNS server**
**Explanation**

**Explanation/Reference:**
Insert into /etc/bind/named.conf.local of master DNS and all slave DNS.In the allow-transfer statement add the `key` keyword instead of IPs.

**QUESTION 93**
Which of the following sentences is true for the shown BIND9 configuration?

```
options {
 directory "/var/named";
 allow-query { any; };
 allow-recursion {127.0.0.1; 10.0.0.0/24; };
 forwarders {192.168.0.4; };
 forward first;
};

zone"." {
 type hint;
 file "named.ca";
};
```

A. Any host, from any network, may use this server as its main DNS server.
B. If the server doesn't know the answer to a query, it sends a recursive query to 192.168.0.4.
C. If the server doesn't know the answer to a query, it sends a query to a root DNS server.
D. Hosts in the network 10.0.0.0/24 will be able to ask for zone transfers.
E. If the server doesn't know the answer to a query, it sends a recursive query to 192.168.0.4 and, if this fails, it returns a failure.

Correct Answer: B
Section: 207.2 Create and maintain DNS zones
Explanation

Explanation/Reference:
A) would be correct if `allow-recursion {any;};` was specified.
C) would be correct if no `forwarders` were specified.
D) all hosts may initiate a zone transfer. disallow with `allow-transfer {none;};`
E) would be correct if `forward only;` was specified or no root-Servers were specified.

QUESTION 94
What is a significant difference between host and zone keys generated by dnssec-keygen?

A. There is no difference.
B. Zone key files contain a public and private key.
C. Host keys files contain a public and private key.
D. Host keys must always be generated if DNSSEC is used; zone keys are optional
E. Zone keys must always be generated if DNSSEC is used; host keys are optional

Correct Answer: B
Section: 207.3 Securing a DNS server
Explanation

Explanation/Reference:
ZONE Keys (KSK and ZSK) consist of a Public/Private Key Pair, while HOST and USER Keys are Shared Secret Keys.

QUESTION 95
A system is running out of swap space. To initialise 5GB of additional swap space, which combination of commands should be used?

A. dd if=/dev/zero of=/tmp/swapfile bs=1024 count=5120000; mkswap /tmp/swapfile; swapon /tmp/swapfile
B. dd if=/dev/zero of=/tmp/swapfile bs=1024 count=5120000; swap on /tmp/swapfile
C. dd if=/dev/zero of=/tmp/swapfile bs=1024 count=5120000; mkswap /tmp/swapfile; mount /tmp/swapfile
D. touch -5G /tmp/swapfile; swapon /tmp/swapfile
E. mkswap /tmp/swapfile 512000; swapon /tmp/swapfile

Correct Answer: A
Section: 203.2 Maintaining a Linux filesystem
Explanation

Explanation/Reference:
see http://www.cyberciti.biz/faq/linux-add-a-swap-file-howto/

While Linux primarily expects a whole swap partition to be used, it works with files also.
Create a file big enough for your purposes, designate the file as swapspace (`mkswap`), instruct the kernel to use the additional space (`swapon`).

Add the swapfile in `/etc/fstab` to enable swapping after the next reboot automatically.

QUESTION 96
Hundreds of people log in to a server from remote locations per day. Which of the following commands show remote SSH, FTP & telnet sessions for a particular day?

A. cat /var/log/messages | grep "'date "+%b %e"'" | egrep '(telnet|ssh|ftp)'
B. cat /var/log/messages | egrep '(telnet|ssh|ftp)'
C. cat /var/log/messages | grep "`date "+%b %e"`" | grep -E '(telnet|ssh|ftp)'
D. cat /var/log/messages | date | egrep '(telnet|ssh|ftp)'
E. cat /var/log/messages > grep "'date "+%b %e"'" > egrep '(telnet\ssh\ftp)'

Correct Answer: AC
Section: 205.3 Troubleshooting network issues
Explanation

Explanation/Reference:
example for /var/log/messages:

```
Jan  1 01:02:03 host kernel: [ 1730.648910] usb 2-6: new high speed USB device
using ehci_hcd and address 3
```

`date "+%b %e"` gets the current date in the format "Jan 1", so you filter entries for these dates only.
Then use the extended grep (egrep or grep -E) to filter for telnet or ssh or ftp.

QUESTION 97
What command is used to mount a floppy disk image under /mnt/floppy?

A. mount -1 root.img /mnt/floppy
B. mount --loop root.img /mnt/floppy
C. mount root.img /mnt/floppy
D. mount root.img
E. mount -o loop root.img /mnt/floppy

Correct Answer: E
Section: 203.1 Operating the Linux filesystem
Explanation

Explanation/Reference:
see http://en.wikipedia.org/wiki/Loop_device

QUESTION 98
What information can be found in the log file specified by the status parameter in OpenVPN's server.conf?
(Select TWO correct answers)

A. Errors and warnings generated by the openvpn daemon
B. Routing information
C. Statistical information regarding the currently running openvpn daemon
D. A list of currently connected clients
E. A history of all clients who have connected at some point

Correct Answer: BD
Section: 205.2 Advanced Network Configuration and Troubleshooting
Explanation

Explanation/Reference:
Status can be written to the syslog by sending a SIGUSR2 signal. This is an example of the status report:

killall -SIGUSR2 openvpn
#tail /var/log/syslog
Jan 1 01:02:03 linuxserver ovpn-server[1532]: OpenVPN CLIENT LIST
Jan 1 01:02:03 linuxserver ovpn-server[1532]: Updated,Wed Feb 2 13:38:39 2011
Jan 1 01:02:03 linuxserver ovpn-server[1532]: Common Name,Real Address,Bytes Received,Bytes Sent,
Connected Since
Jan 1 01:02:03 linuxserver ovpn-server[1532]: VPNClient,172.16.202.128:1194,34224,6679,Wed Jan 1
01:02:03 2011
Jan 1 01:02:03 linuxserver ovpn-server[1532]: ROUTING TABLE
Jan 1 01:02:03 linuxserver ovpn-server[1532]: Virtual Address,Common Name,Real Address,Last Ref
Jan 1 01:02:03 linuxserver ovpn-server[1532]: 00:aa:bb:cc:dd:ee,VPNClient,172.16.202.128:1194,Wed Jan
1 01:02:03 2011
Jan 1 01:02:03 linuxserver ovpn-server[1532]: GLOBAL STATS
Jan 1 01:02:03 linuxserver ovpn-server[1532]: Max bcast/mcast queue length,0
Jan 1 01:02:03 linuxserver ovpn-server[1532]: END

QUESTION 99

After changing the default runlevel in the init configuration file, the system boots in a different than the intended runlevel. Where else could be this different runlevel be defined?

A. Nowhere. The init configuration file wasn't properly modified
B. In the boot loader configuration file
C. In /etc/ runlevel under default
D. In the initrd image file
E. In the /etc/rc.d/rc.local file

Correct Answer: B
Section: 202.1 Customizing startup and boot processes
Explanation

Explanation/Reference:
see http://www.centos.org/docs/5/html/Installation_Guide-en-US/s1-grub-runlevels.html or http://www.
comptechdoc.org/os/linux/usersguide/linux_uglilo.html

QUESTION 100
A BIND server should never answer queries from certain networks or hosts. Which configuration directive could be used for this purpose?

A. deny-query { ...; };
B. no-answer { ...; };
C. deny-answer { ...; };
D. deny-access { ...; };
E. blackhole { ...; };

Correct Answer: E
Section: 207.3 Securing a DNS server
Explanation

Explanation/Reference:
see http://www.centos.org/docs/5/html/Deployment_Guide-en-US/s1-bind-namedconf.html

QUESTION 101
What is the purpose of a PTR record?

A. To provide name to IP resolution.
B. To provide IP to name resolution.
C. To direct email to a specific host.
D. To provide additional host information.
E. To direct clients to another nameserver.

Correct Answer: B
Section: 207.1 Basic DNS server configuration
Explanation

Explanation/Reference:
see http://en.wikipedia.org/wiki/Reverse_DNS_lookup

QUESTION 102
What directive can be used in named.conf to restrict zone transfers to the 192.168.1.0/24 network?

A. allow-transfer { 192.168.1.0/24; };

B. allow-transfer { 192.168.1.0-192.168.1.0.255; };

C. allow-axfr { 192.168.1.0/24; };

D. allow-xfer { 192.168.1.0/24; };

Correct Answer: A
Section: 207.3 Securing a DNS server
Explanation

Explanation/Reference:
see http://h30097.www3.hp.com/docs/base_doc/DOCUMENTATION/BIND/DOCU0010.HTM

QUESTION 103
To securely use dynamic DNS updates, the use of TSIG is recommended. Which TWO statements about TSIG are true?

A. TSIG is used for zone data encryption

B. TSIG is a signal to start a zone update

C. TSIG is used in zone files

D. TSIG is used only in server configuration

E. Servers using TSIG must be in sync (time zone!)

Correct Answer: DE
Section: 207.3 Securing a DNS server
Explanation

Explanation/Reference:
see http://tools.ietf.org/html/rfc2845

To defend against attackers resending old messages the time of the message is used in the hashing of the message, which means that servers must be synced.

QUESTION 104
Which THREE statements concerning automounter are true?

A. The autofs service does not need to be restarted after changing automounter map files

B. Only one entry in master map can refer to each map file

C. The automounter service does not rely on the kernel configuration

D. For each entry in auto.master, a separate automounter daemon is started

E. Changes to auto.master require automounter to reload its configuration

Correct Answer: ADE
Section: 203.3 Creating and configuring filesystem options
Explanation

Explanation/Reference:
From the man pages:

autofs will consult a configuration file /etc/auto.master (see auto.master(5)) to find mount points on the system. **For each of those mount points a automount(8) process is started** with the appropriate parameters. You can check the active mount points for the automounter with the /etc/init.d/autofs status command. After the auto.master configuration file is processed the autofs script will check for an NIS map with the same name. If such a map exists then that map will be processed in the same way as the auto.master map. The NIS map will be processed last. **/etc/init.d/autofs reload will check the current auto.master map against running daemons**. It will kill those daemons whose entries have changed and then start daemons for new or changed entries. If a map is modified then the change will become effective immediately. If the auto.

master map is modified then the autofs script must be rerun to activate the changes. /etc/init.d/autofs status will display the current configuration and a list of currently running automount daemons.

QUESTION 105
What are typical targets in a makefile?

A. CFLAGS, CPPFLAGS, LIBS, LDFLAGS
B. clean, install, uninstall
C. PATHS, DESTDIR, LIBS, LDFLAGS
D. prefix, exec_prefix, bindir, mandir

Correct Answer: B
Section: 206.1 Make and install programs from source
Explanation

Explanation/Reference:
see http://stackoverflow.com/questions/3915067/what-are-makefiles-make-install

QUESTION 106
Which single command will extract data from the file abc.tar.bz2

A. bunzip2
B. tar
C. gzip
D. gunzip

Correct Answer: B
Section: 206.2 Backup operations
Explanation

Explanation/Reference:
From the man pages:
tar — The GNU version of the tar archiving utility
-j, --bzip2 extract bz2 file

----
if you use bunzip2 you are still left with the tar-archive.

Exam B

QUESTION 1
How would you run named inside a chroot jail as user nobody and group nogroup?

A. Add "user nobody; group nogroup; chroot /var/named/root" to named.conf
B. named runs as nobody/nogroup by default, so just invoke it as "name --chroot /var/named/root"
C. Use /usr/bin/chroot after running "chown nobody.nogroup named"
D. Invoke named as "named -t /var/named/root -u nobody"

Correct Answer: D
Section: 207.3 Securing a DNS server
Explanation

Explanation/Reference:
http://unixwiz.net/techtips/bind9-chroot.html

The group is taken automatically from the group of the specified user. `nobody` must be member of `nogroup`.

QUESTION 2
Where should the LILO code reside, on a system with only one installation of Linux and no other operating systems?

A. In the master boot record
B. In the boot sector
C. In the /boot directory
D. At the start of the kernel

Correct Answer: A
Section: 203.1 Operating the Linux filesystem
Explanation

Explanation/Reference:

QUESTION 3
The Human Interface Device (HID) is being used, which of the following represents a USB mouse connected to the PC?

A. /dev/psaux
B. /dev/ttyS0
C. /dev/input/mice
D. /dev/usb/mouse0
E. /dev/ttyUSB0

Correct Answer: C
Section: 203.4 udev Device Management
Explanation

Explanation/Reference:
http://www.linux-usb.org/USB-guide/x194.html

QUESTION 4
Select the TWO correct alternatives regarding the kill -9 command:

A. Its use should be avoided and other alternatives should be tried before it.
B. Its use can occasionally cause the data loss.
C. It is possible that zombie processes can be created as a consequence of its use.
D. It can always be used with no restrictions.
E. Its frequent use can increase the RAM utilization.

Correct Answer: AB
Section: 207.1 Basic DNS server configuration
Explanation

Explanation/Reference:
see http://en.wikipedia.org/wiki/SIGKILL

QUESTION 5
The server has two network cards. The driver for the first card is the module 8139too and the driver for the second card is the module ne2k-pci. How is it possible to ensure that the card using the 8139too driver is detected before the card using the ne2k-pci driver?

A. modprobe 8139too dev=eth0; modprobe ne2k-pci dev=eth1
B. install mod 8139too; install mod ne2k-pci
C. modprobe eth0=8139too, eth1=ne2k-pci
D. ifconfig modadd eth0=8139too, eth1=ne2k-pci
E. modprobe 8139too; modprobe ne2k-pci

Correct Answer: E
Section: 202.1 Customizing startup and boot processes
Explanation

Explanation/Reference:
Just init the networkdrivers in the correct order, eth0 and eth1 will be set in this order.

QUESTION 6
Which of these would be the simplest way to configure BIND to return a different version number to queries?

A. Compile BIND with the option -blur-version=my version.
B. Set version-string "my version" in BIND's configuration file.
C. Set version "my version" in BIND's configuration file.
D. Set version=my version in BIND's configuration file.
E. Set version-bind "my version" in BIND's configuration file.

Correct Answer: C
Section: 207.1 Basic DNS server configuration
Explanation

Explanation/Reference:

QUESTION 7
An administrator has placed an executable in the directory /etc/init.d, however it is not being executed when the system boots into runlevel 2. What is the most likely cause of this?

A. The script has not been declared in /etc/services
B. runlevel 2 is not declared in /etc/inittab

C. The script has the permissions 700 and is owned by root

D. A corresponding link was not created in /etc/rc2.d

Correct Answer: D
Section: 202.1 Customizing startup and boot processes
Explanation

Explanation/Reference:

QUESTION 8
In order to generate a pair of asymmetric keys to use during an SSH connection, please choose the correct command to use?

A. ssh-keygen -t dsa

B. ssh-agent

C. sshd

D. ssh-agent -t dsa

E. ssh-keyscan -t dsa

Correct Answer: A
Section: 205.1 Basic networking configuration
Explanation

Explanation/Reference:
From the man pages:
ssh-keygen — authentication key generation, management and conversion

-t type   Specifies the type of key to create. The possible values are "rsa1" for protocol version 1 and "rsa" or "dsa" for protocol version 2.

QUESTION 9
Consider the following output from `df -i`:

```
Filesystem              Inodes   IUsed    IFree IUse% Mounted on
/dev/md0               1966080   45044 1921036    3% /
none                    125731     712  125019    1% /dev
none                    127729       1  127728    1% /dev/shm
none                    127729      17  127712    1% /var/run
none                    127729       2  127727    1% /var/lock
none                   1966080   45044 1921036    3% /var/lib/ureadahead/debugfs
/dev/sde1                    0       0       0    -  /mnt
```

What filesystem does `/dev/sde1` most likely use?

A. ext2

B. ext3

C. reiserfs

D. xfs

Correct Answer: C
Section: 203.3 Creating and configuring filesystem options
Explanation

Explanation/Reference:
ReiserFS works with dynamic inodes and does not show a inodecount when queried with df -i.

QUESTION 10
Why shouldn't you use the options -z and -j when using tar with a magnetic tape backup?

A. In case of damaged tape uncompressed tar archives may allow partial recovery of the backup
B. Standard Linux compression software and hardware compresion in the tape drive will cause bigger files on the tapes.
C. Standard Linux compression software won't be able to write to sequential tape media.
D. Backup and restore performance will be better if we don't introduce the compression delay into the process
E. The tape drive hardware-based compression achieves higher compression rates than either gzip or bzip2 software based compression.

Correct Answer: A
Section: 206.2 Backup operations
Explanation

Explanation/Reference:
???

Exam C

QUESTION 1
Using only commands included with named, what is the command, with options or parameters, to make named re-read its zone files?

Correct Answer: rndc reload
Section: 207.2 Create and maintain DNS zones
Explanation

Explanation/Reference:

QUESTION 2
Which file contains configuration data for automount? Please enter the complete path.

Correct Answer: /etc/auto.master
Section: 203.3 Creating and configuring filesystem options
Explanation

Explanation/Reference:
From the man pages:
The auto.master map is consulted to set up automount managed mount points when the autofs(8) script is invoked or the automount(8) program is run. Each line describes a mount point and refers to an autofs map describing file systems to be mounted under the mount point.
The default location of the master map is /etc/auto.master but an alternate name may be given on the command line when running the automounter and the default master map may changed by setting the MASTER_MAP_NAME configuration variable in /etc/default/autofs. If the master map name has no path then the system Name Service Switch configuration will be consulted and each of the sources searched in line with the rules given in the Name Service Switch configuration.

QUESTION 3
On a system with separate partitions for /, /usr, /var & /tmp, which filesystem can safely be mounted read-only?

Correct Answer: /usr
Section: 203.1 Operating the Linux filesystem
Explanation

Explanation/Reference:

QUESTION 4
Which mount option must be used in the example `/etc/fstab` entry below, to ensure that a specific filesystem is not mounted when the system is booted?

/dev/hdd /media/cdrom iso9660 _____,ro 0 0

Correct Answer: noauto
Section: 203.1 Operating the Linux filesystem
Explanation

Explanation/Reference:
noauto Can only be mounted explicitly (i.e., the -a option will not cause the filesystem to be mounted).

QUESTION 5
With which command can the reserved blocks on /dev/hda1 be displayed? (Enter the command with all parameters and/or options)

Correct Answer: tune2fs -l /dev/hda1
Section: 203.2 Maintaining a Linux filesystem
Explanation

Explanation/Reference:
-l   List the contents of the filesystem superblock, including the current values of the parameters that can be set via this program.

QUESTION 6
After a lot of write operations, the changes should be written to the disk.

Please enter the appropriate command, without the path or any options or parameters, that would achieve this.

Correct Answer: sync
Section: 203.2 Maintaining a Linux filesystem
Explanation

Explanation/Reference:
sync writes any data buffered in memory out to disk. This can include (but is not limited to) modified superblocks, modified inodes, and delayed reads and writes. This must be implemented by the kernel; The sync program does nothing but exercise the sync(2) system call.

QUESTION 7
Which command, with options, could be used to change an ext2 file system on /dev/hda1 to an ext3 file system?

Correct Answer: tune2fs -j /dev/hda1
Section: 203.1 Operating the Linux filesystem
Explanation

Explanation/Reference:
From the man pages:

tune2fs - adjust tunable filesystem parameters on ext2/ext3/ext4 filesystems
-j   Add an ext3 journal to the filesystem. If the -J option is not specified, the default journal parameters will be used to create an appropriately sized journal (given the size of the filesystem) stored within the filesystem. Note that you must be using a kernel which has ext3 support in order to actually make use of the journal.

QUESTION 8
Configuration of X is complete and now the default runlevel can be changed from runlevel 3 to runlevel 5. In which of the following configuration files should this be done?

Correct Answer: /etc/inittab
Section: 202.1 Customizing startup and boot processes
Explanation

Explanation/Reference:
from the man pages:

inittab - init daemon configuration

The /etc/inittab file was the configuration file used by the original System V init(8) daemon.
The Upstart init(8) daemon does not use this file, and instead reads its configuration from files in /etc/init. See init(5) for more details.

QUESTION 9

You have configured a workstation to boot in runlevel 4, but you now find that the X server will not start correctly and the machine will not allow local access. What would be the most effective command to run at the LILO prompt to regain local access to the machine, when the last known working kernel image was linux?

Correct Answer: linux s
Section: 202.1 Customizing startup and boot processes
Explanation

Explanation/Reference:
see http://www.snow.nl/dist/xhtmlc/ch02s02.html

To boot into single user mode in LILO type the name of the label corresponding to the kernel you'd like started followed by an "s", "S" or the word "single". If the label is "Linux", you can type one of the following after the LILO prompt:

```
LILO: Linux s
LILO: Linux S
LILO: Linux single
```

If you have defined a runlevel, let's say runlevel 4, which is a text-only runlevel, you can type the following line to boot into runlevel 4 and regain access to your system:

```
LILO: Linux 4
```

QUESTION 10
Which keyword is used in the /etc/inittab file to define the default system runlevel?

Correct Answer: initdefault
Section: 202.1 Customizing startup and boot processes
Explanation

Explanation/Reference:
see http://linux.die.net/man/5/inittab

respawn - The process will be restarted whenever it terminates (e.g. getty).
wait - The process will be started once when the specified runlevel is entered and init will wait for its termination.
once - The process will be executed once when the specified runlevel is entered.
boot - The process will be executed during system boot. The runlevels field is ignored.
bootwait - The process will be executed during system boot, while init waits for its termination (e.g. /etc/rc). The runlevels field is ignored.
off - This does nothing.
ondemand - A process marked with an ondemand runlevel will be executed whenever the specified ondemand runlevel is called. However, no runlevel change will occur (ondemand runlevels are 'a', 'b', and 'c').
initdefault - An initdefault entry specifies the runlevel which should be entered after system boot. If none exists, init will ask for a runlevel on the console. The process field is ignored.
sysinit - The process will be executed during system boot. It will be executed before any boot or bootwait entries. The runlevels field is ignored.
powerwait - The process will be executed when the power goes down. Init is usually informed about this by a process talking to a UPS connected to the computer. Init will wait for the process to finish before continuing.
powerfail - As for powerwait, except that init does not wait for the process's completion.
powerokwait -This process will be executed as soon as init is informormed that the power has been restored.
powerfailnow - This process will be executed when init is told that the battery of the external UPS is almost empty and the power is failing (provided that the external UPS and the monitoring process are able to detect this condition).
ctrlaltdel - The process will be executed when init receives the SIGINT signal. This means that someone on the system console has pressed the CTRL-ALT-DEL key combination. Typically one wants to execute some

sort of shutdown either to get into single-user level or to reboot the machine.
kbrequest - The process will be executed when init receives a signal from the keyboard handler that a special key combination was pressed on the console keyboard.

QUESTION 11
When using SysV init system, the file /etc/rc3.d/S55sshd is a symbolic link. Type the full path and file name to which this is linked.

Correct Answer: /etc/init.d/sshd
Section: 202.1 Customizing startup and boot processes
Explanation

Explanation/Reference:
see http://www.debian.org/doc/debian-policy/ch-opersys.html

The /etc/init.d directory contains the scripts executed by init at boot time and when the init state (or "runlevel") is changed (see init(8)). [...] These scripts are referenced by symbolic links in the /etc/rcn.d directories. When changing runlevels, init looks in the directory /etc/rcn.d for the scripts it should execute, where n is the runlevel that is being changed to, or S for the boot-up scripts.

QUESTION 12
After a crash, the system needs to be booted into runlevel 1. Which option(s) must be typed at the LILO prompt to achieve this, assuming that the working kernel image is called 'linux'?

Correct Answer: linux 1
Section: 202.2 System recovery
Explanation

Explanation/Reference:
see http://www.snow.nl/dist/xhtmlc/ch02s02.html

"1" is synonymous with runlevel "S" or "single"

QUESTION 13
Please enter the complete path to the main init process configuration file.

Correct Answer: /etc/inittab
Section: 202.1 Customizing startup and boot processes
Explanation

Explanation/Reference:
from the man pages:

inittab - init daemon configuration in /etc/inittab

QUESTION 14
Which e2fsck option is used to automatically repair an ext2 filesystem?

Correct Answer: -p
Section: 203.2 Maintaining a Linux filesystem
Explanation

Explanation/Reference:
From the man pages:

e2fsck - check a Linux ext2/ext3/ext4 file system
-p Automatically repair ("preen") the file system. This option will cause e2fsck to automatically fix any filesystem problems that can be safely fixed without human intervention. If e2fsck discovers a problem which

may require the system administrator to take additional corrective action, e2fsck will print a description of the problem and then exit with the value 4 logically or'ed into the exit code. This option is normally used by the system's boot scripts.

QUESTION 15
In which subdirectory of /proc is information about PC Cards, which are connected and recognized by a 2.6 kernel stored? Please enter the complete path.

Correct Answer: /proc/bus/pccard
Section: 201.5 Manage/Query kernel at runtime
Explanation

Explanation/Reference:
see http://tldp.org/HOWTO/PCMCIA-HOWTO-7.html

On 2.2 and later kernels, the PCMCIA package will create a tree of status information under `/proc/bus/pccard`. Much of the information can only be interpreted using the data sheets for the PCMCIA host controller. Its contents may depend on how the drivers were configured, but may include all or some of the following:

`/proc/bus/pccard/{irq,ioport,memory}` If present, these files contain resource allocation information to supplement the normal kernel resource tables. Recent versions of the PCMCIA system may obtain additional resource information from the Plug and Play BIOS if configured to do so.
`/proc/bus/pccard/drivers` In recent releases, this lists all currently loaded PCMCIA client drivers. Unlike /proc/modules, it also lists drivers that may be statically linked into the kernel.
`/proc/bus/pccard/*/info` For each socket, describes that socket's host controller and its capabilities.
`/proc/bus/pccard/*/exca` This contains a dump of a controller's ``ExCA'' Intel i82365sl-compatible register set.
`/proc/bus/pccard/*/{pci,cardbus}` For CardBus bridges, a dump of the bridge's PCI configuration space, and a dump of the bridge's CardBus configuration registers.

QUESTION 16
Which file contains the software RAID configuration? (Please enter the file-name without the path)

Correct Answer: raidtab
Section: 204.1 Configuring RAID
Explanation

Explanation/Reference:
From the man pages:

/etc/raidtab is the default configuration file for the raid tools (raidstart and company). It defines how RAID devices are configured on a system.

QUESTION 17
Which program can be used to adjust the DMA settings of an IDE hard drive? Please enter it without path, parameters or arguments

Correct Answer: hdparm
Section: 203.3 Creating and configuring filesystem options
Explanation

Explanation/Reference:
From the man pages:

hdparm - get/set SATA/IDE device parameters
-d   Disable/enable the "using_dma" flag for this drive.

QUESTION 18
A database application requires a maximum shared memory segment (shmmax) of 2GB (2147483648 Bytes).
Which configuration file should be modified, to set this kernel parameter permanently? Please enter the
complete path to the file.

Correct Answer: /etc/sysctl.conf
Section: 204.2 Adjusting Storage Device Access
Explanation

Explanation/Reference:
From the man pages:

sysctl.conf - sysctl(8) preload/configuration file
sysctl.conf is a simple file containing sysctl values to be **read in and set by sysctl**(8).

QUESTION 19
A new kernel version needs to be compiled to use a new feature. If the old kernel configuration file is
available, which make target will only update the configuration file for the new kernel version?
(Please enter only the make target.)

Correct Answer: oldconfig
Section: 201.4 Customize, build and install a custom kernel
Explanation

Explanation/Reference:
see http://www.gentoo.org/doc/en/kernel-upgrade.xml#doc_chap10

To reuse your old .config, you simply need to copy it over and then run make oldconfig.

QUESTION 20
Your newly-compiled kernel can not find any modules it needs to load. What command was missed when
compiling and installing the kernel?

Correct Answer: make modules_install
Section: 201.2 Compiling a kernel
Explanation

Explanation/Reference:
see http://www.faqs.org/docs/Linux-mini/Modules.html#KERNEL and http://www.sysdesign.ca/guides/
linux_kernel.html

mod_install: This will copy all the modules to a new directory, "/lib/modules/a.b.c" where a.b.c is the kernel
version

```
# make dep clean modules modules_install zImage
```

QUESTION 21
What is the correct parameter to pass to the kernel at boot time to force it to use only one of the available
processors?

Correct Answer: nosmp
Section: 201.4 Customize, build and install a custom kernel
Explanation

Explanation/Reference:
see http://www.mjmwired.net/kernel/Documentation/kernel-parameters.txt

QUESTION 22

Consider the following /etc/fstab file:

```
/dev/hda1 swap swap defaults 0 0
/dev/hda2 / ext2 defaults 1 1
/dev/hda3 /home ext2 defaults 1 2
none /proc proc defaults 0 0
/dev/fd0 /media/floppy vfat user,noauto 0 0
```

What command can an ordinary (non-root) user use to mount a floppy disk in this system? (Please enter the command with all parameters and/or options)

Correct Answer: mount /dev/fd0
Section: 203.1 Operating the Linux filesystem
Explanation

Explanation/Reference:
also valid command would be mount /media/floppy

QUESTION 23
How can the label root be added to the ext2 file-system on /dev/sda1? Please enter the command with all parameter(s) and/or option(s):

Correct Answer: tune2fs -L root /dev/sda1
Section: 203.2 Maintaining a Linux filesystem
Explanation

Explanation/Reference:
from the man pages:

tune2fs - adjust tunable filesystem parameters on second extended filesystems
tune2fs [-L volume-name] device

QUESTION 24
How can a journal added, non-destructively, to the ext2 file-system on /dev/dg/lv05?

Please enter the command with all parameter(s):

Correct Answer: tune2fs -j /dev/dg/lv05
Section: 203.2 Maintaining a Linux filesystem
Explanation

Explanation/Reference:
From the man pages

tune2fs - adjust tunable filesystem parameters on second extended filesystems
tune2fs [-j] [-J journal-options] device

-j   Add an ext3 journal to the filesystem. If the -J option is not specified, the default journal parameters will be used to create an appropriately sized journal (given the size of the filesystem) stored within the filesystem. Note that you must be using a kernel which has ext3 support in order to actually make use of the journal.

QUESTION 25
You want to change the file that contains the message which is used at the login prompt when users log in locally. Please enter the file including the path.

Correct Answer: /etc/issue
Section: 205.4 Notify users on system-related issues
Explanation

Explanation/Reference:
from the man pages:

issue - pre-login message and identification file
The file /etc/issue is a text file which contains a message or system identification to be printed before the login prompt.

QUESTION 26
Which environment variable you have to setup to use shared libraries that are not in the standard search path?

Correct Answer: LD_LIBRARY_PATH
Section: 206.1 Make and install programs from source
Explanation

Explanation/Reference:
see http://tldp.org/HOWTO/Program-Library-HOWTO/shared-libraries.html

You can temporarily substitute a different library for this particular execution. In Linux, the environment variable LD_LIBRARY_PATH is a colon-separated set of directories where libraries should be searched for first, before the standard set of directories; this is useful when debugging a new library or using a nonstandard library for special purposes

QUESTION 27
You wish to notify all users that you have to take down a service on which they rely. What command will allow you to send a message to all currently logged on users? Enter only the command, not the path.

Correct Answer: wall
Section: 205.4 Notify users on system-related issues
Explanation

Explanation/Reference:
from the man pages:

wall - write a message to users

Wall displays the contents of file or, by default, its standard input, on the terminals of all currently logged in users. Only the super-user can write on the terminals of users who have chosen to deny messages or are using a program which automatically denies messages.

QUESTION 28
According to the configuration below, what is the e-mail address of the administrator for this domain?

```
$TTL 86400
$ORIGIN lpi.org
@ IN SOA test.lpi.org hostmaster.lpi.org (
   2005010101
   10800
   3600
   604800
   86400 )
```

Correct Answer: hostmaster@lpi.org
Section: 207.1 Basic DNS server configuration
Explanation

Explanation/Reference:

see http://tools.ietf.org/html/rfc1035#page-18

The field in question is RNAME.

QUESTION 29
When configuring a new kernel, what file under /usr/src/linux/ contains the configuration?

Correct Answer: .config
Section: 201.2 Compiling a kernel
Explanation

Explanation/Reference:

QUESTION 30
What is the command that will extract information, such as module parameters, from the Linux Kernel modules and print this information to the command line? (Please specify only the command with no path information)

Correct Answer: modinfo
Section: 201.4 Customize, build and install a custom kernel
Explanation

Explanation/Reference:
from the man pages:

modinfo -- program to show information about a Linux Kernel module
modinfo by default lists each attribute of the module in form fieldname : value, for easy reading. The filename is listed the same way (although it's not really an attribute).

QUESTION 31
In which directory is the Linux kernel documentation be found?

Correct Answer: /usr/src/linux/Documentation
Section: 201.2 Compiling a kernel
Explanation

Explanation/Reference:
see http://tldp.org/LDP/Linux-Filesystem-Hierarchy/html/usr.html

/usr/src/linux/Documentation
Contains documentation that may be necessary in order to re-compile a kernel. However, it also provides quite a lot of information about your Linux system in general as well. For those who wish to seek further information on the contents of this directory you may consult the /usr/src/linux/Documentation/00-INDEX file. Further, more detailed documentation may be found in /usr/src/linux/Documentation/Docbook.

QUESTION 32
When compiling kernel modules, which make target will remove most generated files but keep the config file and enough build support to build external modules? (Please enter only the make target and no other words)

Correct Answer: clean
Section: 201.2 Compiling a kernel
Explanation

Explanation/Reference:

QUESTION 33

You need to recover some data from a magnetic tape and it is the second file on the media. The following command is being attempted:

mt -f /dev/nst0 _____

What is the mt operation that will position the tape on the first block of the second file? (Please specify the operation with no other parameters)

Correct Answer: asf 2
Section: 206.2 Backup operations
Explanation

Explanation/Reference:
From the man pages:
mt - control magnetic tape drive operation
asf   The tape is positioned at the beginning of the count file. Positioning is done by first rewinding the tape and then spacing forward over count filemarks.

QUESTION 34
The users of the local network complain that name resolution is not fast enough. Enter the command, without the path or any options, that shows the time taken to resolve a DNS query.

Correct Answer: dig
Section: 205.2 Advanced Network Configuration and Troubleshooting
Explanation

Explanation/Reference:

QUESTION 35
Which option, when passed to the hostname command, will return the name of the DNS domain? (Provide only the option)

Correct Answer: -d
Section: 205.1 Basic networking configuration
Explanation

Explanation/Reference:
-d, --domain
Display the name of the DNS domain. Don't use the command domainname to get the DNS domain name because it will show the NIS domain name and not the DNS domain name. Use dnsdomainname instead.

QUESTION 36
What tool can be used to send kernel boot messages to a remote server?

Correct Answer: netconsole
Section: 202.1 Customizing startup and boot processes
Explanation

Explanation/Reference:
see http://www.kernel.org/doc/Documentation/networking/netconsole.txt

QUESTION 37
Which directory in /dev/disk/ can be used to determine the UUID of a connected hard disk?

Correct Answer: by-uuid
Section: 203.3 Creating and configuring filesystem options

Explanation

Explanation/Reference:
see http://linuxshellaccount.blogspot.com/2008/08/how-to-manage-your-disk-by-uuid-on.html

QUESTION 38
What command will search for physical defects on a hard drive and will mark these defects so that they are no longer used? (Please specify the command with no path information)

Correct Answer: badblocks
Section: 203.2 Maintaining a Linux filesystem
Explanation

Explanation/Reference:
from the man pages:

badblocks - search a device for bad blocks
badblocks [-svwnf] [-b block-size] [-c blocks_at_once] [-i input_file] [-o output_file] [-p num_passes] [-t test_pattern] device [last-block] [start-block]

QUESTION 39
Which command will prevent the service `ldap` from starting on a Debian system in all runlevels, forcing the removal of all symlinks in /etc/rcX.d?

(Provide the command without any options or parameters)

Correct Answer: update-rc.d
Section: 202.1 Customizing startup and boot processes
Explanation

Explanation/Reference:
from the man pages:

update-rc.d - install and remove System-V style init script links

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Insert links using the defaults: `update-rc.d foobar defaults`
Equivalent command using explicit argument sets: `update-rc.d foobar start 20 2 3 4 5 . stop 20 0 1 6 .`
More typical command using explicit argument sets: `update-rc.d foobar start 30 2 3 4 5 . stop 70 0 1 6 .`
Remove all links for a script (assuming foobar has been deleted already): `update-rc.d foobar remove`

QUESTION 40
What command will remove the physical volume /dev/sda4 from the volume group /dev/vg0?

(Provide the command with options and parameters)

Correct Answer: vgreduce /dev/vg0 /dev/sda4
Section: 204.3 Logical Volume Manager
Explanation

Explanation/Reference:
from the man pages:

vgreduce - reduce a volume group
vgreduce allows you to remove one or more unused physical volumes from a volume group.

QUESTION 41
In order to provide notices and information to users when they log in to a server, what file must be modified to give these notices? (Please provide the file with full path information)

Correct Answer: /etc/motd
Section: 205.4 Notify users on system-related issues
Explanation

Explanation/Reference:
from the man pages:

The file /etc/motd is normally displayed by login(1) after a user has logged in but before the shell is run. It is generally used for important system-wide announcements. Individual users may suppress the display of this file by creating a file named ``.hushlogin'' in their home directories.

QUESTION 42
Which single parameter, when passed to nmap, will instruct nmap to perform a fast scan? (Provide only the option)

Correct Answer: -F
Section: 205.3 Troubleshooting network issues
Explanation

Explanation/Reference:
From the man pages:

-F (Fast (limited port) scan)
    Specifies that you only wish to scan for ports listed in the nmap-services file which comes with nmap (or the protocols file for -sO). This is much faster than scanning all 65535 ports on a host. Because this list contains so many TCP ports (more than 1200), the speed difference from a default TCP scan (about 1650 ports) isn't dramatic. The difference can be enormous if you specify your own tiny nmap-services file using the --datadir option.

QUESTION 43
Which directory contains the PCMCIA configuration files?

Correct Answer: /etc/pcmcia
Section: 202.1 Customizing startup and boot processes
Explanation

Explanation/Reference:
see http://linuxmafia.com/pub/linux/suse-linux-internals/chapter2.html#Tab2-5

QUESTION 44
After configuring a new 2.4 series kernel, all dependencies, such as include files, need to be created. How can this be achieved? Please enter the complete command.

Correct Answer: make dep
Section: 201.2 Compiling a kernel
Explanation

Explanation/Reference:
make dep = makes and build the dependecies

QUESTION 45
You have installed some new libraries, but these are not available to programs and are not listed by ldconfig -p. What file should the path to the libraries be added to, before running ldconfig?

Correct Answer: /etc/ld.so.conf
Section: 206.1 Make and install programs from source
Explanation

Explanation/Reference:

QUESTION 46
You are not sure whether the kernel has detected a piece of hardware in your machine. What command, without options or parameters, should be run to present the contents of the kernel ring- buffer?

Correct Answer: /bin/dmesg
Section: 201.5 Manage/Query kernel at runtime
Explanation

Explanation/Reference:
From the man pages:
dmesg - print or control the kernel ring buffer

QUESTION 47
According to the tcpdump output below, what is the IP address of the client host?

```
14:17:19.225220 IP 192.168.1.106.33239 > 192.168.1.127.22: S  4158312222, win
5840, options [mss 1460,sackOK,TS val 806043 ecr 0,nop,wscale 6]
14:17:19.242943 IP 192.168.1.127.22 > 192.168.1.106.33239: S. 4013568495 ack
4158312223, win 5792, options [mss 1460,sackOK,TS val 565852 ecr 806043,nop,
wscale 6]
14:17:19.243111 IP 192.168.1.106.33239 > 192.168.1.127.22: .  ack 1, win 92,
options [nop,nop,TS val 806045 ecr 565852]
14:17:19.264654 IP 192.168.1.127.22 > 192.168.1.106.33239: P. seq 1:40, ack 1,
win 91, options [nop,nop,TS val 565856 ecr 806045]
```

Correct Answer: 192.168.1.106
Section: 205.3 Troubleshooting network issues
Explanation

Explanation/Reference:
```
192.168.1.127.22 means Port 22 on Host 192.168.1.127, which is the ssh-server;
which leaves 192.168.1.106 as the client host.

------------------------------------
```
WARNING: actual IP may be different in the LPI test! (192.168.246.11 was the
original IP i think)

QUESTION 48
Which chkconfig command will display whether or not the service ldap is configured to start in each runlevel?
(Provide the command and any options or parameters)

Correct Answer: chkconfig --list ldap
Section: 201.1 Kernel Components
Explanation

Explanation/Reference:
From the man pages:

chkconfig - updates and queries runlevel information for system services

--list name   This option lists all of the services which chkconfig knows about, and whether they are stopped or

started in each runlevel. If name is specified, information in only display about service name.

QUESTION 49
On a server running the 2.6.27-11 Linux kernel, which file in the/boot directory contains the kernel configuration parameters?

Correct Answer: config-2.6.27-11
Section: 201.4 Customize, build and install a custom kernel
Explanation

Explanation/Reference:

QUESTION 50
Which program lists information about files opened by processes and produces output that can be parsed by other programs?

Correct Answer: lsof
Section: 205.2 Advanced Network Configuration and Troubleshooting
Explanation

Explanation/Reference:
From the man pages:

lsof - list open files

QUESTION 51
Please enter the complete path to the main configuration file for syslogd, which logs system messages on Linux systems?

Correct Answer: /etc/syslog.conf
Section: 205.3 Troubleshooting network issues
Explanation

Explanation/Reference:

QUESTION 52
With which command can the reserved blocks count for a file-system be seen? (Please enter only the command without the path or any parameters or options)

Correct Answer: tune2fs
Section: 203.3 Creating and configuring filesystem options
Explanation

Explanation/Reference:

QUESTION 53
What command is used to create a file-system to be burned to a CD? (Please enter the command without the path or any options or parameters)

Correct Answer: mkisofs
Section: 203.3 Creating and configuring filesystem options
Explanation

Explanation/Reference:
From the man pages:

mkisofs - create an hybrid ISO9660/JOLIET/HFS filesystem with optional Rock Ridge attributes.

Was replaced by genisoimage

QUESTION 54
The administrator notices that a 10GB ext2 file-system used only for data storage has approximately 540MB reserved for root. Which command can be used to change the file-system parameters to make all of the partition available to users, WITHOUT losing data? Please enter only the command without path, options or parameters.

Correct Answer: tune2fs
Section: 203.3 Creating and configuring filesystem options
Explanation

Explanation/Reference:

QUESTION 55
For interpreting system rc scripts a shell is most commonly used. Please enter the first line found in such scripts.

Correct Answer: #!/bin/sh
Section: 202.1 Customizing startup and boot processes
Explanation

Explanation/Reference:
Use a script that works with all POSIX-compatible shells

QUESTION 56
What directive can be used in named.conf to restrict zone transfers to the 192.168.1.0/24 network?

Correct Answer: allow-transfer { 192.168.1.0/24; };
Section: 207.1 Basic DNS server configuration
Explanation

Explanation/Reference:

QUESTION 57
This program has 3 operating modes: copy-in mode, copy-out mode, and copy-pass mode, and is used to copy files into or out of archives. What program is this? (Please provide the command name only, with no arguments or path.)

Correct Answer: cpio
Section: 206.2 Backup operations
Explanation

Explanation/Reference:

QUESTION 58
Running tcpdump -nli eth1 'icmp' shows the following output:

```
11:56:35.599063 IP 192.168.123.5 > 194.25.2.129: icmp 64: echo request seq 1
11:56:35.670910 IP 194.25.2.129 > 192.168.123.5: icmp 64: echo reply seq 1
```

What command was used on the host 192.168.123.5, to generate this output?

Correct Answer: ping
Section: 205.3 Troubleshooting network issues
Explanation

Explanation/Reference:

QUESTION 59
Which port must be open on a firewall, to allow a DNS server to receive queries? (Enter only the port number).

Correct Answer: 53
Section: 205.3 Troubleshooting network issues
Explanation

Explanation/Reference:

QUESTION 60
Which type of DNS record defines which server(s) email for a domain should be sent to?

Correct Answer: MX
Section: 207.1 Basic DNS server configuration
Explanation

Explanation/Reference:

QUESTION 61
What is the location of the main udev configuration file? (Specify the full path and filename)

Correct Answer: /etc/udev/udev.conf
Section: 203.4 udev Device Management
Explanation

Explanation/Reference:
From the man pages:
udev - Linux dynamic device management
udev expects its main configuration file at /etc/udev/udev.conf.

QUESTION 62
After calling `./configure` with its appropriate parameters and no errors, what would be the next command to run?

Correct Answer: make all -or- make
Section: 206.1 Make and install programs from source
Explanation

Explanation/Reference:
configure prepares the makefile for the system it is used for. run the make or make all command to start the building process.

QUESTION 63
Which site-specific configuration file for the shadow login suite must be modified to log login failures? Please enter the complete path to that file.

Correct Answer: /etc/log.defs
Section: (none)
Explanation

Explanation/Reference:

QUESTION 64
Please enter, separated with a space but without paths, the TWO archive programs needed in addition to gzip, to extract files from a .deb file without using the Debian package manager.

Correct Answer: ar tar
Section: (none)
Explanation

Explanation/Reference:

QUESTION 65
Because of a bad BIOS LBA translation, a booting system displays an error instead of a LILO prompt. Complete the error message with the error number:

L

Correct Answer: 01
Section: (none)
Explanation

Explanation/Reference:

QUESTION 66
Please enter the command with all parameters and arguments, that could be used by root to list the cron jobs for the user john.

Correct Answer: crontab -u john -l
Section: (none)
Explanation

Explanation/Reference:
From the crontab manpage
-u   Specify the name of the user
-l   Display the current crontab on standard output

QUESTION 67
Which command with all parameters and arguments, can be used by root to erase the cron job list for the user fred?

Correct Answer: crontab -u fred -r
Section: (none)
Explanation

Explanation/Reference:
From the crontab manpage
-u   Specify the name of the user
-r   Remove the current crontab

Exam D

QUESTION 1
Messages from programs are not appearing in the user's native language. What environment variable must be set for this to happen?

A. LANG
B. I18N
C. MESSAGES
D. MSGS
E. LC_MSGS

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:

QUESTION 2
When building an RPM package, which rpmbuild option is used to unpack sources and apply patches before proceeding with the next steps?

A. -ba
B. -bb
C. -be
D. -bs
E. -bp

Correct Answer: E
Section: (none)
Explanation

Explanation/Reference:

QUESTION 3
Which of the following must be included in the syslogd configuration file, so that ONLY kernel related messages with the priority crit are reported?

A. kern.crit
B. kern.!crit
C. kern.=crit
D. kern.*=crit
E. kern.-crit

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:

QUESTION 4

Which TWO statements about crontab are true?

A. Every user may have their own crontab.
B. Changing a crontab requires a reload/restart of the cron deamon.
C. The cron daemon reloads crontab files automatically when necessary.
D. hourly is the same as "0 * * * *".
E. A cron daemon must run for each existing crontab.

Correct Answer: AD
Section: (none)
Explanation

Explanation/Reference:

QUESTION 5
What does the following script do? #!/bin/bash find / -perm +4000 | mail -s "Daily find output" root

A. Emails a report of all guid files to root
B. Emails a report of all important files to root
C. Emails a report of all writeable files to root
D. Emails a report of all suid files to root
E. Corrects permissions on files and emails the result to root

Correct Answer: D
Section: (none)
Explanation

Explanation/Reference:

QUESTION 6
A system has one hard disk, configured as master and connected to the primary IDE controller, and one CD writer, configured as slave and connected to the secondary IDE controller. If the system is correctly configured, which device is used to represent the CD writer?

A. /dev/scd0
B. /dev/hdd
C. /dev/hdb
D. /dev/sr1
E. /dev/scd1

Correct Answer: B
Section: (none)
Explanation

Explanation/Reference:
IDE Device Recognition
Primary Master /dev/hda
Primary Slave /dev/hdb
Secondary Master /dev/hdc
Secondary Slave /dev/hdd
According to question CD-ROM is connected as Secondary Slave so device named should be /dev/hdd.

QUESTION 7
A new PCMCIA network card is not functioning correctly. To troubleshoot this, the socket information should be checked. How can this be done? (Choose two.)

A. cardctl info
B. cardctl -s
C. cardmgr -s
D. cat /var/lib/pcmcia/stab
E. cat /proc/pcmcia

Correct Answer: AD
Section: (none)
Explanation

Explanation/Reference:

QUESTION 8
Which command displays information about connected USB devices?

A. cat /proc/usbdevices
B. cat /proc/usb/devices
C. cat /proc/bus/usb/devices
D. cat /proc/usbbus/devices
E. cat /proc/hotplug/usb

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:

QUESTION 9
What command can be used to configure the baud rate on a serial port?

A. setserial
B. serialconfig
C. ttyconfig
D. setty
E. serialmode

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:

QUESTION 10
What command is used to re-add a partition to a software RAID setup?

A. raidhotadd
B. raidadd

C. addraid

D. raidaddhot

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:
Explanation:
: raidhotadd command is used to add the new disk on RAID array or as a RAID spare disk.
Example: raidhotadd /dev/hda13 /dev/md0

QUESTION 11
Which TWO of the following sentences are true about this package?
Consider the following excerpt from an RPM spec file:

Summary: Complete Web authoring system for linux
Name: nvu
Version: 0.50
Release: 5
Source0: %{name}-%{version}.tar.bz2
Patch0: nvu-freetype2.patch.bz2
Patch1: nvu-mozilla-1.1-system-myspell-dicts.patch.bz2 Patch2: nvu-mozilla-1.7-spellcheck-full-langname.
patch.bz2 License: MPL/LGPL/GPL
Group: Development/Other
Url: http://www.nvu.com
BuildRoot: %{_tmppath}/%{name}-buildroot
BuildRequires: libjpeg-devel libpng-devel libIDL-devel BuildRequires: zip tcsh
BuildRequires: gtk+2-devel >= 2.2.0

Which TWO of the following sentences are true about this package?

A. Package gtk+2-devel version 2.2.0 or higher needs to be present in the system before this nvu package
   may be installed.
B. The file nvu-freetype2.patch.bz2 must be present in the SOURCES/PATCHES directory.
C. The macro %_tmppath must be defined in system-wide or in local configuration files.
D. The nvu-0.50.tar.bz2 will be unpacked into %{_tmppath}/%{name}-buildroot.
E. The nvu-0.50.tar.bz2 file contains pristine sources for nvu.

Correct Answer: AE
Section: (none)
Explanation

Explanation/Reference:

QUESTION 12
In some older machines, the Linux kernel defaults to polling for the parallel printer port (/dev/lp0), even if it is
capable of interrupt-driven operation (ECP). Which utility enables interrupt-driven operation of the parallel
port?

A. tunelp

B. stty

C. setserial

D. setpar

E. parpirq

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:

QUESTION 13
To check winbind functionality, you have try:

wbinfo -u
getent passwd

What is the next action?

A. The contents of smb.conf should be verified
B. The contents of resolv.conf should be verified
C. The contents of nsswitch.conf should be verified
D. The contents of winbind.conf should be verified
E. The contents of lmhosts should be verified

Correct Answer: C
Section: (none)
Explanation

Explanation/Reference:

QUESTION 14
Which THREE lines below are valid entries in /etc/crontab and will work properly?

A. 0 23 * * 7 root tar cvf /dev/st0 /etc
B. 0 10 6 22 * /usr/local/bin/fs-report.sh
C. 0 17 * * 1 jdoe accouting-generation
D. 20 6 1 * * root graphicals-generations
E. 0 10 * * 2-6 tar cvf /dev/st0 /etc

Correct Answer: ACE
Section: (none)
Explanation

Explanation/Reference:

QUESTION 15
Which TWO of the following wireless tools can be used to check the wireless network link quality?

A. iwconfig
B. iwlink
C. iwscan
D. iwifi
E. iwspy

QUESTION 16
What command is used to permanently set the options in the kernel when making a boot disk?

A. blockdev
B. kconfig
C. lilo
D. rdev
E. dd

QUESTION 17
What command can be used to install a Perl module ('$module') from the CPAN archive?

A. perl -MCPAN -e "install $module"
B. perl -MCPAN -install $module
C. perl -i $module
D. perl -cpan -e "make $module"
E. perl -cpan -i $module

QUESTION 18
When bash is invoked as an interactive login shell, which of the following sentences is true?

A. It first reads and executes commands in /etc/bashrc and then does the same for /etc/profile.
B. It ignores /etc/profile and only reads and executes commands in ~/.bashrc.
C. It first reads and executes commands in /etc/profile and then does the same for ~/.bash_profile, ~/.
   bash_login and ~/.profile.
D. It first reads and executes commands in /etc/profile and then does same for ~/.bash_profile and ~/.bashrc.
E. It reads and executes commands in ~/.bashrc only if /etc/profile or another initialisation script calls it.

Explanation/Reference:
Explanation:
Startup Scripts:
For Login shell provided users:
i. /etc/profile which calls /etc/profile.d/*.sh
ii. ~./bash_profile
iii. ~/.bashrc
iv. /etc/bashrc
For non-Login Shell provided users
 19

1. ~/.bashrc
2. /etc/bashrc which calls /etc/profile.d/*.sh

QUESTION 19
The server has two network cards. The driver for the first card is the module 8139too and the driver for the
second card is the module ne2k-pci. How is it possible to ensure that the card using the 8139too driver is
detected before the card using the ne2k-pci driver?

A. modprobe 8139too dev=eth0; modprobe ne2k-pci dev=eth1
B. install mod 8139too; install mod ne2k-pci
C. modprobe eth0=8139too, eth1=ne2k-pci
D. ifconfig modadd eth0=8139too, eth1=ne2k-pci
E. modprobe 8139too; modprobe ne2k-pci

Correct Answer: A
Section: (none)
Explanation

Explanation/Reference:
Explanation:
: At System booting time, tries to bring up the Ethernet devices, first try to eth0 and then eth1. We
can set the module to specific device using modprobe command modprobe 8139too dev=eth0 than means
8139too alias to eth0 and system first try to bring up the eth0 device.