QUESTION BANK

MCA

SEMESTER V

VOL. I

QUESTION BANK

LINUX PROGRAMMING

MCA 301

QUESTION BANK
LINUX PROGRAMMING - MCA 301
MCA V

UNIT - I

I   **Test Your Skills:**
(a)   **State Whether the Following Statements are True or False:**

1   The "no" option informs the machine that there is no grace period or time to wait for other users to log off.
2   Telnet command is used for changing the run level or state of the computer without rebooting.
3   IP address is a unique identifier for the system.
4   Transmission control protocol (TCP) builds on top of UPS and certifies that each message has been received.
5   Cron is known for arranging the files in the disk in chronological manner.
6   ARP (Address Resolution Protocol) converts IP address to MAC Address.
7   UNIX is a command-based system.
8   A program is synonymous with a process.
9   All UNIX flavors today offer a Command User Interface.
10   The operating system allocates memory for the program and loads the program to the allocated memory.

Ans.   (1)(T), (2)(T), (3)(T), (4)(T), (5)(F), (6)(F), (7)(T), (8)(T), (9)(F), (10)(T)

(b)   **Multiple Choice Questions:**

1   Physical partitioning can be done using:
    (a)   fdisk
    (b)   Disk Driud
    (c)   Both (a) and (b)
    (d)   None

2   RPM stands for
    (a)   Random Process Management
    (b)   Red Hat Package Manager
    (c)   Both (a) and (b)
    (d)   None

3   IP address is a
    (a)   Static address
    (b)   Dynamic address
    (c)   Both (a) and (b)
    (d)   None

4   NFS stands for

(a)   New file system
(b)   Network file system
(c)   Netware file system
(d)   None of the above

5   By default, one can mount
(a)   CDs onto your device as root
(b)   Floppy disk onto your device as root
(c)   Pen drive
(d)   Magnetic tapes

6   The agency that sits between the user and the LINUX system is called the
(a)   logic
(b)   shell
(c)   .profile
(d)   .exec
(e)   None of the above

7   Which is the earliest and most widely used shell that came with the UNIX system?
(a)   C shell
(b)   Korn shell
(c)   Bourne shell
(d)   Smith Shell
(e)   None of the above

8   In Bourne shell, which file sets the Unix environment for the user when the logs into his HOME directory.
(a)   .exec
(b)   .last login
(c)   .profile
(d)   .mbox
(e)   None of the above

9   The seventh field of /etc/password is
(a)   password
(b)   login
(c)   shell
(d)   home
(e)   None of the above

10   The UNIX file system stores a date in physical blocks of
(a)   1,024 bytes
(b)   512 bytes
(c)   2,048 bytes
(d)   256 bytes
(e)   None of the above

11   Which of the following is not the component of LINUX?
        (a)   CPU
        (b)   Kernel
        (c)   Shell
        (d)   Utilities

12   What hardware architectures are not supported by Red Hat?
        (a)   SPARC
        (b)   IBM-compatible
        (c)   Alpha
        (d)   Macintosh
        (e)   None of the above

13   How can you add Amit, a new user, to your system?
        (a)   Using useradd
        (b)   Using adduser
        (c)   Using linuxconf
        (d)   All of the above
        (e)   None of the above

14   How many primary partitions can exist on one drive?
        (a)   16
        (b)   4
        (c)   2
        (d)   1
        (e)   None of the above

15   RPM
        (a)   stands for Red Hat Package Manager
        (b)   is used to install, uninstall, and manage packages
        (c)   is used to keep track of the users
        (d)   assigns a dynamic IP address
        (e)   None of the above

16   What command is used to query for a specific package with RPM?
        (a)   rpm –q
        (b)   rpm –a
        (c)   rpm –d
        (d)   rpm –l
        (e)   None of the above

17   What script is run for setting bash global defaults for all users?
        (a)   /etc/.profile
        (b)   /etc/.bashrc
        (c)   /etc/.log
        (d)   /etc/profile

(e)   None of the above

18   Who founded the Linux Kernel?
       (a)   Bill Gates
       (b)   Ben Thomas
       (c)   Richard Stallman
       (d)   Linus Torvalds
       (e)   None of the above

19   ____ tool allows you to change your default X Window desktop.
       (a)   Utilinux
       (b)   Cempre
       (c)   Switchdesk
       (d)   Window
       (e)   None of the above

20   In what file can you specify which users are not allowed to access a system via FTP?
       (a)   /etc/ftpusers
       (b)   /etc/hosts.deny
       (c)   /etc/ftpaccess
       (d)   All of the above
       (e)   None of the above

21   Which program is used to schedule particular jobs or programs at particular times on the system?
       (a)   vi
       (b)   Outlook
       (c)   Scheduler
       (d)   cron
       (e)   None of the above

22   Which command can force all buffers to disk?
       (a)   save
       (b)   sync
       (c)   edbuff
       (d)   flush
       (e)   None of the above

23   How many extended partitions can exist on one drive?
       (a)   16
       (b)   4
       (c)   2
       (d)   1
       (e)   None of the above

24   The location of some system configuration and system administrator executable files, is:

(a)   /home
(b)   /proc
(c)   /var
(d)   /sbin
(e)   None of the above

25   The location for subdirectories for local programs and executables for user and administrative commands is:
(a)   /usr
(b)   /tmp
(c)   /opt
(d)   /mnt
(e)   None of the above

26   LILO
(a)   stands for Linux loader
(b)   is the Linux boot loader
(c)   is a tool used to boot the Kernel on x86 hardware
(d)   All of the above
(e)   None of the above

27   Which of the following tool is used to partition your hard drive?
(a)   mkfs
(b)   fdisk
(c)   fsck
(d)   mount
(e)   None of the above

28   What command can be used to get information about yourself?
(a)   which
(b)   pwd
(c)   i/4
(d)   who am i
(e)   None of the above

29   Which of the following tool allows the user to change the default X Window desktop?
(a)   Switchdesk
(b)   Intrc
(c)   Xinitre
(d)   Xchange
(e)   None of the above

30   What command is used to halt a Linux system?
(a)   init 0
(b)   Shutdown –t
(c)   Shutdown -g -y0

(d)   Ctrl+Alt+Del
(e)   None of the above

31   SVR4 was developed by
(a)   Sun Microsystems
(b)   AT&T
(c)   University of Berkeley
(d)   Sun and AT&T jointly

32   Which of these is not a Unix Flavor?
(a)   BSD
(b)   MAC
(c)   AIX
(d)   IRIX

33   Which of the following statement is FALSE?
(a)   Unix supports multiple users
(b)   Linux is an open source operating system and the source code is shared
(c)   Shell takes care of inter process communication
(d)   Shell provides the feature of I/O Redirection

34   Which of the following UNIX flavor is from IBM?
(a)   BSD
(b)   Solaris
(c)   HP-UX
(d)   AIX

35   x86-32 uses which programming model?
(a)   IP16
(b)   IP32
(c)   ILP16
(d)   ILP32

36   What are the sizes of (Integer/Long/Pointer) in LP64 programming model?
(a)   8/8/8
(b)   4/4/8
(c)   4/8/8
(d)   4/8/4

37   Which among the following is used to write small programs to control Unix functionalities?
(a)   Shell Commands
(b)   Shell Script
(c)   Filters
(d)   C Language

38   What control character signals the end of the input file?
       (a)   ctrl + a
       (b)   ctrl + b
       (c)   ctrl + c
       (d)   ctrl + d

39   How do the user gets the help about the command "cp"?
       (a)   help cp
       (b)   man cp
       (c)   cd ?

40   UNIX/Linux kernel is?
       (a)   Monolithic
       (b)   micro
       (c)   Exo
       (d)   nano

41.   To increase the response time and throughput, the kernel minimizes the frequency of disk
       access by keeping a pool of internal data buffer called
       (a)   Pooling
       (b)   Spooling
       (c)   Buffer cache
       (d)   Swapping

42.   At start of process execution, STDOUT & STDERR
       (a)   Point to current terminal device
       (b)   Are closed
       (c)   Point to special files on the system
       (d)   None of the above

43.   wtmp and utmp files contain:
       (a)   Temporary system data
       (b)   User login-logout log
       (c)   The user's command execution log
       (d)   The user's su and sudo attempts

44.   Which is the core of the operating system?
       (a)   Shell
       (b)   Kernel
       (c)   Commands
       (d)   Script

45.   ILP32 stands for
       (a)   32 bit Integer, Long & Pointer
       (b)   32 bit Integrated Long & Pointer
       (c)   32 bit Intelligent Long & Pointer

       (d)   32 bit Long & Pointer

46.   Single Unix Specification Version 2 provides enhanced support for
       (a)   16 bit Unix
       (b)   32 bit Unix
       (c)   64 bit Unix
       (d)   8 bit Unix

47.   Under UNIX the key board is the default input device and the monitor is the default output device
       (a)   True
       (b)   False

48.   Which among the following interacts directly with system hardware?
       (a)   Shell
       (b)   Commands
       (c)   Kernel
       (d)   Applications

49.   Applications communicate with kernel by using:
       (a)   System Calls
       (b)   C Programs
       (c)   Shell Script
       (d)   Shell

50.   Solaris is the name of a flavor of UNIX from
       (a)   HP
       (b)   IBM
       (c)   Digital Equipment Corp
       (d)   Sun Microsystems

Ans.   (1)(c), (2)(b), (3)(c), (4)(b), (5)(a), (6)(b), (7)(c), (8)(c), (9)(c), (10)(b), (11)(a), (12)(d), (13)(d), (14)(b), (15)(a), (16)(a), (17)(d), (18)(d), (19)(c), (20)(a), (21)(d), (22)(b), (23)(d), (24)(d), (25)(a), (26)(d), (27)(b), (28)(d), (29)(a), (30)(a), (31)(d), (32)(b), (33)(c), (34)(d), (35)(d), (36)(c), (37)(b), (38)(d), (39)(b), (40)(a), (41)(c), (42)(a), (43)(b), (44)(b), (45)(a), (46)(c), (47)(a), (48)(c), (49)(a), (50)(d)

(c)   Fill in the Blanks:

1   Linux can handle as many as _____ partitions one device or physical hard drive.
2   Red Hat by default places its binary files in _____.
3   The command used to enable swap space is _____.
4   As the machine boots up, it reads through the _____.
5   The information about your swap partition is kept in the _____.
6   In the Linux bootup process, there are actually two stages. The first is _____, and the second is the initiation of process _____.

7   _____ allows better access control and logging of netware daemons.
8   LILO stands for _____.
9   Modern operating systems are _____.
10   The operating system creates a _____ for each program and then control the switching of these processes.
11   After the program has completed execution, the operating system cleans up the _____ and _____ and makes them available for the next program.
12   Operating Systems are written in _____.

Ans.   (1)(16), (2)(/usr/bin), (3)(swapon-a), (4)(rc or run command file), (5)(/etc/fstab file), (6)(Hardware recognition, process daemons or scripts), (7)(TCP-Wrappers), (8)(Linux Loader), (9)(multiprogramming), (10)(Process), (11)(memory, registers), (12)(Low level Languages).

II   Short Answer Type Questions:

1   How many swap partition can Linux support?
2   What other Linux releases are available?
3   What type of hardware are required to install Linux?
4   How to obtain the Linux OS?
5   How to partition the drives? Define partition.
6   Define Daemons.
7   What are run levels?
8   What is ping used for?
9   How to define hostname for the system?
10   What is SAMBA?
11   Give the command to shutdown a Linux system after 5 minutes . (Shutdown-g5)
12   How can a process be terminated in Linux?
13   What is the relation between UNIX and Linux?
14   What is the security feature in Linux?
15   Explain the features of an X-Windows system.
16   What are the features of Linux Operating System?
17   Name various Linux distributions.
18   How to obtain the Linux OS.
19   What types of hardware are required to install Linux ?
20   How to partition the drives?
21   How to Select the Mount Points?
22   Write a note on changing the state of Linux Operations.
23   Write the process of changing the Run Level using telinit.
24   Explain the system V booting process with special emphasis on the rc.d scripts and the role of the boot loader.
25   Explain the Linux startup process. How Linux box switches from real mode to protected mode.
26   Why does a machine needs an operating system?
27   When you enter a command, what processing does it go through before it is executed?
28   What Software does Linux Support?

29   What Hardware Is Supported?
30   What is LILO?
31   Describe briefly the Linux architecture.
32   Briefly explain the start up scripts of Linux.
33   Write a command to find all of the files which have been accessed within the last 30
        days.
        (Hint: find / -type f -atime -30 >December.files)
34   Who created LINUX ?
35   Write down five main functions of an operating system.
36   List the various distributions of LINUX operating system.
37   What is the use of CRON daemon ?
38   What do multiprogramming mean?
39   What do multiuser mean?
40.   Differentiate between multiuser and multitasking.
41.   Explain booting process of Linux?
42.   Difference between Linux and Windows?
43.   Explain Ext2 file system? Difference between Ext2 and Ext3 file system?
44.   What is inode. Explain its structure in brief?
45.   Explain Linux architecture?
46.   Describe various run-levels used by Linux?

III   Long Answer Type Questions:

1   Write the installation process of the Linux Operating System.
2   Explain bootup process of Linux OS.
3   Explain startup and shut process of Linux OS.
4   Describe and compare various run levels.
5   What is Linux? Explain its features.
6   Explain controlling process of Linux.
7   Differentiate between ISO/OSI model and TCP/IP model.
8   What are the security issues of Linux System?
9   How networking can be configured in Linux System?
10   Why is Linux more portable than other operating systems?
11   Discuss the Linux internal structure with a neat diagram.
12   What do multiprogramming, multitasking and multiuser mean in Linux operating
        System?
13   What are system calls? How these are implemented in Linux?
14   Write in detail the process of running Daemons in the Background.
15   Write in detail Troubleshooting boot errors in Linux system.
16   Write note on following:
        (i)   Moving information across networks via routes and packets
        (ii)   Assigning identification numbers or IP addresses to a networked machine
        (iii)   Creating domains and giving your machine an identity.
        (iv)   Dynamically providing IP addresses and hostnames
        (iv)   Communicating and sharing files with other machines.
        (vi)   Creating name servers for hostname lookups.

17   What is a Network File System(NFS) ? Explain the usage of following to configure Ethernet card on a LINUX System:
        (a)   /etc/hosts
        (b)   /etc/networks
        (c)   Resolve.conf
        (d)   /etc/services
18   "A modular kernel is better than a monolithic kernel. Comment.
19   A system has to be installed for database development. The system has 1GB of RAM and 4 * 9.1 GB SCSI HDD's . Design the partitions layout (together with sizes) for the optimum utilization of resources.
20   In your LAN there is a DHCP server (192.168.42.x) which assigns the IP addresses to all the nodes connected to it. Your Linux box is in the same network with an Ethernet interface (etho). Write down the steps to get a dynamic IP for that box from the given DHCP server.
21   "The Linux firewall has more functionality than windows" Agree or Disagree? Justify your answer.
22   Compare Unix and Linux in terms of cost, platforms, copyright, GUI, shell, kernel etc.
23   Differentiate between X-Client and X-server.
24   What is CVS? List some useful CVS commands.
25   Explain the user management in linux using the command line and GUI tool.
26   Explain the difference between the EXT2 and EXT3 file system.
27   Explain briefly the Powers of Root.
28   Explain the architecture of Linux.
29   What are system calls and what role they play in the system? How is C programming so different and powerful in the UNIX environment compared to Windows?
30   What is Boot Loader? Explain different ways to configure the Boot Loader. Give an example of each.

UNIT - II

I   Test Your Skills:
(a)   State Whether the Following Statements are True or False:

1   Su command changes your effective user name and grants you the permissions that user name has.
2   /etc directory is reserved for binary files.
3   The /mnt directory is for permanent mounting file system.
4   The /etc/passwrd file should be owned duly by root.

Ans.   (1)(T), (2)(F), (3)(F), (4)(T)

(b)   Multiple Choice Questions:

1   Which of the following commands is used to summarize the disk usage?
        (a)   chkdsk
        (b)   du

(c)   fdisk

(d)   disk

(e)   None of the above

2   Which of the following commands is used to copy directory structures in and out?

(a)   cp

(b)   cp-p

(c)   cpio

(d)   copy

(e)   None of the above

3   Which of the following commands is used to change the working directory?

(a)   cd

(b)   chdir

(c)   changedir

(d)   cdir

(e)   None of the above

4   Which of the following commands is used to count the total number of line, words and characters contained in a file?

(a)   count p

(b)   wcount

(c)   wc

(d)   countw

(e)   None of the above

5   Which of the following commands is used to list contents of directories?

(a)   1s

(b)   dir

(c)   1p

(d)   tar

(e)   None of the above

6   Which of the following commands is used to list remove files?

(a)   erase

(b)   rm

(c)   delete

(d)   dm

(e)   None of the above

7   Which of the following commands is used to count just the number of lines contained in a file?

(a)   wc – 1

(b)   wc - w

(c)   wc - c

(d)   wc - r

(e)   None of the above

8   Which of the following directories contain all the files created by a user, including his login directory?
(a)   /tmp
(b)   /usr
(c)   /etc
(d)   /dev
(e)   None of the above

9   Which command is used to copy the three files wb, collect and mon into the misc directory, under the same, when you were currently in the programs directory?
(a)   copywb collect mon /mis
(b)   cpwb collect mon ../misc
(c)   copywb ../misccollect ../mismon ../misc
(d)   tarwb collect mon /misc
(e)   None of the above

10   Which command is used to assign only read permission to all three categories of the file 'note'?
(a)   chmod a-rw
(b)   chmodgo+r note
(c)   chmodugo = r = note
(d)   chmodu+r, g+r, o-x note
(e)   None of the above

11   Which command is used to make all files and sub-directories in the directory (prog) executable by all users?
(a)   chmod –R a+xprogs
(b)   chmod –x a+xprogs
(c)   chmod -1 a+xprogs
(d)   chmod –R 222 progs
(e)   None of the above

12   The chmodugo+rw note command can be represented in octal notation as
(a)   chmod 555 note
(b)   chmod 666 note
(c)   chmod 333 note
(d)   chmod 444 note
(e)   None of the above

13   Which of the following commands is used to view the file 24 lines at a time?
(a)   pg
(b)   1p
(c)   cat
(d)   /p

(e)   None of the above

14   The second set of the three permissions (r-) indicates that
      (a)   group has read permission only
      (b)   other has read permission only
      (c)   group has write permission only
      (d)   owner has read permission only
      (e)   None of the above

15   The dmesg command
      (a)   Shows user login logoff attempts
      (b)   Shows the syslog file for info messages
      (c)   Kernel log messages
      (d)   Shows the daemon log messages

16   The command "mknodmyfifo b 4 16"
      (a)   Will create a block device if user is root
      (b)   Will create a block device for all users
      (c)   Will create a FIFO if user is not root
      (d)   None of the above

17   Which command is used to set terminal IO characteristic?
      (a)   tty
      (b)   ctty
      (c)   ptty
      (d)   stty

18   Which command is used to record a user login session in a file ?
      (a)   macro
      (b)   read
      (c)   script
      (d)   none of the above

19   Which command is used to display the operating system name ?
      (a)   os
      (b)   Unix
      (c)   kernel
      (d)   uname

20   Which command is used to display the unix version ?
      (a)   uname -r
      (b)   uname -n
      (c)   uname -t
      (d)   kernel

21   Which command is used to print a file ?
      (a)   print
      (b)   ptr
      (c)   lpr
      (d)   none of the above

22   Using which command you find resource limits to the session?
      (a)   rlimit
      (b)   ulimit
      (c)   setrlimit
      (d)   getrlimit

23   Which option of ls command used to view file inode number ?
      (a)   –l
      (b)   -o
      (c)   –a
      (d)   –i

24   Find / -name '*' will
      (a)   List all files and directories recursively starting from /
      (b)   List a file named * in /
      (c)   List all files in / directory
      (d)   List all files and directories in / directory

25   In which directory can you store system user default files used for creating user
      directories?
      (a)   /usr/tmp
      (b)   /etc/default
      (c)   /etc/skel
      (d)   /etc/users
      (e)   None of the above

26   What command do you use to create Linux file systems?
      (a)   fdisk
      (b)   mkfs
      (c)   fsck
      (d)   mount
      (e)   None of the above

27   What command is used to display the characteristics of a process?
      (a)   au
      (b)   ps
      (c)   du
      (d)   pid
      (e)   None of the above

28   What command is used to list the files chap0l, chap02 and chap04?
      (a)   ls chap*
      (b)   ls chap[124]
      (c)   ls - x chap0[124]
      (d)   ls chap0[124]
      (e)   None of the above

29   What command is used to add printing jobs to the queue?
      (a)   lpd
      (b)   lpr
      (c)   lpq
      (d)   lpc
      (e)   None of the above

30   What command is used to list contents of directories?
      (a)   tar
      (b)   dir
      (c)   lp
      (d)   ls
      (e)   None of the above

31   Command used to determine the path of an executable file is
      (a)   which
      (b)   where
      (c)   wexec
      (d)   what

32   Command used to count number of character in a file is
      (a)   grep
      (b)   wc
      (c)   count
      (d)   cut

33   Which of these commands could you use to show one page of output at a time?
      (a)   less
      (b)   sed
      (c)   pause
      (d)   grep

34   Which commands will give you information about how much disk space each file in the
      current directory uses?
      (a)   ls -l
      (b)   ls -la
      (c)   du
      (d)   ls -a

35   Which of the following command output contains userid?
      (a)   ls
      (b)   help
      (c)   date
      (d)   ls –l

36   Which command is used to display all the files including hidden files in your current and
      its subdirectories ?
      (a)   ls –aR
      (b)   ls –a
      (c)   ls –R
      (d)   ls –l

37   Which of the following commands can be used to copy files across systems?
      (a)   ssh
      (b)   telnet
      (c)   rsh
      (d)   ftp

38   pwd command displays
      (a)   user password
      (b)   password file content
      (c)   present working directory
      (d)   none of the mentioned

39   Which of the following commands can be used to change default permissions for files
      and directories at the time of creation
      (a)   Chmod
      (b)   Chown
      (c)   Umask
      (d)   Chgrp

40   Which tar command option is used to list the files in a tape archive format?
      (a)   cvf
      (b)   tvf
      (c)   xvf
      (d)   ovf

41   Which of the following commands will allow the user to search contents of a file for a
      particular pattern
      (a)   touch
      (b)   grep
      (c)   find
      (d)   ls

42. Write the command to display the current date in the form dd/mm/yyyy.
    (a) date +%d/%m/%Y
    (b) date +"%d/%m/%Y"
    (c) date +/%d/%m/20%y
    (d) date +"/%d/%m/20%y"

43. The command syntax to display the file 'sample.txt' one page at a time is
    (a) man sample.txt>more
    (b) cat sample.txt<more
    (c) cat sample.txt|more
    (d) None of the above

44. Which one shows the name of the operating system?
    (a) uname -n
    (b) uname -r
    (c) uname -o
    (d) uname –m

45. How do you add (append) a file "file1" to the example.tar file
    (a) no you cannot add a file to example.tar
    (b) tar -cvf example.tar file1
    (c) tar -rvf file1 example.tar
    (d) tar -evf file1 example.tar

46. How to execute ls command inside a vi editor?
    (a) !ls
    (b) :ls
    (c) :!ls
    (d) we can't execute

47. Which command gives the first byte where the difference is in the file1 & file2?
    (a) diff
    (b) cmp
    (c) comm
    (d) ls -a

48. To open a file file1 with cursor at line number 4
    (a) vi +num file1
    (b) vi +set num file1
    (c) vi + "set num" file1
    (d) vi +/se nu file1

49. sed is a command typically used for
    (a) Perform complex calculations
    (b) Perform FIFO based non-blocking I/O
    (c) Modify/print selective contents of a file

(d)   None of the mentioned

50.   What communication command provides communication to another user logged on by
        writing to the bottom of their terminal?
        (a)   talk
        (b)   write
        (c)   chat
        (d)   transmit

51.   Which screen manipulation command sets the screen back to normal?
        (a)   tput cup
        (b)   tput smso
        (c)   tput rmso
        (d)   tput blink

52.   Which command will you use to see the available routes?
        (a)   show route
        (b)   route status
        (c)   netstat -r
        (d)   none of the mentioned

53. The permission -rwxr-xr-t represented in octal expression will be
        a) 0777
        b) 1755
        c) 1754
        d) 2754

54. With a umask value of 112, what is the default permission assigned to newly created regular
        file?
        a) —x—x-wx
        b) -rw-rw-r—
        c) -r-xr-x-r—
        d) -rw-rw-r—

55. Which command is used to assign read-write permission to the owner?
        a) chmod a+r file
        b) chmod o+r file
        c) chmod u=rw file
        d) chmod og-r file

56. Given the command
        $ chmod o-w datafile
        a) sets write permission to everyone for datafile
        b) sets write permission to others for datafile
        c) clears write permission to everyone for datafile
        d) clears write permission to others for datafile

57. Which of these commands will set the permissions on file textfile to read and write for the
      owner, read for the group, and nothing for everyone else?
      a) chmod 046 textfile
      b) chmod 640 textfile
      c) chmod 310 textfile
      d) chmod rw r nil textfile

58. If you are a root user, how can you grand execute permission only for the owner of the file
      project1?
      a. chmod +x project1
      b. chmod u+x project1
      c. chmod a+x project1
      d. chmod U+X project1

59. A user executes the following command successfully:
      $ chmod +x file1.txt
      Which of the following is true of the output of this command?
      a) The command results in adding execute permission to the user who ran this command
      b) The command results in adding execute permission for the owner of the file
      c) The command results in an error since the file is not an executable file
      d) The command results in adding execute permission for all users (i.e., user,group &
      others)

60. What does chmod +t do?
      a) wrong syntax
      b) set effective userid for filename
      c) set effective groupid for filename
      d) set the sticky bit

61. Which of the following umask settings doesn't allow execute permission to be set by default
      on directory files
      a) 222
      b) 111
      c) 000
      d) 444

62. Which of the following umask settings allow execute permission to be set by default on
      regular files
      a) 222
      b) 111
      c) 000
      d) None of the given choices

63. The command chmod 4777 a.out
      a) will set the suid bit of a.out
      b) will set the suid bit of a.out only if the command is issued by root

c) is not a valid command

d) will set the sticky bit of a.out

Ans. (1)(b), (2)(c), (3)(a), (4)(c), (5)(a), (6)(b), (7)(a), (8)(b), (9)(b), (10)(c), (11)(a), (12)(b), (13)(a), (14)(a), (15)(c), (16)(a), (17)(d), (18)(c), (19)(d), (20)(a), (21)(c), (22)(b), (23)(d), (24)(a), (25)(c), (26)(b), (27)(b), (28)(c), (29)(b), (30)(d), (31)(a), (32)(b), (33)(a), (34)(c), (35)(d), (36)(a), (37)(d), (38)(c), (39)(c), (40)(b), (41)(b), (42)(a), (43)(c), (44)(c), (45)(c), (46)(c), (47)(b), (48)(a), (49)(c), (50)(a), (51)(c), (52)(c), (53)(b), (54)(d), (55)(c), (56)(d), (57)(b), (58)(b), (59)(d), (60)(d), (61)(d), (62)(d), (63)(a)

(c)   Fill in the Blanks:

1   An owner accomplishes modifications to the permission settings by using both the _____ and _____ command.
2   UID stands for _____.
3   GID stands for _____.
4   Only _____ can change the machine's init state and shut down the system.
5   FTP stands for _____.
6   Item allows creating and storing files. _____.
7   The user name is a single string, usually _____.
8   The _____ is the command to be executed when logic terminates.
9   _____ contains information about the last time a login was done on the system.
10   _____ is Remote Access Command.
11   _____displays all users logged in to systems in your network.

Ans. (1)(cdmod, chgrp), (2)(user identification number), (3)(group identification), (4)(root), (5)(File Transfer Protocol), (6)(temporary), (7)(eight character or less), (8)(login), (9)(/var/log/last log), (10)(SSH), (11)(rwho)

II   Short Answer Type Questions:

1   What are disk usage limits?
2   Differentiate between mounting and un-mounting file systems.
3   Write a short note on file permissions of Linux System.
4   Explain the directory structure of Linux.
5   Explain features of Ext2 file system.
6   What are links? Differentiate between hard link and symbolic link.
7   Differentiate between absolute path and relative path.
8   Explain in brief the jobs of super user.
9   How can you find number of users logged in?
10   What is mounting and un-mounting a file in Linux?
11   What is the process of a shell script?
12   Discuss different types of files in Linux.
13   Write a Short note on File permissions of Linux system.

14   Explain how command Line can be used for editing user variables.
15   Differentiate between Home and Root Directory.
16   How to add a group in Linux?
17   How to add a user in Linux operating system?
18   Give commands to modify or add a user.
19   Name some services that are not available when the machine is in the single user mode.
20   What is the main advantage of creating links to a file instead of copies of the file?
21   What is the most graceful way to get to run level single user mode?
22   Differentiate between file system of Linux and file system of Windows.
23   What are pipes? Write a program to create pipe between parent and child and to send data down the pipe?
24   Write a program to create a child process and print pid and ppid of parent and child processes, showing that the two processes are executing independently?

III   Long Answer Type Questions:

1   Explain different types of users available in Linux System.
2   Write a shell script to add and delete users in Linux System.
3   What are the different user management methods available in Linux system? Explain them.
4   Explain different file types of Linux system.
5   Explain the directory structure of Linux.
6   Explain Ext3 file system features of Linux.
7   What is meant by recursive behavior of a command? Name four commands which can be used recursively.
8   Explain briefly the significance of the fields of the Is-1 output. Who can change these attributes?
9   What are the different file systems that are compatible with Linux?
10   Explain atleast two different types of files in Linux.
11   How users are managed in Linux? Explain all the available commands for the purpose.
12   Explain how Accounts can be edited with Linux conf.
13   Explain how file systems can be Checked and repaired.
14   What are the essential files required to maintain the user in Linux.
15   What do you understand by the term mounting a device? Explain how the devices treated in Linux file system?
16   What are the various file permissions which could be given? How rights could be given or revoked?
17   How the file system could be checked or revoked?
18   Define the following concepts:
            1. Fork
            2. Pipe
            3. Shell
            4. inode
            5. super block
19   When can mount work with only one argument? When is un-mounting of a file system not possible?

20   Name the important features of the ufs file system. What is the significance of the proc file system?
21   What is FIFO? Writ a program to exchange data between two processes using FIFO?
22   What is signal how are they handled?

UNIT - III

I   Test Your Skills:
(a)   State Whether the Following Statements are True or False:

1   Shell is command line interpreter and interface between a user and operating system.
2   Bash is the shell, or command language interpreter, for the GNU operating system.
3   Bash is not compatible with sh.
4   For GNU operating system Bash is the default shell.
5   C shell is developed as part of BSD UNIX
6   The gawk language does not support arrays.
7   Logon command in Linux/unix is "login"

Ans.   (1)(T), (2)(T), (3)(F), (4)(T), (5)(T), (6)(F), (7)(T)

(b)   Multiple Choice Questions:
1   The commonly used UNIX commands like date, Is, cat, etc. are stored in
    (a)   /dev directory
    (b)   /bin and /usr/bin directories
    (c)   /unixdirecotry
    (d)   /tmp directory
    (e)   None of the above

2   Which of the following commands is used to save the output of the which command in a file named user.1st, as well as display it?
    (a)   who | tee user.1st
    (b)   who>> user.1st
    (c)   who> user.1st
    (d)   who< user.1st
    (e)   None of the above

3   Which command is used to concatenate all files beginning with the string 'emp' and followed by non-numeric characters?
    (a)   catemp{!0-9]
    (b)   more [emp][!0-9]
    (c)   cateemp[x-z]
    (d)   catemp[a-z]
    (e)   None of the above

4   Which command will be used to match the pattern agarwal, Aggarwal, Agggarwal and agrawal in the file named empl.1st?

(a) grep "[aA]99*[ar][ra]wal" empl.1st
(b) grepag* empl.1st
(c) cutagrawal empl.1st
(d) grepag[ra][ar]wal empl.1st
(e) None of the above

5   Which command is used to select those lines where the data lies between 7000 and 7999 at the end of the line of file empl.lit.
(a) grep "$7…" empl.1st
(b) grep "7…^" empl.1st
(c) grep "7…$" empl.1st
(d) grep ^7… empl.1st
(e) None of the above

6   Which command is used to select those lines that begin with a 2 in the tre file empl.1st?
(a) grep "^2" empl.1st
(b) grep "2…" empl.1st
(c) grep "7^" empl.1st
(d) grep "2^" empl.1st
(e) None of the above

7   Which of the following commands is used to update access and modification times of a file?
(a) grep
(b) wc
(c) touch
(d) cat
(e) None of the above

8   The command that can be used to restrict incoming messages to a user is
(a) mesg
(b) halt
(c) grep
(d) sleep
(e) None of the above

9   The command which transcribes the standard input to the standard output and also makes a copy of the same in a file is
(a) tee
(b) sort
(c) tr
(d) grep
(e) None of the above

10   What command is used to count the total number of lines, words, and characters contained in a file?

(a) countw
(b) wcount
(c) wc
(d) count p
(e) None of the above

11   What command is used to remove files?
(a) dm
(b) rm
(c) delete
(d) erase
(e) None of the above

12   What command is used with vi editor to delete a single character?
(a) x
(b) y
(c) a
(d) z
(e) None of the above

13   What command is used to save the standard output in a file, as well as display it on the terminal?
(a) tee
(b) grep
(c) cat
(d) more
(e) None of the above

14   What command is used to count just the number of lines contained in a file?
(a) wc –r
(b) wc –w
(c) wc –c
(d) wc –l
(e) None of the above

15   What command is used to sort the lines of data in a file in reverse order?
(a) sort –r
(b) st
(c) sh
(d) sort
(e) None of the above

16   What shell's wild-card is used to match a single character?
(a) [!ijk]
(b) [ijk]
(c) ?

(d) *
(e) None of the above

17 Which of the following command lists the last 10 lines of a file?
(a) grep
(b) tail
(c) head
(d) cat
(e) None of the above

23 Which statement resumes the next iteration of a for, while, select, or untill loop?
(a) continue
(b) break
(c) complete
(d) command

24 Which command can create environment variable?
(a) export
(b) set
(c) read
(d) none of the mentioned

25 Which of the following is not a major Unix shell?
(a) X Shell
(b) C Shell
(c) Bash Shell
(d) Korn Shell

26 Which was the first Unix shell?
(a) X Shell
(b) C Shell
(c) Bash Shell
(d) Korn Shell

27 The purpose of the PATH variable is to
(a) Show the current directory
(b) Show the directory path of a file
(c) Tells the shell what directories to search when a command is entered
(d) Both A and C

28 What special character is used to designate the users home directory in the C shell?
(a) @
(b) ~
(c) &
(d) $

29   The shell in the Unix system is the
      (a)   Outer layer of a seed
      (b)   User interface with the operating system
      (c)   Provides a prompt
      (d)   Both (b) and (c)

30   The asterisk is a meta-character which in the command "ls *.txt" means
      (a)   Any single character
      (b)   Any combination of one or more characters
      (c)   Any combination of zero or more characters
      (d)   None of the above

31   A meta-character is any character that
      (a)   Is taken literally
      (b)   Represents any string of characters that fit its definition
      (c)   Is an "asterisk" or "question mark"
      (d)   All of the above

32   Which of the following UNIX utilities are not commonly used to process regular
      expressions?
      (a)   Grep
      (b)   Sed
      (c)   Cut
      (d)   Awk

33   "Awk" is a program that is primarily concerned with formatting output. It is designed to
      work best with pieces of data called
      (a)   Records
      (b)   Characters
      (c)   Fields
      (d)   Strings

34   In "bash", "if" constructs are ended with
      (a)   Fi
      (b)   Endif
      (c)   End
      (d)   None of the above

35   Which of the following is not a iterative construct in "bash"?
      (a)   If
      (b)   For
      (c)   Until
      (d)   While

31   Which command runs the shell built-in command 'command' with the given argument?
      (a)   builtin
      (b)   caller
      (c)   there is no command present for this purpose
      (d)   none of the mentioned

32   Which option of the command 'cd' use the actual filesystem path for cd..and the value of pwd?
      (a)   -l
      (b)   -L
      (c)   -p
      (d)   -P

33   Which command generates possible completions for string according to the and write it to standard output?
      (a)   compgen
      (b)   complete
      (c)   continue
      (d)   none of the mentioned

34   Which command executes 'command' in place of the current process instead of creating a new process?
      (a)   exec
      (b)   command
      (c)   trap
      (d)   none of the mentioned

35   After running this program, as you press 's', what will be the output of the program?
      1.   #!/bin/bash
      2.   echo "press 's' to print Sanfoundry"
      3.   read var
      4.   if $var=s
      5.   then
      6.   echo "Sanfoundry"
      7.   else
      8.   echo "You did not press s"
      9.   fi
      10.   exit 0

      (a)   Sanfoudry
      (b)   You did not press s
      (c)   program will generate an error message
      (d)   none of the mentioned

36   After running this program, as your press 4, what will be the output of the program?
      1. #!/bin/bash

2. echo "How many times you want to print 'Sanfoundry'"
3. read value
4. for((i=0;i<$value;i++))
5. do
6. echo "Sanfoundry";
7. done
8. exit 0

(a)   'Sanfoudry' will print 4 times
(b)   'Sanfoudry' will print 3 times
(c)   'Sanfoudry' will print 5 times
(d)   program will generate an error message

37   What is the output of this program?
1.   *#!/bin/bash*
2.   for i in 2 3 7
3.   do
4.   echo "Sanfoundry"
5.   done
6.   exit 0
(a)   'Sanfoundry' will print 3 times
(b)   nothing will print
(c)   program will generate an error message
(d)   none of the mentioned

38   How can you come out of the loop in this program?
1.   *#!/bin/bash*
2.   read x
3.   while[$x != "hello"]
4.   do
5.   echo "Try to come out of the loop"
6.   read x
7.   done
8.   echo "Welcome"
9.   exit 0

(a)   by entering "hello"
(b)   by entering anything except "hello"
(c)   it is not possible
(d)   none of the mentioned

39   What is the output of this program?
1.   *#!/bin/bash*
2.   echo "Which file do you want to check"
3.   read x
4.   until[-e $x]

```
5.      do
6.      echo "The file does not exist. Do you want to create? y/n"
7.      read a
8.      if[ $a = y ]; then
9.      touch $x
10.     echo "Your file has been created successfully."
11.     fi
12.     done
13.     echo "The file is present in this directory"
14.     exit 0
```

(a)   it checks the existance of your entered file in the present working directory
(b)   it creates the file if file does not exists
(c)   program runs untill you create the file
(d)   all of the mentioned

40   After running this program, if you enter 1000, then what will be the output of the program?
```
1.      #!/bin/bash
2.      echo "Please enter a number"
3.      read a
4.      if[ $a -lt 100 ]; then
5.      echo "It is less than 100";
6.      elif[ $a -lt 1000 ]; then
7.      echo "It is less than 1000"
8.      else
9.      echo "It is greater than 1000"
10.     fi
11.     exit 0
```

(a)   It is greater than 1000
(b)   It is less then 1000
(c)   It is equal to 1000
(d)   None of the mentioned

41.   Which option of grep displays the line number as well?
    (a)   -v
    (b)   -l
    (c)   -n
    (d)   -E

42.   How can you search for blank line in a file?
    (a) $ grep " " file
    (b) $ grep "^$" file
    (c) $ grep [" "] file

33

(d) $ grep [^$] file

43.   Assuming the files fileA, fileB, fileAB, fileBC and fileABC, exist in a directory, which
      files match with the pattern file[ABC]?
      (a)   fileA, fileB and fileABC
      (b)   fileABC
      (c)   fileA and fileB
      (d)   fileAB, fileBC and fileABC

44.   What will be printed for the command below?
      $ grep –c "^echo" abc
      (a)   The count of lines that do not contain the pattern echo in file abc
      (b)   The count of lines which begin with the pattern echo in file abc
      (c)   The count of lines that ends with the pattern echo in file abc
      (d)   None of the above

45.   Which one is used to select only one copy of the repeated lines?
      (a)   uniq -u
      (b)   uniq -d
      (c)   uniq -c
      (d)   uniq –I

46.   Indicate the right option to search for BOB, Bob, BOb or BoB?
      (a)   grep –i Bob files
      (b)   grep 'B[oO][bB]' files
      (c)   grep '[BOB]' files
      (d)   grep -v 'Bob' files

47.   Indicate the right option to search for anything not a letter or number
      (a)   grep '^[a-zA-Z0-9]'
      (b)   grep '[^a-zA-Z0-9]'
      (c)   grep '[a-zA-Z0-9]'
      (d)   None of the above

48.   How do you remove duplicate lines from the file foo using uniq?
      (a)   sort foo | uniq –u
      (b)   sort -u foo | uniq -d
      (c)   sort foo | uniq –c
      (d)   sort foo | uniq –I

49.   One of the entry of /etc/passwd file is shown below:
      user1:x:1111:2222:Sanfoundry:/home/user1:/bin/bash
      Which among the following will print userid and home dir in the following pattern
      "user1:/home/user1"
      (a)   awk `{print $1 ":" $6}` /etc/passwd
      (b)   awk `{print $1 ":" $7}` /etc/passwd

(c)   awk `{print $2 ":" $6}` /etc/passwd
(d)   awk `{print $2 ":" $7}` /etc/passwd

50.   who | cut –d ” ” -f1
       what is the ouput if the who command displays like this
       user1 tty 0 1234
       (a)   user1
       (b)   user1 tty 0 1234
       (c)   tty
       (d)   tty 0 1234

Ans: (1)(b), (2)(a), (3)(a), (4)(a), (5)(c), (6)(a), (7)(c), (8)(a), (9)(c), (10)(c), (11)(b), (12)(a),
       (13)(a), (14)(d), (15)(a), (16)(c), (17)(b), (18)(a), (19)(a), (20)(a), (21)(d), (22)(c),
       (23)(b), (24)(d), (25)(c), (26)(b), (27)(c), (28)(c), (29)(a), (30)(a), (31)(a), (32)(d),
       (33)(a), (34)(a), (35)(c), (36)(a), (37)(a), (38)(a), (39)(d), (40)(a), (41)(c), (42)(b), (43)(c),
       (44)(b), (45)(a), (46)(b), (47)(b), (48)(a), (49)(a), (50)(a)

(c)   Fill in the Blanks:
1   _____ is used to insert the comments in the shell scripts.
2   _____ command Sends mail to user `[user]'
3   Program name for Korn shell is_____.
4   Program name for Bourne again shell is _____.
5   Program name for Bourne shell is _____.
6   The _____ command prints the home directory.
7   The_____ command gives the User name who is currently login to this PC.

Ans.   (1)(#), (2)(mail [user]), (3)(ksh), (4)(Bash), (5)(sh), (6)(HOME), (7)(LOGNAME)

II   Short Answer Type Questions:

1   Write UNIX Internal Commands.
2   What is Bash?
3   How shell works?
4   Explain environment Control variables.
5   How shell script is executed?
6   What is the effect of the following command sequences?
       (a)   ls | wc -l
       (b)   rm ???
       (c)   who | wc -l
       (d)   mv progs/* /usr/steve/backup
       (e)   ls *.c | wc -l
       (f)   rm *.o
       (g)   who | sort
       (h)   cd ; pwd
       (i)   cp memo1 ..
       (j)   ls -l | sort +4n

7   Discuss the role of filters in Linux?
8   What are shell program called scripts and how do we execute a shell script?
9   Differentiate between BASH & TCSH shells.
10   Explain the following commands with example.
        (a) Sort   (b) Find   (c) Grep   (d) Mount   (e) Gawk
11   Write the usage and any two important options of any four of the following commands.
        (a) export   (b) rpm   (c) gunzip   (d) fgrep
12   Explain Bash, TCSH and Korn shell.
13   What is the significance of the command ls *.*?
14   Name the three sources of standard input and standard output.
15   How do you add two spaces to the beginning of every line?
16   What will this construct do and why? – **while [5]**
17   How will you make sure that a script prompts you before exiting an interruption?
18.   What is a process? How are you able to get complete information about all currently
        scheduled processes?
19.   How "grep" is different from "sed" script?
20.   Differentiate Unlink, rm and rmdir command.

III   Long Answer Type Questions:

1   What do you mean by Shell script/program? Explain in detail giving examples of shell
        scripts.
2   What is the difference between $* and $@? Explain with example.
3   Give the basics of input/output (IO) commands in Linux in detail.
4   Explain Conditional Statements in shell programs.
5   Explain Case Statements in shell programs.
6   Explain UNIX Directory Commands.
7   Explain UNIX File Commands.
8   Explain UNIX Pipe and Redirection Commands.
9   What is the difference between vi editor and ex editor?
10   Explain filters in details.
11   Give the details of the commands: Head, Tail, tee, ps, finger, talk.
12   What is the exit status of a command? What is its normal value and where is the value
        stored?
13   Write a shell script that accepts a file name as argument and displays last modification
        time if the file exists and a suitable message if it does not.
14   What are the different types of shell available in Linux? Explain.
15   Write a shell script that searches for a pattern (supplied as argument) in a file.
16   What are shell programming functions. Write a function that adds two numbers.
17   Explain the usage of the test command for checking the type of a file.
18   Write a program in C/C++ to display the file system statistics.
19   Write a program in C/C++ to display the processes with their associated PID's. The
        program should be able to take a PID for a process from the user and either, kill it of
        change its nice factor as specified by the user.
20   Write a shell program to query the installed packages on Linux box.

21 Write a shell program where command line arguments are input for the program. There should be a menu (add, sub, mult, div, exit) based calculator. On selecting any one option it should be operated on the numbers passed as the arguments and on selecting exit program should terminate.

22 Devise a script that accept two directory names, bar1 and bar2, and deletes those files in bar2 which are identical to their namesakes in bar1.

23 What are the various kinds of variable available in shell script? Describe their naming conventions.

24 What is global shell variable and how it is created?

25 Explain grep utility with its various options.

26 How shell scripts are executed? Explain with example.

27 What is the purpose of groups?

28 Who may change the ownership of a file?

29 Why are shells better suited than C programs to some tasks?

30 Write a shell script to check whether a number is prime or not.

31. Write a script to cut the range of the particular columns and rows from a file.

32. Write a script to copy files. Check the possible conditions for the existence to source and destination file in the directory.

UNIT - IV

I   Test Your Skills:
(a)   State Whether the Following Statements are True or False:

1 Sometimes a daemon is interested in the exit status of its child process.

2 The link system call fails if the name of the new link to the file already exists.

3 A pipe provides a two – way flow of data.

4 Pipes are typically used to communicate between two different processes.

5 The biggest advantage with pipes is that they can only be used between processes that have a parent process in common.

6 A signal is a notification to a process that an event has occurred.

7 Several of the signals are used for implementation dependent hardware exceptions.

8 A process can set an alarm clock by calling the alarm() system call.

9 The RECEIVE_ANY command allows a process to receive the next message from specific correct session partners.

10 TCP Provides end-to –end flow control whereby the receiver tells the sender how much data it can accept.

Ans.   (1)(T), (2)(T), (3)(F), (4)(T), (5)(F), (6)(T), (7)(T), (8)(T), (9)(F), (10)(T)

(b)   Multiple Choice Questions:

1   FIFO Stands For :
        (a)   Figure in Figure Out
        (b)   First in First Out
        (c)   File input File Output

(d)   None

2   The set of possible names for a given type of IPC is called its
    (a)   Process
    (b)   Name Space
    (c)   Connect
    (d)   Communication

3   The three types of IPC are :
    (a)   Message Queues
    (b)   Semaphores
    (c)   Shared memory
    (d)   Messages

4   Signals can be sent
    (a)   By process itself
    (b)   By one process to another process
    (c)   By the Kernel to a process
    (d)   None of the above
    (e)   By (a),(b) and (c)

5   Similar to read and write system calls
    (a)   Send
    (b)   Recv
    (c)   (a) and (b) both
    (d)   None

6   NetBIOS is
    (a)   Session Service
    (b)   Datagram service
    (c)   General Commands
    (d)   None

7   UDP stands for
    (a)   User datagram Protocol
    (b)   Uninterrupted data part
    (c)   Uniform data provider
    (d)   None

8   TCP stands for
    (a)   Transmission Control protocol
    (b)   Transfer Control protocol
    (c)   Termination control protocol
    (d)   None

9   How to identify a communication?

(a) Source IP Address
(b) Source Port Number
(c) Destination IP Address
(d) Destination Port Number
(e) All the above

10   The physical layer of a network
(a) constructs packets of data and sends them across the network
(b) controls error detection and correction
(c) defines the electrical characteristics of signals passed between the computer and communication devices
(d) All of the above
(e) None of the above

11   What TCP/IP protocol is used for remote terminal connection service?
(a) UDP
(b) RARP
(c) FTP
(d) TELENET
(e) None of the above

12   How many networks and nodes per network, are allowed by the Class B network?
(a) 127 networks and 16,777,216 nodes per network
(b) 16,384 networks and 65,534 nodes per network
(c) 2,097,152 networks and 254 nodes per network
(d) All of the above
(e) None of the above

13   What service is used to translate domain names to IP addresses?
(a) NFS
(b) SMB
(c) NIS
(d) DNS
(e) None of the above

14   What TCP/IP protocol is used for file transfer with minimal capability and minimal overhead?
(a) TELNET
(b) TFTP
(c) FTP
(d) RARP
(e) None of the above

15   What TCP/IP protocol is used for transferring electronic mail messages from one machine to another?
(a) FTP

(b)   SNMP
(c)   SMTP
(d)   RPC
(e)   None of the above

16   What can he used to set up a firewall on a Linux system?
(a)   netstat
(b)   route
(c)   trace
(d)   ipchains
(e)   None of the above

17   What service is not monitored by inetd ?
(a)   SSH
(b)   time
(c)   ntalk
(d)   finger
(e)   None of the above

18   What command do you use to add routes to a Linux router?
(a)   addroute
(b)   route
(c)   netstat
(d)   net
(e)   None of the above

19   Which of the following is not a communication command?
(a)   grep
(b)   mail
(c)   mesg
(d)   Write
(e)   None of the above

20   What protocol(s) is (are) allowed a user to retrieve her/his mail from the mail server to her/his mail reader?
(a)   POP3
(b)   FTP
(c)   MAP
(d)   All of the above
(e)   None of the above

21   The 32-bit internet address 10000000 00001010 00000010 00011110 will be written in dotted decimal notation as
(a)   128.10.2.30
(b)   210.20.2.64
(c)   164.100.9.61
(d)   148.20.2.30

(e)   None of the above

22   Which class network is used for a collection of a small number of networks with a large number of nodes?
(a)   Class A
(b)   Class B
(c)   Class C
(d)   All of the above
(e)   None of the above

23   What type of addressing format is used by Class A network?
(a)   Net.Net.Net.Node
(b)   Net.Net.Node.Node
(c)   Net.Node.Net.Node
(d)   Net.Node.Node.Node
(e)   None of the above

24   How many class A, B and C network IDs can exist?
(a)   128
(b)   126
(c)   16,382
(d)   2,113,658
(e)   None of the above

25   Communication using UDP is usually_____.
(a)   connectionless,iterative
(b)   connectionless,concurrent
(c)   connection-oriented,iterative
(d)   connection-oriented,concurrent

26   Communication using TCP is usually_____.
(a)   connectionless,iterative
(b)   connectionless,concurrent
(c)   connection-oriented,iterative
(d)   connection-oriented,concurrent

27   SOCK_STREAM sockets are used by _____ processes.
(a)   UDP
(b)   TCP
(c)   SCTP
(d)   None of these

28   SOCK_DGRAM sockets are used by _____ processes.
(a)   UDP
(b)   TCP
(c)   SCTP

(d)   None of these

29   An interface is a set of _____ designed to facilitate interaction between two entities
(a)   programs
(b)   instructions
(c)   rules
(d)   none of these

30   How many types of sockets are there?
(a)   2
(b)   3
(c)   4
(d)   5

31   If a signal is received by a process, when will it be processed?
(a)   It is processed immediately
(b)   It is processed when process is switching to kernel mode
(c)   It is processed in the next time slice given to the process

32   Which signal is generated when we press control-C?
(a)   SIGINT
(b)   SIGTERM
(c)   SIGKILL
(d)   SIGSEGV

33   Which signal is generated when we press ctrl-Z?
(a)   SIGKILL
(b)   SIGSTOP
(c)   SIGABRT
(d)   SIGINT

34   Which signal is sent when the Child process terminates?
(a)   SIGINIT
(b)   SIGKILL
(c)   SIGSTOP
(d)   SIGCHLD

35   Which of the following signal cannot be handled or ignored?
(a)   SIGINT
(b)   SIGCHLD
(c)   SIGKILL
(d)   SIGALRM

36   Another signal that cannot be caught is:
(a)   SIGPIPE

(b)   SIGHUP
(c)   SIGSTOP
(d)   SIGUSR1

37   When real interval timer expires which signal is generated?
(a)   SIGINT
(b)   SIGCHLD
(c)   SIGKILL
(d)   SIGALRM

38   Signals are handled using which system call?
(a)   kill
(b)   signal
(c)   both
(d)   none

39   Default action of SIGSEGV is
(a)   Terminate
(b)   Core dump
(c)   Stop
(d)   Cont

40   The kill system call is used to
(a)   Send shutdown messages to all by super-user
(b)   Send a signal to a process
(c)   Kill processes
(d)   Stop the processes

41   What is the output of the below code?
```
void sig_handler ( int signum) {
printf("Handled the signal\n");
}
 int main() {
int pid;
signal (SIGKILL, sig_handler);
pid = fork();
if (pid==0) {
kill(getppid(), SIGKILL);
exit(0);
} else {
sleep(20);
}
return 0;
}
```
(a)   Error child cannot send a SIGKILL signal to parent.
(b)   Parent goes to the signal handler, prints handled the signal and goes back to sleep

(c)   Parent goes to the signal handler, prints handled the signal and exits
(d)   Parent exits without going to the signal handler

42.   Which is true regarding pipes?
(a)   half duplex
(b)   full duplex
(c)   message boundaries are preserved
(d)   Unordered data

43.   The persistancy of a FIFO is
(a)   process
(b)   kernel
(c)   file system
(d)   none

44.   Advantage of FIFO over pipe is
(a) related processes can communicate
(b) unrelated processes can communicate
(c) none

45.   What mkfifo() creats?
(a) pipe
(b) unnamed pipe
(c) named pipe
(d) msg queue

46.   System V IPC common attributes are
(a) key
(b) id
(c) owner
(d) all the above

47.   Which one of the following is not system V IPC ?
(a)   Shared Memory
(b)   Semaphores
(c)   FIFO
(d)   Message Queues

48.   Which system call is used to create Sys V message Queue ?
(a)   msgget
(b)   shemget
(c)   semget
(d)   msgctl

49.   Which is not the correct option for removing a message queue ?
(a)   ipcrm -Q

    (b)   ipcrm -q
    (c)   ipcrm -m
    (d)   None

50.   Message queues are created in
    (a)   userspace
    (b)   kernelspace
    (c)   both
    (d)   none

Ans.   (1)(b), (2)(b), (3)(a),(b) and (c), (4)(e), (5)(c), (6)(a), (7)(a), (8)(a), (9)(e), (10)(c),
       (11)(d), (12)(b), (13)(d), (14)(b), (15)(c), (16)(d), (17)(a), (18)(b), (19)(a), (20)(a),
       (21)(a), (22)(a), (23)(d), (24)(d), (25)(a), (26)(d), (27)(b), (28)(a), (29)(b), (30)(3),
       (31)(b), (32)(a), (33)(d), (34)(b), (35)(c), (36)(c), (37)(d), (38)(b), (39)(b), (40)(b),
       (41)(d), (42)(a), (43)(c), (44)(b), (45)(c), (46)(d), (47)(c), (48)(a), (49)(c), (50)(b)

II   Short Answer Type Questions:

1   If a process modifies an environment variable, by changing one of the strings pointed to by the environment pointer, what effect does this have on its parent process? What effect does this have on any child processes it invokes?
2   What effect does the following have? setuid();
3   Both the functions getpwuid and getpwnam return a pointer to a structure that the function fills in. Where do you think this structure is stored?
4   Some network servers compare a user's encrypted password with the pw_passwd field in the passwd structure. What happens when the server is running on a system that has a shadow password file?
5   Investigate the access system call on the LINUX system. Write a similar function that uses the effective user ID and the effective group ID.
6   Explain the creation of message queues.
7   Explain Ipcrm command.
8   What is socket? State and explain different socket types?
9   What do you mean by Client-Server Architecture? Write steps to establishing a socket on client side and server side.

III   Long Answer Type Questions:

1   How to get client port number in server socket programming?
2   What is the difference between socket and port?
3   Why bind system call is required in socket programming?
4   What is the difference between a process task and threads and what are the things that are acquired by the child process from the parent process?
5   What is the difference between a process task and threads?
6   What is the difference between fork() and exec()?
7   How to get microseconds of system time from Red hat linux?.
8   How to create samba server?

9   Write a socket program to implement TCP Client Server.
10   Explain Connect Function, Bind, Listen, Accept, Fork and Exec functions.
11   Explain Signal, FIFO and Message Queue.
12   Explain various processes in LINUX.
13.   Difference between fork() and exex() with example.
14.   Explain connect, bind, accept and listen system calls used in socket programming?

QUESTION BANK

SOFTWARE TESTING

MCA 303

QUESTION BANK
SOFTWARE TESTING - MCA 303
MCA -V

UNIT – I

I   Test Your Skills:
(a)   State Whether the Following Statements are true or false:

1   Acceptance Testing is done when software is developed for anonymous customers.
2   A good test case has a high probability of finding an error.
3   Verification is the process of confirming that software meets its specification.
4   Software Testing is a specialized discipline requiring unique skills.
5   The domain of possible inputs is not too large to test.
6   Software tester should be involved very early during development phase of a project.
7   System testing only deals with functional requirements.
8   Beta testing is useful way of compatibility testing.
9   Testing a functionality of software has two parts, requirement specification testing and business process based testing.
10   Black box testing is only functional testing.
11   Non-functional testing is performed only at system testing level.
12   Sometimes regression testing is best candidate for automation.
13   Configuration testing deals with hardware while compatibility testing deals with software.
14   Software Reliability is the probability of failure-free software operation for a specified period of time in a specified environment.
15   Equivalence partitioning and boundary value analysis techniques are used only during system testing.

Ans.   (1)(F), (2) (T), (3) (T), (4) (T), (5) (F), (6)(T), (7)(F), (8)(T), (9)(T), (10)(F), (11)(F), (12)(T), (13)(T), (14)(T), (15)(F)

(b)   Multiple Choice Questions:

1   The word 'Error' is synonymous with which of the following words?
(a)   Incident
(b)   Defect
(c)   Mistake
(d)   Bug

2   Which of the statements below is the best assessment of how the test principles apply across the test life cycle?
(a)   Test principles only affect the preparation for testing.
(b)   Test principles only affect test execution activities.
(c)   Test principles only affect the early test activities such as review.
(d)   Test principles affect activities throughout the test life cycle.

3   Software Testing is the process of
        (a)   Demonstrating that errors are not present.
        (b)   Executing the program with the intent of finding errors.
        (c)   Executing the program to show that it executes as per SRS.
        (d)   All of the above.

4   Programmers make mistakes during coding. These mistakes are known as
        (a)   Failures
        (b)   Defects
        (c)   Bugs
        (d)   Errors

5   Software Testing is nothing else but
        (a)   Verification only
        (b)   Validation only
        (c)   Both verification & validation
        (d)   None of the above.

6   Test suite is
        (a)   Set of test cases
        (b)   Set of inputs
        (c)   Set of outputs
        (d)   None of the above

7   Which one is not the verification activity?
        (a)   Reviews
        (b)   Path Testing
        (c)   Walk throughs
        (d)   Acceptance Testing

8   A break in the working of a system is called
        (a)   Defect
        (b)   Failure
        (c)   Fault
        (d)   Error

9   One fault may lead to
        (a)   One failure
        (b)   No failure
        (c)   Many failures
        (d)   All of the above

10   The best reason for using Independent software test teams is that
        (a)   Software developers do not need to do any testing
        (b)   A test team will test the software more thoroughly
        (c)   Testers do not get involved with the project until testing begins

(d)   Arguments between developers and testers are reduced

11   The goal of software testing is to
(a)   Debug the system
(b)   Validate that the system behaves as expected
(c)   Let the developer know the defects injected by him
(d)   Execute the program with the intent of finding errors

12   Defects are least costly to correct at what stage of the development cycle?
(a)   Requirements
(b)   Analysis & Design
(c)   Construction
(d)   Implementation

13   _____must be developed to describe when and how testing will occur.
(a)   Test Strategy
(b)   Test Plan
(c)   Test Design
(d)   High Level document

14   Testing Process comprised of
(a)   Test Plan and Test Cases
(b)   Test log and Test Status
(c)   Defect Tracking
(d)   All of the above

15   As a tester, what is your main objective in reviewing a requirement document?
(a)   To ascertain that each requirement is traceable to a business need
(b)   To ascertain that each requirement is both testable and uniquely identifiable
(c)   To ascertain that each requirement is traceable to a business need, testable, and
        uniquely identifiable
(d)   To ascertain that each requirement is uniquely identifiable

16   We split testing into distinct stages primarily because:
(a)   Each test stage has a different purpose.
(b)   It is easier to manage testing in stages.
(c)   We can run different tests in different environments.
(d)   The more stages we have, the better the testing.

17   Which of the following characterizes the cost of faults?
(a)   They are cheapest to find in the early development phases and the most expensive
        to fix in the latest test phases.
(b)   They are easiest to find during system testing but the most expensive to fix then.
(c)   Faults are cheapest to find in the early development phases but the most
        expensive to fix then.

(d)   Although faults are most expensive to find during early development phases, they are cheapest to fix then.

18   A failure is:
(a)   Found in the software; the result of an error.
(b)   Departure from specified behavior.
(c)   An incorrect step, process or data definition in a computer program.
(d)   A human action that produces an incorrect result.

19   Enough testing has been performed when
(a)   Time runs out.
(b)   The required level of confidence has been achieved.
(c)   No more faults are found.
(d)   The users won't find any serious faults.

20   Test design mainly emphasizes all the following except
(a)   Data planning
(b)   Test procedures planning
(c)   Mapping the data and test cases
(d)   Data synchronization

21   Which one of the following describes the major benefit of verification early in the life cycle?
(a)   It allows the identification of changes in user requirements.
(b)   It facilitates timely set up of the test environment.
(c)   It reduces defect multiplication.
(d)   It allows testers to become involved early in the project.

22   Which of the following is NOT a reasonable testing objective?
(a)   To find faults in the software
(b)   To prove that the software has no faults
(c)   To give confidence in the software
(d)   To find performance problems

23   In Life cycle approach to testing, test execution occurs _____
(a)   During testing phase
(b)   During requirement phase
(c)   During coding phase
(d)   None of the above.

24   A deviation from the specified or expected behavior that is visible to end-users is called:
(a)   An error
(b)   A fault
(c)   A failure
(d)   A defect

25   What is the important criterion in deciding what testing technique to use?
        (a)   How well you know a particular technique
        (b)   The objective of the test
        (c)   How appropriate the technique is for testing the application
        (d)   Whether there is a tool to support the technique

26   Which of the following are characteristics of testable software?
        (a)   Observability
        (b)   Simplicity
        (c)   Stability
        (d)   All of the above

27   The Planning phase of a formal review includes the following:
        (a)   Explaining the objectives
        (b)   Selecting the personnel, allocating roles.
        (c)   Follow up
        (d)   Individual Meeting preparations

28   A Person who documents all the issues, problems and open points that were identified
        during a formal review.
        (a)   Moderator.
        (b)   Scribe
        (c)   Author
        (d)   Manager

29   Who are the persons involved in a Formal Review?
        i.   Manager
        ii.   Moderator
        iii.   Scribe / Recorder
        iv.   Assistant Manager
        (a)   i,ii,iii,iv are true
        (b)   i,ii,iii are true and iv is false.
        (c)   ii,iii,iv are true and i is false.
        (d)   i,iv are true and ii, iii are false.

30   Which of the following is a Key Characteristics of Walk Through?
        (a)   Scenario, Dry Run, Peer Group
        (b)   Pre Meeting Preparations
        (c)   Formal Follow Up Process
        (d)   Includes Metrics

31   Which of the following term describes testing?
        (a)   Finding broken code
        (b)   Evaluating deliverable to find errors
        (c)   A stage of all projects

(d)   None of the mentioned

32   What type of fault remains in the system for some period and then disappears?
     (a)   Permanent
     (b)   Transient
     (c)   Intermittent
     (d)   Non-Permanent

33   Which of the following approaches are used to achieve reliable systems?
     (a)   Fault prevention
     (b)   Fault removal
     (c)   Fault tolerance
     (d)   All of the mentioned

34   A system maintaining its integrity while accepting a temporary halt in its operation is said to be in a state of
     (a)   Full Fault Tolerance
     (b)   Graceful Degradation
     (c)   Fail Soft
     (d)   Fail Safe

35   Which of the following Error Detection checks is not a part of Application detection?
     (a)   Hardware checks
     (b)   Timing checks
     (c)   Reversal checks
     (d)   Coding checks

36   Exception handling is a type of
     (a)   Forward error recovery mechanism
     (b)   Backward error recovery mechanism
     (c)   Top recovery mechanism
     (d)   Bottom recovery mechanism

37   All fault-tolerant techniques rely on
     (a)   Integrity
     (b)   Dependability
     (c)   Redundancy
     (d)   Inter-dependability

38   It is imperative for communicating processes to reach consistent recovery points to avoid the _____ effect, with backward error recovery mechanism.
     (a)   Static
     (b)   Dynamic
     (c)   Domino
     (d)   Whirlpool

39   What do you understand by V&V in software testing?
        (a)   Verified Version
        (b)   Version Validation
        (c)   Verification and Validation
        (d)   Version Verification

40   When does the testing process stops?
        (a)   When resources (time and budget) are over
        (b)   When some coverage is reached
        (c)   When quality criterion is reached
        (d)   Testing never ends.

41.   Quality also can be looked at in terms of user satisfaction which includes
        (a)   A compliant product
        (b)   Good quality output
        (c)   Delivery within budget and schedule
        (d)   All of the mentioned

42.   Inspections and testing are what kinds of Quality Costs
        (a)   Prevention
        (b)   Internal Failure
        (c)   External Failure
        (d)   Appraisal

43.   According to ISO 9001, inspection and testing comes under which management responsibility?
        (a)   Process control
        (b)   Document control
        (c)   Control of non-conforming products
        (d)   Servicing

44.   The degree to which the design specifications are followed during manufacturing is known as
        (a)   Quality of design
        (b)   Quality of conformance
        (c)   Quality of testing
        (d)   None of the mentioned

45   What kind of quality cost is incurred when an error is detected in a product prior to shipment?
        (a)   Prevention
        (b)   Internal Failure
        (c)   External Failure
        (d)   Appraisal

46   Non-conformance to software requirements is known as

(a)   Software availability
(b)   Software reliability
(c)   Software failure
(d)   None of the mentioned

47   Software project manager is engaged with software management activities. He is responsible for _____.
(a)   Project planning.
(b)   Monitoring the progress
(c)   Communication among stakeholders
(d)   All mentioned above
(e)   None of the above

48   Which quality deals with the maintaining the quality of the software product?
(a)   Quality assurance
(b)   Quality control
(c)   Quality Efficiency
(d)   None of the above

49   The interviews, which are held between two persons across the table is _____.
(a)   Written
(b)   Non-structured
(c)   Group
(d)   One-to- one

50   Which of these primary objectives have to be achieved for the requirement model?
(a)   To describe what the customer requires
(b)   To establish a basis for the creation of a software design
(c)   To define a set of requirements that can be validated once the software
(d)   All mentioned above

Ans.   (1)(c), (2)(d), (3)(b), (4)(c), (5)(c), (6)(a), (7)(d), ()(b), (9)(d), (10)(b), (11)(d), (12)(a), (13)(a), (14)(d), (15)(c), (16)(a), (17)(a), (18)(b), (19)(b), (20)(d), (21)(c), (22)(b), (23)(d), (24)(c), (25)(b), (26)(d), (27)(b), (28)(b), (29)(c), (30)(a), (31)(b), (32)(b), (33)(d), (34)(d), (35)(a), (36)(a), (37)(c), (38)(c), (39)(c), (40)(c), (41)(d), (42)(d), (43)(a), (44)(b), (45)(b), (46)(c), (47)(d), (48)(b), (49)(d), (50)(d)

(c)   Fill in the Blanks:

1   _____ is checking the product with respect to customer's expectations.
2   _____ testing is infeasible.
3   A node with in degree = 0 and out degree = 0 is called _____node.
4   Alpha testing is done by _____.
5   Site of Beta testing is _____site.
6   A node with in degree = 0 and out degree = 0 is called _____node.
7   Acceptance testing is done by _____.

8   _____is a good synonym for fault.
9   It is difficult for _____for point out errors from their own creations.
10 A _____occurs when a fault executes.

Ans. (1)(Validation), (2)(Complete), (3)(Source), (4)(Customer), (5)(User's), (6)(Destination), (7)(Customers), (8)(Defect), (9)(Developers), (10)(Failure)

II Short Answer Type Questions:

1   What are the myths associated with software testing?
2   Why developers are not good testers?
3   What is testing?
4   What are the limitations of testing?
5   What should we test?
6   Software Testing is software verification plus software validation. Discuss.
7   What is the need of testing?
8   'Software Testing is an incremental process'. Justify.
9   Differentiate between verification and validation.
10 Differentiate between error and fault.
11 Define the following terms:
   (a) Error
   (b) Fault
   (c) Failure
   (d) Incident
12 Define:
   (a) Test
   (b) Test Case
   (c) Test Suite
13 Discuss the role of software testing during software life cycle and why it is so difficult?
14 What are code reviews?
15 Differentiate between alpha and beta testing.
16 What is the difference between a Bug and an Enhancement?
17 Will exhaustive testing guarantee that software is 100% correct?
18 What is testing lifecycle?
19 Explain the significance of SRS in software testing.
20 What is code review?
21 What are the limitations of slice based testing?
22 Explain validity checks.
23 What is software testing? Is it possible to do complete testing?
24 Explain the term code walkthrough.

III Long Answer Type Questions:

1   What is a software failure? Explain necessary and sufficient conditions for software failure.
2   Why does software fail after it has passed from acceptance testing? Explain.

3   Explain the V-Model of testing?
4   What is a test case? Write template for typical test case.
5   Explain the difference between a test case and test plan.
6   Why software needs to be tested?
7   What is the reason that Software has Bugs?
8   What is the sequence of succession in STLC - Software Testing Life Cycle?
9   What is the difference between a Test Plan and a Use Case?
10   Give examples of verification and validation.
11   Discuss the difference between verification and validation and discuss why particularly validation is difficult?
12   Explain Bug Life Cycle in detail.
13   What is V-shaped software testing life cycle? Discuss its model. What are the limitations of software testing?
14   Define Verification Testing? What are its different methods? Explain in brief.
15   Discuss code coverage prioritization technique in detail.
16   Define verification testing. Discuss briefly the various methods of verification testing.
17   What are the essentials of software testing? Why software testing is hard?
18   Define a test case. What are the objectives and the various steps involved in test case design?

UNIT – II

I   Test Your Skills:
(a)   State Whether the Following Statements are true or false:

1   Boundary value analysis and equivalence partitioning do not explore combinations of inputs.
2   Boundary value analysis works well for the programs with independent input values.
3   Data flow testing is another form of functional testing.
4   The connection matrix cannot be used to find cyclomatic complexity.
5   If a program has backward branch then it may have infinite number of paths.
6   Configuration management is only important during development activity.
7   Configuration management is possible only by using automated tools.
8   Every risk has 100% likelihood.
9   Risk is expressed in terms of probability and impact.
10   Risk management is important part of a project management.
11   If all the statements of code are executed that means every decision is is executed at least once.
12   Test strategy gives rules for testing.
13   Test policy is overall high-level approach.
14   Test control is ongoing activity.
15   The documentation on which test cases are based is called as test basis.

Ans.   (1)(T), (2)(T), (3)(F), (4)(F), (5)(T), (6)(F), (7)(F), (8)(F), (9)(F), (10)(T), (11)(F), (12)(F), (13)(F) ,(14)(T), (15)(T)

(b) **Multiple Choice Questions:**

1   Which of the following is not a functional testing technique?
     (a)   Boundary-Value Analysis
     (b)   Decision Table
     (c)   Regression Testing
     (d)   None of the above

2   Decision tables are useful in situations where
     (a)   An action is taken under varying sets of conditions.
     (b)   Number of combinations of actions is taken under varying sets of conditions.
     (c)   No action is taken under varying sets of conditions.
     (d)   None of the above.

3   'Causes' and 'Effects' are related to
     (a)   Input and Output
     (b)   Output and Input
     (c)   Destination and Source
     (d)   Source and Destination

4   If 'n' represents the number of variables in a program then Boundary Value analysis yields how many test cases
     (a)   4n+2
     (b)   4n+1
     (c)   n+2
     (d)   n+1

5   For a function of 'n' variables, the robustness testing will yield how many cases
     (a)   6n+1
     (b)   6n+2
     (c)   6n+4
     (d)   None of above

6   In decision tables, which of the following is true?
     (a)   Number of test cases is equal to number of rules (columns)
     (b)   No. of test cases is not equal to number of rules (or column)
     (c)   Both (a) and (b)
     (d)   None of the above.

7   Cyclomatic complexity is equal to
     (a)   Number of independent paths
     (b)   Number of paths
     (c)   Number of edges
     (d)   None of the above

8   Data flow testing is related to

(a)   DFD
(b)   ERD
(c)   Data Dictionary
(d)   None of the above

9   In data flow testing, objective is to find
        (a)   All dc-paths that are not du-paths
        (b)   All du-paths
        (c)   All du-paths that are not dc-paths
        (d)   All dc-paths

10   Every node is represented by
        (a)   One row and one column in graph matrix
        (b)   Two rows and two columns in graph matrix
        (c)   One row and two columns in graph matrix
        (d)   None of the above.

11   The testing technique that requires devising test cases to demonstrate that each
        program function is operational is called
        (a)   black-box testing
        (b)   glass-box testing
        (c)   grey-box testing
        (d)   white-box testing

12   What types of errors are missed by black-box testing and can be uncovered by white-
        box testing?
        (a)   Behavioral errors
        (b)   Logic errors
        (c)   Performance errors
        (d)   Typographical errors
        (e)   Both b and d

13   Black-box testing attempts to find errors in which of the following categories
        (a)   Incorrect or missing functions
        (b)   Interface errors
        (c)   Performance errors
        (d)   All of the above
        (e)   None of the above

14   What is an equivalence partition (also known as an equivalence class)?
        (a)   A set of test cases for testing classes of objects
        (b)   An input or output range of values such that only one value in the range
                becomes a test case
        (c)   An input or output range of values such that each value in the range
                becomes a test case

(d) An input or output ranges of values such that every tenth value in the range becomes a test case.

15 Functional system testing is:
(a) Testing that the system functions with other systems
(b) Testing that the components that comprise the system function together
(c) Testing the end to end functionality of the system as a whole
(d) Testing the system performs functions within specified response times

16 One of the fields on a form contains a text box which accepts alpha numeric values. Identify the Valid Equivalence class
(a) BOOK
(b) Book
(c) Boo01k
(d) Book

17 Which of the following techniques is not a White box technique?
(a) Statement Testing and coverage
(b) Decision Testing and coverage
(c) Condition Coverage
(d) Boundary value analysis

18 What is the relationship between equivalence partitioning and boundary value analysis techniques?
(a) Structural testing
(b) Opaque testing
(c) Compatibility testing
(d) All of the above

19 White Box Techniques are also called as
(a) Structural Testing
(b) Design Based Testing
(c) Error Guessing Technique
(d) Experience Based Technique

20 The cyclomatic complexity metric provides the designer with information regarding the number of
(a) Cycles in the program
(b) Errors in the program
(c) Independent logic paths in the program
(d) Statements in the program

21 Condition testing is a control structure testing technique where the criteria used to design test cases is that they
(a) Rely on basis path testing
(b) Exercise the logical conditions in a program module

(c)   Select test paths based on the locations and uses of variables
(d)   Focus on testing the validity of loop constructs

22   Data flow testing is a control structure testing technique where the criteria used to design test cases is that they
(a)   Rely on basis path testing
(b)   Exercise the logical conditions in a program module
(c)   Select test paths based on the locations and uses of variables
(d)   Focus on testing the validity of loop constructs

23   Loop testing is a control structure testing technique where the criteria used to design test cases is that they
(a)   Rely basis path testing
(b)   Exercise the logical conditions in a program module
(c)   Select test paths based on the locations and uses of variables
(d)   Focus on testing the validity of loop constructs

24   An independent path is
(a)   Any path through DD path graph that introduces at least one new set of process statement or new condition
(b)   Any path through DD path graph that introduces at most one new set of process statement or new condition
(c)   Any path through DD path graph that introduces one and only one new set of process statement or new condition
(d)   None of the above

25   Cyclomatic complexity was developed by
(a)   B.W.Bohem
(b)   T.J.McCabe
(c)   B.W.Little wood
(d)   Victor Basili

26   Cyclomatic complexity is denoted by
(a)   e-n+2P
(b)   Number of regions of graph
(c)   No of predicate nodes + 1
(d)   All of the above

27   The equation V(G)= No. of predicated nodes+1 is applicable only when node has
(a)   Two outgoing edges
(b)   Three outgoing edges
(c)   No outgoing edges
(d)   None of the above

28   The size of the graph matrix is
(a)   Number of edges in the flow Graph

(b) Number of nodes in the flow Graph
(c) Number of paths in the flow Graph
(d) Number of independent paths in the flow Graph

29 Data flow testing is related to
(a) DFD
(b) ER diagram
(c) Data dictionaries
(d) None of these

30 _____ testing assumes that the path of logic in a unit or program is known.
(a) Black Box testing
(b) Performance Testing
(c) White Box testing
(d) Functional testing

31 White Box techniques are also classified as
(a) Design based testing
(b) Structural testing
(c) Error guessing technique
(d) Strong testing

32 Exhaustive testing is
(a) Always possible
(b) Practically possible
(c) Impractical but possible
(d) Impractical and impossible

33 Which of the following is/are White box technique?
(a) Statement Testing
(b) Decision Testing
(c) Condition Coverage
(d) All of these

34 What are the various Testing Levels?
(a) Unit testing
(b) System Testing
(c) Integration Testing
(d) All of the mentioned

35 Boundary value analysis belongs to?
(a) White Box Testing
(b) Black Box Testing
(c) Glass Testing
(d) Alpha Testing

36   Alpha testing is done at
        (a)   Developer's end
        (b)   User's end
        (c)   Customer's end
        (d)   Tester's end

37   SPICE stands for
        (a)   Software Process Improvement and Compatibility Determination
        (b)   Software Process Improvement and Control Determination
        (c)   Software Process Improvement and Capability Determination
        (d)   None of the mentioned

38   Unit testing is done by
        (a)   Users
        (b)   Developers
        (c)   Customers
        (d)   Tester

39   Behavioral testing is
        (a)   White box testing
        (b)   Black box testing
        (c)   Grey box testing
        (d)   Glass testing

40   Which of the following is black box testing
        (a)   Basic path testing
        (b)   Boundary value analysis
        (c)   Code path analysis
        (d)   None of the mentioned

41   Which of the following is not used in measuring the size of the software
        (a)   KLOC
        (b)   Function Points
        (c)   Size of module
        (d)   Software Metric

42   What kind of quality cost is incurred when an error is detected in a product prior to
        shipment?
        (a)   Prevention
        (b)   Internal Failure
        (c)   External Failure
        (d)   Appraisal

43   When code is made available to others, it goes in a/an
        (a)   hard drive
        (b)   access-controlled library

(c)   servers

(d)   access control

44   What allows different projects to use the same source files at the same time?
   (a)   Version Control
   (b)   Access control
   (c)   CM Process
   (d)   Version Control and Access control

45   Why is decomposition technique required?
   (a)   Software project estimation is a form of problem solving
   (b)   Developing a cost and effort estimate for a software project is too complex
   (c)   All of the mentioned
   (d)   None of the mentioned

46   If a Direct approach to software project sizing is taken, size can be measured in
   (a)   LOC
   (b)   FP
   (c)   LOC and FP
   (d)   None of the mentioned

47   The expected value for the estimation variable (size), S, can be computed as a weighted average of the optimistic(Sopt), most likely (Sm), and pessimistic (Spess) estimates given as
   (a) $EV = (Sopt + 4Sm + Spess)/4$
   (b) $EV = (Sopt + 4Sm + Spess)/6$
   (c) $EV = (Sopt + 2Sm + Spess)/6$
   (d) $EV = (Sopt + 2Sm + Spess)/4$
48   How many forms exists of Barry Boehm's COCOMO Model?
   (a)   Two
   (b)   Three
   (c)   Four
   (d)   No form exists

49   Who suggested the four different approaches to the sizing problem?
   (a)   Putnam
   (b)   Myers
   (c)   Boehm
   (d)   Putnam and Myers

50   Which of the following is not one of the five information domain characteristics of Function Point (FP) decomposition?
   (a)   External inputs
   (b)   External outputs
   (c)   External process
   (d)   Internal Inputs

Ans.   (1)(c), (2)(b), (3)(a), (4)(b), (5)(a), (6)(a), (7)(a), (8)(d), (9)(c), (10)(a), (11)(a), (12)(d), (13)(d), (14)(b), (15)(c), (16)(c), (17)(d),(18)(b),(19)(a), (20)(e), (21)(c), (22)(b), (23)(c), (24)(a), (25)(b), (26)(d), (27)(a), (28)(b), (29)()d, (30)(c), (31)(b), (32)(c), (33)(d), (34)(d), (35)(b), (36)(a), (37)(c), (38)(b), (39)(b), (40)(b), (41)(c),42(b),43(b),44(a),45(c), (46)(a), (47)(b), (48)(b), (49)(d), (50)(c)

(c)   Fill in the Blanks:

1   Cyclomatic complexity is denoted by _____.
2   Equivalence class partitioning is one form of _____testing.
3   White-box testing is also known as _____.
4   Worst case testing for a function of 'n' variables generates _____test cases.
5   _____is a method of generating test cases representing combinations of conditions.
6   The _____of path testing deteriorates as the size of the software under test increases.
7   A flow graph can easily be generated from the _____of any problem.
8   An_____is any path through the DD path graph that introduces atleast one new set of processing statement.
9   The _____is also known as the structural complexity.
10   A _____in a flow graph is a node with two outgoing edges.

Ans.   (1) (e-n+2p / π + 1/ No. of regions in graph), (2) (black-box / functional testing),(3) (Structural testing), (4) (5^n), (5) (cause effect graph), (6) (effectiveness), (7) (code), (8) (Independent path), (9) (Cyclomatic Complexity), (10) (predicate node)

II   Short Answer Type Questions:

1   Write a short note on cause effect graphing technique.
2   What is cyclomatic complexity?
3   What are predicate nodes? Where are they used?
4   What are flow graphs?
5   What is a graph matrix?
6   What is Equivalence Testing?
7   Differentiate between black box and white box testing.
8   Discuss the various steps of data flow testing.
9   Define the following:
        (a)   du-path   (b) dc-path   (c) usage node   (d) defining node
10   What are independent paths?
11   "We can achieve complete statement coverage but still miss bugs" Comment.
12   What is the use of graph theory in software testing?
13   Distinguish between single and multiple fault assumption.

III   Long Answer Type Questions:

1   Explain the boundary value analysis technique with the help of an example.
2   Explain the usefulness of decision table during testing.
3   (a)   Discuss all methods to calculate cyclomatic complexity.

(b)   What is the use of graph matrices?

4   What is structural testing? Explain in detail the various types of structural testing.

5   What is functional testing? Explain its various types.

6   What is the difference between Statement Coverage, Branch Coverage and Path Coverage?

7   What is the difference between Ad-hoc Testing, Monkey Testing and Exploratory Testing?

8   What is the difference between Smoke Testing and Sanity Testing?

9   What is the difference between STLC &SDLC.

10   What are the Testing Types & Techniques?

11   What is a use case test?

12   Write down the steps involved in use case testing.

13   Difference between weak normal and strong normal equivalence class testing?

14   Explain the cause effect graph technique using suitable example.

15   Compare the various functional testing techniques in terms of effort and number of test cases. What are its limitation and discuss the situations in which these are not effective.

16   Write a program to find the factorial of a number. Draw the DD graph and calculate cyclomatic complexity for it. Also derive du-paths and dc-paths using data flow testing and generate test cases for these paths.

IV   Practical Questions:

1   Consider a program for determining the Next date. Its input is a triple of day, month and year with the following range

$1 \leq$ month ≤ 12

$1 \leq$ day ≤ 31

$1900 \leq$ year ≤ 2025

The possible outputs would be next date or invalid input date. Design boundary value test cases for this program.

2   Design robust and worst test cases for above problem.

3   Draw the flow graph of binary search routine and find its independent paths.

4   Find the cyclomatic complexity of the graph given below and find all independent paths.
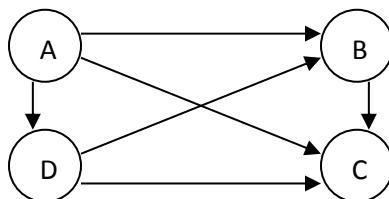
5   Find the cyclomatic complexity of the graph given below and find all independent paths.
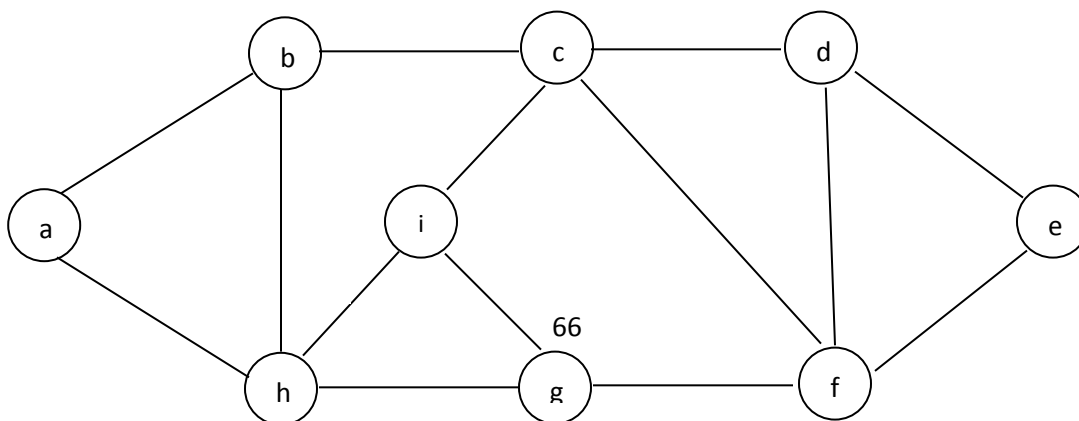
6   Consider the flow graph given below and draw the graph & connection matrices. Find out cyclomatic complexity and two/three link paths from a node to any other node.
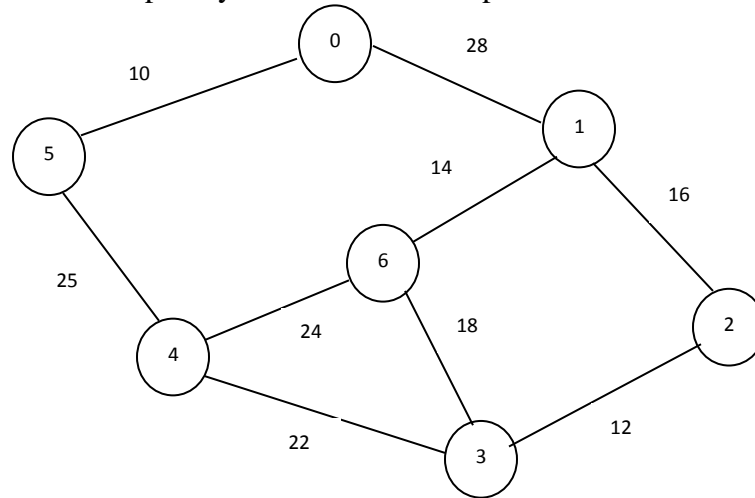
7   Consider a program for the determination of the nature of roots of a quadrate equation. Its input is a triple of positive integers (a, b, c) and values may be from interval (0, 100). The program output may have one of the following words:
(Not a quadrate equation, Real roots, imaginary roots, equal roots)
Design the boundary value test cases.

8   Design Robust and Worst test cases for above problem.

9   Identify the equivalence class test cases for output and input domains for problem given in Q7.

10   Draw the decision table for the problem given in Ques7.

UNIT – III

I   Test Your Skills:

(a)   State Whether the Following Statements are true or false:

1   Equivalence class partitioning and orthogonal array testing are test design methods.
2   The main guide for selecting tests is to assess risk.
3   Software projects do not benefit from risk analysis.
4   Multiplying the probability and severity values yields the risk exposure.
5   There are two types of flows in use case diagrams – basic flow and alternative flow.
6   In waterfall model, output of one phase is input to next phase.
7   Testing objective is different for each phase of life cycle activity.
8   Testing approach changes based on the life cycle applied for development of a software.
9   In incremental model, requirements do not need to be prioritize.
10   Strict configuration management is required during Rapid ActionDevelopment.
11   Software safety is equivalent to software reliability.
12   Software is not considered to be collection of executable programming code, associated libraries and documentations.

13   CASE tools cannot be grouped together if they have similar functionality, process activities and capability of getting integrated with other tools.

14   A software project manager is a person who undertakes the responsibility of carrying out the software project.

15   CM is about managing the different items in the product, and changes in them.

Ans.   (1)(T), (2)(T), (3)(F), (4)(T), (5)(T), (6)(T), (7)(T), (8)(T), (9)(F), (10)(T), (11)(F), (12)(F), (13)(F), (14)(T), (15)(T)

(b)   Multiple Choice Questions:

1   The main guide for selecting test cases is
   (a)   To assess risks
   (b)   To assess quality
   (c)   Both (a) and (b)
   (d)   None of the above

2   Which of the following is not a risk reduction scheme?
   (a)   Priority category scheme
   (b)   Risk analysis
   (c)   Interviewing
   (d)   None of the above

3   The potential problems are identified and their probabilities and impacts are given weights in which technique
   (a)   Priority categorization scheme
   (b)   Risk analysis
   (c)   Interviews
   (d)   None of the above

4   Risk exposure is given by which formula
   (a)   It is the product of probability of occurrence of risk and its impact
   (b)   It is the sum of probability of its occurrence and its impact
   (c)   It is the standard deviation of the sum of it's probability and it's impact
   (d)   None of the above

5   A risk matrix
   (a)   Allows the testers to evaluate and rank potential problems by giving weights to probability or severity value as necessary
   (b)   Allows testers to assign thresholds that classify the potential problems into priority categories
   (c)   Both (a) and (b)
   (d)   None of the above

6   In diagonal band prioritisation scheme
   (a)   Severity equals probability

(b)   Severity is never equal to probability
(c)   Either (a) or (b)
(d)   Both (a) and (b)

7   Some managers found out that
(a)   Reducing the number of test cases
(b)   Increased the number of test cases
(c)   It does not affect the number of test cases
(d)   None of the above

8   Equivalence partitioning is a technique for?
(a)   Correction regression testing
(b)   Retest-all strategy
(c)   Combinational explosion
(d)   None of the above

9   The test cases derived from use cases
(a)   Are most useful in uncovering the defects in the process flows during real world use of the system.
(b)   Are most useful in uncovering the defects in the process flows during the testing use of the system.
(c)   Are most useful in covering the defects in the process flows during real world use of the system.
(d)   Are most useful in covering the defects at the integration level.

10   Several techniques for using test execution information to prioritize test cases for regression testing include,
(a)   Techniques that order test cases based on their total coverage of code components.
(b)   Techniques that order test cases based on their total coverage of code components not previously covered.
(c)   Techniques that order test cases based on their estimated ability to reveal faults in the code components that they cover.
(d)   All of the above

11   Regression testing should be tightly linked to _____, and be built from the successful test cases developed and used in it.
(a)   Functional Testing
(b)   Retesting
(c)   End to End testing
(d)   System Testing

12   Use case scenario is:
(a)   An input of a use case
(b)   An instance of a use case
(c)   An output of a use case

(d) An information of a use case

13 Which is not an accepted strategy for data validity?
(a) Accept only known valid data
(b) Reject known bad data
(c) Sanitize all data
(d) Reject non-effective data

14 Guidelines for generating validity checks should include the following:
(a) Mandatory data inputs
(b) Blank data inputs
(c) Data range
(d) All of the above

15 The most popular area of database testing is:
(a) Websites
(b) Networks
(c) Scientific applications
(d) Operating systems

16 Use cases and use case diagrams are used to define:
(a) Complexity of a system
(b) Criticality of a system
(c) Stability of a system
(d) Behaviour of a system

17 Any variable in a use case has:
(a) At least one valid value and one invalid value
(b) At most one valid value
(c) At most one invalid value
(d) At most one valid value and one invalid value

18 A selection variable in a form:
(a) Has one option
(b) Has many options
(c) Has no option
(d) None of the above

19 Which is not the way to organize a risk matrix?
(a) Threshold by quadrant
(b) Threshold by diagonal quadrant
(c) Threshold by available test cases
(d) Threshold based on high impact of the problem

20 Which prioritization technique is used when we assign equal importance to 'probability of occurrence' and 'Impact of problem' in risk matrix?

(a)   Threshold by quadrant
(b)   Threshold by diagonal quadrant
(c)   Threshold based on high impact of the problem
(d)   Threshold based on high probability of occurrence of problem

21   In prioritizing what to test, the most important objective is to:
(a)   Find as many faults as possible.
(b)   Test high risk areas
(c)   Obtain good test coverage
(d)   Test easy areas

22   Test cases are prioritized so that:
(a)   We shorten the time of testing
(b)   We do the best testing in the time available
(c)   We do more effective testing
(d)   We find more faults

23   A regression test:
(a)   Will always be automated
(b)   Will help to ensure that unchanged areas have not been affected
(c)   Will help to ensure that changed areas have not been affected
(d)   Will run during acceptance testing

24   Which test cases are easy to identify?
(a)   Fault revealing
(b)   Modification revealing
(c)   Modification traversing
(d)   Bug revealing

25   Regression testing process may include:
(a)   Fault Identification
(b)   Code Modification
(c)   Test cases selection
(d)   All of the above

26   Which regression test cases selection technique is more useful?
(a)   Select all test cases
(b)   Select test cases randomly
(c)   Select modification traversing test cases
(d)   Select 50% of available test cases

27   Risk should include:
(a)   Probability of occurrence of a problem
(b)   Impact of that problem
(c)   Test cases
(d)   (a) and (b) both

28   Special requirements in a use case template define:
(a)   Business rules
(b)   Reliability requirements
(c)   Expectations of the users
(d)   Associated use cases

29   Which is not an actor in use cases?
(a)   External database
(b)   Administrator
(c)   Keyboard
(d)   Data entry operator

30   Which activity is performed in crisis situations and under greater time constraints?
(a)   Regression testing
(b)   Development testing
(c)   Verification
(d)   Validation

31   Which of the following errors should not be tested when error handling is evaluated?
(a)   Error description is unintelligible
(b)   Error noted does not correspond to error encountered
(c)   Error condition causes system intervention prior to error handling
(d)   Error description provide enough information to assist in the location of the cause of the error

32   What is normally considered as an adjunct to the coding step
(a)   Integration testing
(b)   Unit testing
(c)   Completion of Testing
(d)   Regression Testing

33   Which of the following is not regression test case?
(a)   A representative sample of tests that will exercise all software functions
(b)   Additional tests that focus on software functions that are likely to be affected by the change
(c)   Tests that focus on the software components that have been changed
(d)   Low-level components are combined into clusters that perform a specific software sub-function

34   Which testing is an integration testing approach that is commonly used when "shrink-wrapped" software products are being developed?
(a)   Regression Testing
(b)   Integration testing
(c)   Smoke testing
(d)   Validation testing

35 In which testing level the focus is on customer usage?
    (a)   Alpha Testing
    (b)   Beta Testing
    (c)   Validation Testing
    (d)   Both Alpha and Beta

36 Risk management is one of the most important jobs for a
    (a)   Client
    (b)   Investor
    (c)   Production team
    (d)   Project manager

37 Which of the following risk is the failure of a purchased component to perform as
    expected?
    (a)   Product risk
    (b)   Project risk
    (c)   Business risk
    (d)   Programming risk

38 Which of the following term is best defined by the statement: "There will be a change of
    organizational management with different priorities."?
    (a)   Staff turnover
    (b)   Technology change
    (c)   Management change
    (d)   Product competition

39 Which of the following term is best defined by the statement: "The underlying
    technology on which the system is built is superseded by new technology."?
    (a)   Technology change
    (b)   Product competition
    (c)   Requirements change
    (d)   None of the mentioned

40 What assess the risk and your plans for risk mitigation and revise these when you learn
    more about the risk?
    (a)   Risk monitoring
    (b)   Risk planning
    (c)   Risk analysis
    (d)   Risk identification

41 Which of the following risks are derived from the organizational environment where the
    software is being developed?
    (a)   People risks
    (b)   Technology risks
    (c)   Estimation risks

(d)   Organizational risks

42   Which of the following risks are derived from the software or hardware technologies that are used to develop the system?
(a)   Managerial risks
(b)   Technology risks
(c)   Estimation risks
(d)   Organizational risks

43   The object of _____within an OO system is to design tests that have a high likelihood of uncovering plausible bugs.
(a)   Fault-based testing
(b)   Integration testing
(c)   Use-based testing
(d)   Scenario-based testing

44   Which of the following is black-box oriented and can be accomplished by applying the same black-box methods discussed for conventional software?
(a)   Conventional testing
(b)   OO system validation testing
(c)   Test case design
(d)   Both Conventional testing and OO system validation testing

45   Software mistakes during coding are known as
(a)   errors
(b)   failures
(c)   bugs
(d)   defects

46   Name an evaluation technique to assess the quality of test cases.
(a)   Mutation analysis
(b)   Validation
(c)   Verification
(d)   Performance analysis

47   Which of the following is not a part of bug report?
(a)   Test case
(b)   Output
(c)   Software Version
(d)   LOC

48   Which testing integrates the set of classes required to respond to one input or event for the system?
(a)   cluster testing
(b)   thread-based testing
(c)   use-based testing

(d)   none of the mentioned

49.   Which of the following is one of the steps in the integration testing of OO software?
      (a)   cluster testing
      (b)   thread-based testing
      (c)   use-based testing
      (d)   none of the above

50.   _____ methods can be used to drive validations tests
      (a)   Yellow-box testing
      (b)   Black-box testing
      (c)   White-box testing
      (d)   All of the mentioned

Ans.   (1)(c), (2)(d), (3)(b), (4)(a), (5)(c), (6)(a), (7)(b), (8)(a), (9)(a), (10)(d), (11)(a), (12)(b),(13)(d), (14)(d), (15)(a), (16)(d), (17)(a), (18)(b), (19)(c), (20)(b), (21)(b), (22)(b), (23)(b),(24)(c), (25)(d), (26)(c), (27)(d), (28)(a), (29)(c), (30)(a), (31)(a), (32)(b), (33)(d), (34)(c), (35)(d), (36)(d), (37)(a), (38)(c), (39)(a), (40)(a), (41)(a), (42)(b), (43)(a), (44)(d), (45)(c), (46)(a), (47)(d), (48)(b), (49)(a), (50)(b)

(c)   Fill in the Blanks:

1   The _____round of portioning can either reuse the same scale or use a new priority scheme.
2   Priority categorization scheme has _____ levels.
3   Probability of _____ is he likelihood of a problem occurring.
4   _____ are the one that need to be satisfied for the use case to perform.
5   _____ is used to capture identified problems, estimate their probability of occurrence with impact and rank the risks based on this information.

Ans.   (1)(second), (2)(three), (3) (occurrence), (4)(Pre-conditions), (5)(Risk Matrix)
II   Short Answer Type Questions:

1   Explain the risk reduction method?
2   Can you list the most common risk factors for various project types given below:
      (a)   MIT
      (b)   Commercial Software Sectors
3   How can regression testing be done at the module level and at the product level?
4   Write short note on "Regression testing".
5   What is risk?
6   How the test cases are selected regression testing?
7   Explain the following
      (a)   Modification traversing test cases
      (b)   Modification revealing test cases
8   What is the role of risk matrix for the reduction of test cases?
9   Write a short note on database testing.

10   What is a use case? How is it different from a use case diagram?
11   What are the guidelines for generating the validity checks? Explain with the help of an example.
12   Discuss the use case template.
13   Discuss the applications of database testing.
14   Why should data validation be given focus in testing?
15   What is use case scenario matrix?
16   Why is the prioritization of test cases necessary?
17   How do you define a risk? Why is risk analysis important?
18   Differentiate between system and integration testing.
19   Write short notes on Fault Prediction Model .
20   Distinguish between statement coverage and branch coverage.
21   Explain validity checks.
22   What is regression testing?

III   Long Answer Type Questions:

1   What do you mean by regression testing? Discuss different types of regression testing.
2   Define and discuss the following:
     (a)   Regression testing and how regression test selection is done?
     (b)   Selective retest and coverage techniques.
     (c)   Minimisation and safe techniques.
3   What is regression testing? Discuss the regression test selection problem.
4   What is the importance of regression testing?
5   Explain how risks are prioritized?
6   How can we reduce the number of test cases?
7   Given the following priority scheme for test cases:
     Priority 0: Test cases that check basic functionality, are run for accepting the build for further testing, are run when product undergoes a major change and these test cases deliver a very high project value to development teams and customer.
     Priority 1: Uses the basic and normal setup and these test cases deliver high project value to both development team and to customers.
     Priority 2: These test cases deliver moderate project value. They are executed as part of the testing cycle and selected for regression testing on a need basis.
     Using this scheme of prioritization, prioritize the following test cases as P_0 or P_1 or P_2:
     (a)   A test case for DBMS software that test all options of a select query.
     (b)   A test case for a file system that checks for de-allocation of free space.
     (c)   A test case that checks the functionality of a router/bridge.
     (d)   A test case that tests the OS boot strap process with normal parameters.
     (e)   A test case that checks a form, say, login form of a website.

8   Explain in brief the reduction schemes on prioritizing the test cases to reduced required testing effort? As a tester, how do you evaluate and rank potential problems? Suggest some guidelines of your own approach to reduce the number of test cases?
9   Explain how risk matrix can be used to prioritize the test cases. Explain giving examples. Why do we need to prioritise the test cases?

10   (a)   What are prioritization categories and guidelines for test case-reduction?
       (b)   What is the need of regression testing? How it is done?

11   Suppose your company is about to roll out an E-commerce application. It is not possible to test the application on all types of browsers on all platforms and operating systems. What steps would you take in the testing environment to reduce the testing process and all possible risks?

12   Explain with the help of algorithm, the test first approach used to test an RDBMS.

13   Give reasons why we cannot execute all test cases. What are prioritization categories and guidelines for test case-reduction?

14   Define regression testing. Is it necessary to perform? Explain one regression testing technique.

15   Briefly describe the following : (a) Use Case Testing   (b) Database Testing

UNIT - IV

I   Test Your Skills:

(a)   State Whether the Following Statements are true or false:

1   Object-oriented programming provides features not available in procedural software.
2   Private members are only available to objects of a specific class.
3   Modelling is not a vital part of object oriented development.
4   System testing is independent of the process used to create any application.
5   A class is the smallest unit that can be compiled.
6   Only one strategy exists for developing system level test cases.
7   Use cases are an effective mechanism for documenting requirements.
8   A design with a shallow inheritance structure is less complicated to test.
9   Many applications employ use cases to fully document system requirements.
10   Main header can be a section in use cases which contains a unique identifier and a brief description.
11   Configuration management (CM) is needed to deliver product to the client.
12   Cost and effort estimation of a software uses only one forms of decomposition, either decomposition of the problem or decomposition of the process.
13   In many cases, it is often more cost effective to acquire, rather than develop, computer software.
14   The architecture of object-oriented software results in a series of layered subsystems that encapsulate collaborating classes.
15   The Project Status Report contains the project activities information and give a history of the project over a 16-month period.

Ans.   (1)(T), (2)(T), (3)(F), (4)(T), (5)(T), (6)(F), (7)(T), (8)(T), (9)(T), (10)(T), (11)(T), (12)(F), (13)(T), (14)(T), (15)(T)

(b)   Multiple Choice Questions:

1   Which one of the following is an example of call and return architecture?
       (a)   Object oriented architecture

(b)   Layered architecture
(c)   Both (a) and (b)
(d)   Agent architecture

2   A predicate expression associated with an event is known as
(a)   Transition
(b)   Class
(c)   Guard
(d)   None of the above

3   Testing of nested loops were suggested by
(a)   Little wood
(b)   Beizer
(c)   Boehm
(d)   None of the above

4   A powerful technique to use any time a system presents a small input domain with a large number of permutations is known as
(a)   Regression testing
(b)   Object oriented testing
(c)   Orthogonal array testing
(d)   None of the above

5   What is the normal order of activities in which traditional software testing is organized?
a.   Integration testing
b.   System testing
c.   Unit testing
d.   Validation testing

(a)   a, d, c, b
(b)   b, d, a, c
(c)   c, a, d, b
(d)   d, b, c, a

6   Which of the following need to be assessed during unit testing?
(a)   Algorithmic performance
(b)   Code stability
(c)   Error handling
(d)   Execution paths
(e)   Both c and d

7   Top-down integration testing has as it's major advantage(s) that
(a)   Low level modules never need testing
(b)   Major decision points are tested early
(c)   No drivers need to be written

(d)   No stubs need to be written

(e)   Both b and c

8   Bottom-up integration testing has as it's major advantage(s) that

(a)   Major decision points are tested early

(b)   No drivers need to be written

(c)   No stubs need to be written

(d)   Regression testing is not required

9   The OO testing integration strategy involves testing

(a)   Groups of classes that collaborate or communicate in some way

(b)   Single operations as they are added to the evolving class implementation

(c)   Operator programs derived from use-case scenarios

(d)   None of the above

10   Acceptance tests are normally conducted by the

(a)   Developer

(b)   End users

(c)   Test team

(d)   Systems engineers

11   Fault-based testing is best reserved for

(a)   Conventional software testing

(b)   Operations and classes those are critical or suspect

(c)   Use-case validation

(d)   White-box testing of operator algorithms

12   Testing OO class operations is made more difficult by

(a)   Encapsulation

(b)   Inheritance

(c)   Polymorphism

(d)   Both b and c

13   Scenario-based testing

(a)   Concentrates on actor and software interaction

(b)   Misses errors in specifications

(c)   Misses errors in subsystem interactions

(d)   Both a and b

14   Deep structure testing is not designed to

(a)   Examine object behaviors

(b)   Exercise communication mechanisms

(c)   Exercise object dependencies

(d)   Exercise structure observable by the user

15   Which of these techniques is not useful for partition testing at the class level?
      (a)   Attribute-based partitioning
      (b)   Category-based partitioning
      (c)   Equivalence class partitioning
      (d)   State-based partitioning

16   Tests derived from behavioral class models should be based on the
      (a)   Data flow diagram
      (b)   Object-relation diagram
      (c)   State diagram
      (d)   Use-case diagram

17   _____ is the lease effective methods in isolating the cause of software errors.
      (a)   Algorithmic Bugs.
      (b)   Brute Force Approach.
      (c)   Cause Elimination Approach.
      (d)   Backtracking Approach

18   The major disadvantage of top-down approach is need for _____.
      (a)   Critical module.
      (b)   skeleton
      (c)   Stub.
      (d)   Project

19   _____ couples top-down, bottom-up for upper and sub ordinate levels.
      (a)   Alpha testing.
      (b)   Unit testing.
      (c)   Sandwich testing.
      (d)   Performance testing

20   What are the types of Integration Testing?
      (a)   Big Bang Testing
      (b)   Bottom up Testing
      (c)   Top Down Testing
      (d)   All of the above

21   Which of the following testing strategy is applicable at all three levels of testing
      (a)   White box testing
      (b)   Mutation testing
      (c)   Regression testing
      (d)   None of the above

22   Alpha testing involves
      (a)   Customers
      (b)   Testers
      (c)   Developers

(d)   All of the above

23   Site for Alpha testing is
(a)   Software development company
(b)   Installation site
(c)   Anywhere
(d)   None of the above

24   Site of Beta testing is
(a)   Software organization
(b)   Customer's site
(c)   Anywhere
(d)   All of the above

25   Testing and subsequent debugging can account for _____ software development effort.
(a)   5-10%
(b)   10-20%
(c)   30-40%
(d)   80-90%

26   Integration testing techniques are
(a)   Top down
(b)   Bottom up
(c)   Sandwich
(d)   All of the above

27   Top-down approach is used for
(a)   Development
(b)   Identification of faults
(c)   Validation
(d)   Functional testing

28   Which of the following validation activities belong to low-level testing?
(a)   Unit testing
(b)   Integration testing
(c)   Performance testing
(d)   Both (a) and (b)

29   Debugging is a two- step process that begins when you find an error as a result of a successful test case. Step 1 is the determination of the exact nature and location of the suspected error within the program. Step 2 consists of _____
(a)   viewing the error
(b)   locating the error
(c)   fixing the error
(d)   filing the error

30   _____establishes the existence of errors _____locates and corrects the errors.
      (a)   Debugging, testing
      (b)   Testing, Debugging
      (c)   Testing, Verifying
      (d)   Testing, Validation

31   What is the relationship between testing and quality assurance?
      (a)   QA is part of a complete testing process
      (b)   Testing and QA are two terms for the same thing
      (c)   Testing is part of a complete QA process
      (d)   When Testing is over it becomes QA

32   The Pareto analysis is most effective for _____.
      (a)   Showing relationships between items
      (b)   Measuring the impact of identified items
      (c)   Ranking items by importance
      (d)   None of above

33   Which of the following is not a software testing generic characteristics?
      (a)   Different testing techniques are appropriate at different points in time.
      (b)   Testing is conducted by the developer of the software or an independent test group.
      (c)   Testing and debugging are different activities, but debugging must be accommodated in any testing strategy.
      (d)   None of the mentioned.

34   ITG stands for
      (a)   instantaneous test group
      (b)   integration testing group
      (c)   individual testing group
      (d)   independent test group

35   By collecting _____ during software testing, it is possible to develop meaningful guidelines to halt the testing process.
      (a)   Failure intensity
      (b)   Testing time
      (c)   Metrics
      (d)   All of the mentioned

36   Which of the following issues must be addressed if a successful software testing strategy is to be implemented?
      (a)   Use effective formal technical reviews as a filter prior to testing
      (b)   Develop a testing plan that emphasizes "rapid cycle testing."
      (c)   State testing objectives explicitly

(d)   All of the mentioned

37   Test cases should uncover errors like
        (a)   Nonexistent loop termination
        (b)   Comparison of different data types
        (c)   Incorrect logical operators or precedence
        (d)   All of the mentioned

38   Which of the following errors should not be tested when error handling is evaluated?
        (a)   Error description is unintelligible
        (b)   Error noted does not correspond to error encountered
        (c)   Error condition causes system intervention prior to error handling
        (d)   Error description provide enough information to assist in the location of the cause
                of the error.

39   What is normally considered as an adjunct to the coding step
        (a)   Integration testing
        (b)   Unit testing
        (c)   Completion of Testing
        (d)   Regression Testing

40   Which of the following is not regression test case?
        (a)   A representative sample of tests that will exercise all software functions
        (b)   Additional tests that focus on software functions that are likely to be affected by
                the change.
        (c)   Tests that focus on the software components that have been changed
        (d)   Low-level components are combined into clusters that perform specific software
                sub-function.

41   Which testing is an integration testing approach that is commonly used when "shrink-
        wrapped" software products are being developed?
        (a)   Regression Testing
        (b)   Integration testing
        (c)   Smoke testing
        (d)   Validation testing

42   The object of _____within an OO system is to design tests that have a high
        likelihood of uncovering plausible bugs.
        (a)   Fault-based testing
        (b)   Integration testing
        (c)   Use-based testing
        (d)   Scenario-based testing

43   What refers to the externally observable structure of an OO program?
        (a)   Deep structure
        (b)   Surface structure

(c)   Core structure
(d)   All of the above

44   _____ categorizes class operations based on the generic function that each performs
(a)   Category-based partitioning
(b)   Attribute-based partitioning
(c)   State-based partitioning
(d)   None of the mentioned

45   Which of the following is black-box oriented and can be accomplished by applying the same black-box methods discussed for conventional software?
(a)   Conventional testing
(b)   OO system validation testing
(c)   Test case design
(d)   Both Conventional testing and OO system validation testing

46   Which chart is a tool that depicts project as network diagram that is capable of graphically representing main events of project in both parallel and consecutive way?
(a)   PERT chart
(b)   Gantt chart
(c)   Both A & B
(d)   None of the above

47   User Acceptance testing is
(a)   White box testing
(b)   Black box testing
(c)   Gray box testing
(d)   None of the above

48   Error guessing is a
(a)   Test verification techniques
(b)   Test execution techniques
(c)   Test control management techniques
(d)   Test data management technique

49   The name of the testing which is done to make sure the existing features are not affected by new changes
(a)   Recursive testing
(b)   White Box testing
(c)   Unit testing
(d)   Regression testing

50   According to Pareto's principle, x% of defects can be traced to y% of all   causes. What are the values of x and y?
(a)   60, 40

(b)   70, 30
(c)   80, 20
(d)   No such principle exists

Ans.   (1)(a), (2)(a), (3)(b), (4)(c), (5)(c), (6)(e), (7)(e), (8)(c), (9)(a), (10)(b), (11)(b), (12)(d), (13)(c), (14)(a), (15)(d), (16)(c), (17)(b), (18)(c), (19)(c), (20)(d), (21)(c), (22)(d), (23)(a), (24)(b), (25)(c), (26)(d), (27)(b), (28)(a), (29)(c), (30)(b), (31)(c), (32)(c), (33)(a), (34)(d), (35)(c), (36)(d), (37)(a), (38)(a), (39)(b), (40)(d), (41)(c), (42)(a), (43)(b), (44)(a), (45)(d), (46)(a), (47)(b), (48)(d), (49)(d), (50)(c)

(c)   Fill in the Blanks:

1   Procedural programming, however, controls the flow between _____functions.
2   A _____ is a blueprint that defines the data and behavior common to all objects of a certain kind.
3   _____provides the ability to derive new classes from existing classes.
4   _____provides the programmers with a well-defined interface to access objects features.
5   Orthogonal _____ is based on a statistical technique borrowed from manufacturing.
6   _____ creates new classes that reuse and extend previously created classes.
7   Creating a test execution environment in which to test _____ requires added consideration.
8   _____ help transform the user interface description into test cases.
9   _____ and state tables lead into a set of test cases.
10   Orthogonal array testing is based on a _____ borrowed from manufacturing.

Ans.   (1)(software), (2)(class), (3)(inheritance), (4)(encapsulation), (5)(Array Testing), (6)(Inheritance), (7)(object-oriented software), (8)(use cases), (9)(state transition diagrams), (10)(statistical technique)

II   Short Answer Type Questions:

1   Write short note on "Issues in object oriented testing".
2   What are the characteristics of modern testing tools?
3   Compare unit and integration testing in a tabular form?
4   Differentiate between alpha and beta testing.
5   Write short notes on levels of software testing.
6   What is the importance of stubs? Explain it through example.
7   Explain the concept of driver in unit testing
8   What should we measure during testing?
9   Define the following terms:
        (a)   Measure
        (b)   Measurement
        (c)   Metrics
10   Describe the following terms:
        (a)   Messages

(b)   Methods
(c)   Responsibility
(d)   Abstraction
11   Write short notes on Software Metrics
12   How the test cases are generated from use cases? Explain the method in detail.
13   Explain how system testing differs from acceptance testing.
14   What are the major problems that we face during object oriented testing?
15   What is fault prediction model?

III   Long Answer Type Questions:

1   Explain object- oriented testing in detail.
2   How object-oriented testing is different from procedural testing? Explain with examples.
3   Describe all the methods for class testing.
4   Explain briefly about object oriented testing methods with examples? Suggest how you test object oriented systems by use-case approach.
5   Illustrate "how do you design interclass test cases"?   What are the various testing methods applicable at class level?
6   What are the implications of inheritance and polymorphism in object-oriented testing?
7   How can we calculate cyclomatic complexity from an activity diagram? What does it signify? What is the relationship of cyclomatic complexity with number of test cases?
8   With the help of a suitable examples, demonstrate how integration testing and system testing is done for object oriented systems?
9   How reusability features can be exploited by object oriented testing approach?
10   Discuss the salient features of GUI testing? How is it different from class testing?
11   Explain the testing process for object oriented programs (systems)?
12   What is path testing? How can we perform it in object oriented software? Explain the various steps of path testing.
13   What are the categories of OO testing?
14   How do we perceive various objects of OO software from testing point of view?
15   What is the importance of class testing?
16   What are contact approach and defensive program interface approach for interface design? What is their perspective from testing point of view?
17   What is meant by measures and metrics?
18   What are various software testing metrics?
19   What is meant by (a) schedule variance (b) defect variation?
20   Write Short notes on (a) cost variance (b) effective variance.
21   How is object-oriented testing different from procedural testing? Explain with example.
22   Explain function-oriented metrics and compare it with size-oriented metrics.
23   (a)   What would be the test objective for unit testing? What are the quality measurements to assure that unit testing is complete?
        (b)   Put the following in order and explain in brief:
                (i)   System testing   (ii) Acceptance testing
                (iii)   Unit testing   (iv) Integration testing
24   Explain integration and system testing.
25   Describe all methods of integration testing.

26   What do you mean by 'Big bang' integration strategy?

27   What do you mean by unit testing? Discuss how you would perform unit testing of a module that implements bounded stack of 100 integers that you have designed and coded. Assume that the stack functions supported are push and pop.

28   What do you understand by the term integration testing? What are its different methods? Compare the relative merits and demerits of these different integration testing strategies.

29   What are drivers and stubs? Why are they required?

30   Discuss some methods of integration testing with examples.

31   What is the difference between Unit Testing, Component Testing and Integration Testing?

32   Find all du-paths and identify those du-paths that are definition clear. Also find all du-paths, all-uses and all-definitions and generate test cases for these paths.

33   What is slice based testing? How are the test cases generated in this type of testing?

34   What is class testing? What are various issues related to class testing?

35   What is software metrics? What should we measure during testing?

36   What is the difference between unit testing and integration testing? Explain the different strategies used for integration testing.

37   How is object-oriented integration testing different from functional-oriented integration testing?

QUESTION BANK

ENTERPRISE COMPUTING WITH JAVA

MCA 305

QUESTION BANK
ENTERPRISE COMPUTING WITH JAVA– MCA 305
MCA V

UNIT – I

I   **Test Your Skills:**

(a)   **State Whether the Following Statements are True or False:**

1   Servlets usually are used on the client side of a networking application.
2   Servlet methods are executed automatically.
3   The two most common HTTP requests are get and put.
4   The well known port number for Web requests is 55.
5   Cookies never expire.
6   HttpSession expires only when the browsing session ends or when the invalidate method is called.
7   The HttpSession method getAttributes returns the object associated with a particular name.
8   You cannot use a resource-local entity manager in a Java EE environment.
9   The Java interpreter is used for the execution of the source code.
10   On successful compilation a file with the class extension is created.
11   The Java source code can be created in a Notepad editor.
12   The Java Program is enclosed in a class definition.
13   The javax.servlet and javax.servlet.http packages provide interfaces and classes for writing servlets.
14   An enterprise bean is a server-side component that encapsulates the business logic of an application.
15   JMS is a Java API that allows applications to create, send, receive, and read messages using reliable, asynchronous communication.

Ans. (1)(F), (2)(T), (3)(F), (4)(F), (5)(F), (6)(T), (7)(T), (8) (F), (9)(T), (10)(T), (11)(T), (12)(T), (13)(T), (14)(T), (15)(T)

(b)   **Multiple Choice Questions:**

1   The _____tier processes HTTP protocol, scripting tasks, performs calculations, and provides access to data.
     (a)   Client
     (b)   Applications/Web server
     (c)   Enterprise server
     (d)   DBA

2   _____ are used to identify a user who returns to a Website.
     (a)   Cookies
     (b)   Plug-ins
     (c)   Scripts

(d)   ASPs

3   Which one of the following objects is passed to a Java Bean when one of its properties is set via a JSP action?
(a)   Servlet Request
(b)   Http Servlet Request
(c)   Servlet Response
(d)   Http Servlet Response

4   Struts framework is based on
(a)   Servlet.JSP and Java
(b)   Servlet,.HTML and Java
(c)   Servlet JSP, XML and Java
(d)   Applet, XML and Java

5   Action Servlet, Request Processor and Action classes are the components of
(a)   View
(b)   Model
(c)   Deployment
(d)   Controller

6   Which of the following delegates the request handling to the Request Processor instance?
(a)   Action Servlet
(b)   Action class
(c)   Deployment descriptor
(d)   None of the above

7   How many instances can be created per application module by the Request Processor class?
(a)   Four
(b)   Three
(c)   One
(d)   Uncountable instances

8   An instance of Action is invoked by
(a)   ActionServlet
(b)   ActionListener
(c)   RequestProcessor
(d)   All of above

9   What declarations are required for every Java application?
(a)   A class and the main( ) method declarations.
(b)   A class with void method
(c)   A class with main method
(d)   A class with init method

10   What is a compilation unit?
        (a)   Java Byte code
        (b)   Java source code file
        (c)   Source code
        (d)   Java Exe

11   In order for a source code file, containing the public class Test, to successfully compile, which of the following must be true?
        (a)   It must have a package statement
        (b)   It must be named Test.java
        (c)   It must import java.lang
        (d)   It must declare a public class named Test

12   What are identifiers and what is naming convention?
        (a)   Identifiers are used for class names
        (b)   Identifiers are used for class names, method names
        (c)   Identifiers are used for class names, method names and variable names.
        (d)   None of above

13   What is the return type of program's main( ) method?
        (a)   Void main()
        (b)   Init
        (c)   Void
        (d)   Run

14   What is the value of a[3] as the result of the following array declaration?
        (a)   1
        (b)   2
        (c)   3
        (d)   4

15   Which of the following are primitive types?
        (a)   byte
        (b)   String
        (c)   integer
        (d)   Float

16   What is the range of the char type?
        (a)   0 to 216
        (b)   0 to 215
        (c)   0 to 216-1
        (d)   0 to 215-1

17   What are primitive data types?
        (a)   byte, short, int, long
        (b)   float, double

(c)   boolean
(d)   char

18   What are default values of different primitive types?
      (a)   int - 0
      (b)   short - 0
      (c)   byte - 0
      (d)   long - 0 l
      (e)   float - 0.0 f
      (f)   double - 0.0 d
      (g)   boolean - false
      (h)   char – null

19   How do we change the values of the elements of the array?
      (a)   The array expression
      (b)   The array subscript expression can be used to change the values of the elements of the array.
      (c)   The definition of element
      (d)   The definition & declaration of element array

20   Which of the following features are common to both Java & C++?
      (a)   The class declaration
      (b)   The access modifiers
      (c)   The encapsulation of data & methods with in objects
      (d)   All of above

21   Which of the following statements accurately describe the use of access modifiers within a class definition?
      (a)   They can be applied to both data & methods
      (b)   They must precede a class's data variables or methods
      (c)   They can appear in any order
      (d)   All of above

22   Which of the following statements can be used to describe a public method?
      (a)   It is accessible to all other classes in the hierarchy
      (b)   It represents the public interface of its class
      (c)   All of above
      (d)   None of these

23   Which of the following types of class members can be part of the internal part of a class?
      (a)   Public instance variables
      (b)   Private instance variables
      (c)   Public methods
      (d)   Private methods

24   Which of the following statements correctly describes the relation between an object and the instance variable it stores?
        (a)   Each new object has its own distinctive set of instance variables
        (b)   Each object has a copy of the instance variables of its class
        (c)   The instance variable of each object are separate from the variables of other objects
        (d)   All of above

25   What are the functions of the dot(.) operator?
        (a)   It enables you to access instance variables of any objects within a class
        (b)   It enables you to store values in instance variables of an object
        (c)   It is used to call object methods
        (d)   All of above

26   When may a constructor be called without specifying arguments?
        (a)   When the default constructor is not called
        (b)   When the name of the constructor differs from that of the class
        (c)   When there are no constructors for the class
        (d)   None of above

27   When might your program wish to run the garbage collecter?
        (a)   Before it enters a compute-intense section of code
        (b)   Before it enters a memory-intense section of code
        (c)   When it knows there will be some idle time
        (d)   All of above

28   Which method is used to specify before any lines that uses the PrintWriter?
        (a)   setPageType()
        (b)   setContextType()
        (c)   setContentType()
        (d)   setResponseType()

29   Servlet mapping defines
        (a)   an association between a URL pattern and a servlet
        (b)   an association between a URL pattern and a request page
        (c)   an association between a URL pattern and a response page
        (d)   All of the above

30   The getSession() method with 'true' as its parameter [getSession(true)] it will return the appropriate session object when
        (a)   the session is completed
        (b)   the session object is passed to another method
        (c)   the session does not exists
        (d)   the session is existing

31   Dynamic interception of requests and responses to transform the information is done by

(a)   servlet container
(b)   servlet config
(c)   servlet context
(d)   servlet filter

32   The method forward (request,response) will
(a)   return back to the same method from where the forward was invoked
(b)   not return back to the same method from where the forward was invoked and the web pages navigation continues
(c)   Both A and B are correct
(d)   None of the above

33   What's the difference between servlets and applets?
1.   Servlets executes on Servers, where as Applets executes on Browser
2.   Servlets have no GUI, where as an Applet has GUI
3.   Servlets creates static web pages, where as Applets creates dynamic web pages
4.   Servlets can handle only a single request, where as Applet can handle multiple requests
(a)   1,2,3 are correct
(b)   1,2 are correct
(c)   1,3 are correct
(d)   1,2,3,4 are correct

34   Which of the following are the session tracking techniques?
(a)   URL rewriting, using session object, using response object, using hidden fields
(b)   URL rewriting, using session object, using cookies, using hidden fields
(c)   URL rewriting, using servlet object, using response object, using cookies
(d)   URL rewriting, using request object, using response object, using session object

35   The getSession() method with 'true' as its parameter [getSession(true)] it will return the appropriate session object when
(a)   the session is completed
(b)   the session object is passed to another method
(c)   the session does not exists
(d)   the session is existing

36   RequestDispatcher object is used
(a)   to include other resources
(b)   to include an image
(c)   to include xml object
(d)   to include e-mailing response

37   The include() method of RequestDispatcher
(a)   sends a request to another resource like servlet, jsp or html
(b)   includes resource of file like servlet, jsp or html
(c)   appends the request and response objects to the current servlet

(d)   None of the above

38   To get the servlet environment information
(a)   ServletConfig object is used
(b)   ServletException object is used
(c)   ServletContext object is used
(d)   ServletContainer object is used

39   The values of <servlet-name> and <servlet-class> in web.xml file
(a)   must be same
(b)   must not be same
(c)   may be same
(d)   None of the above

40   What is the limit of data to be passed from HTML when doGet() method is used?
(a)   4K
(b)   8K
(c)   2K
(d)   1K

41   In which advantage of servlet, Servlets are managed by JVM so no need to worry about memory leak, garbage collection etc.?
(a)   Better performance
(b)   Portability
(c)   Robust
(d)   Secure

42   In the following statements identify the disadvantages of CGI?
(a)   If number of clients increases, it takes more time for sending response
(b)   For each request, it starts a process and Web server is limited to start processes
(c)   It uses platform dependent language e.g. C, C++, perl
(d)   All mentioned above

43   Servlet technology is used to create web application?
(a)   True
(b)   False

44   In HTTP Request Which Asks for the loopback of the request message, for testing or troubleshooting?
(a)   PUT
(b)   OPTIONS
(c)   DELETE
(d)   TRACE

45   In HTTP Request method Get request is secured because data is exposed in URL bar?
(a)   True

(b)   False

46   In the HTTP Request method which is non-idempotent?
      (a)   GET
      (b)   POST
      (c)   BOTH A & B
      (d)   None of the above

47   Give the examples of Application Server from the following?
      (a)   Apache
      (b)   Tomcat
      (c)   JBoss
      (d)   Weblogic
      (e)   Both C & D

48   Abbreviate the term MIME?
      (a)   Multilevel internet Mail Extension
      (b)   Multipurpose internet Mail Extension
      (c)   Multiuse information Mail Extension
      (d)   None of the above

49   Which packages represent interfaces and classes for servlet API?
      (a)   javax.servlet
      (b)   javax.servlet.http
      (c)   Both A & B
      (d)   None of the above

50   The web container maintains the life cycle of a servlet instance,give the lifecycle of a
      servlet?
      (a)   Servlet class is loaded
      (b)   Servlet instance is created
      (c)   init,Service,destroy method is invoked
      (d)   All mentioned above

Ans.   (1)(a), (2)(a), (3)(c), (4)(a), (5)(b), (6)(b), (7)(c), (8)(a), (9)(a), (10)(b), (11)(b), (12)(c),
        (13)(c), (14)(d), (15)(a), (16)(d),(17)(a), (18)(a), (19)(b), (20)(d), (21)(d), (22)(c), (23) (b,
        d), (24)(d), (25)(d), (26)(c), (27)(d), (28)(c), (29)(a), (30)(d), (31)(d), (32)(a), (33)(b),
        (34)(b), (35)(d), (36)(a), (37)(b), (38)(c), (39)(c), (40)(c), (41)(c), (42)(d), (43)(a),
        (44)(d), (45)(b), (46)(b), (47)(e), (48)(b), (49)(c), (50)(d)

(c)   Fill in the Blanks:

1   Classes HttpServlet and GenericServlet implement the _____ interface.
2   Class HttpServlet defines the methods_____ and _____ to respond to get
     and post requests from a client.
3   HttpServletResponse method _____ obtains a character-based output stream that
     enables text data to be sent to the client.

4   The form attribute _____ specifies the server-side form handler, i.e., the program that handles the request.

5   _____ is the well-known host name that refers to your own computer.

6   Cookies method _____ returns a String the name of the cookie as set with _____ or the constructor.

7   HttpServletRequest method getSession returns a _____ object for the client.

Ans.   (1)(Servlet), (2)(doGet, doPost), (3)(getWriter), (4) (action), (5)(localhost), (6)(getName, setName), (7)(HttpSession).

II   Short Answer Type Questions:

1   Define Enterprise Computing.
2   Suggest the need of Enterprise Computing
3   List out the components of Enterprise Computing
4   List out the common services for Distributed Enterprise Communication
5   How can we employ information technology by an enterprise system?
6   Define a servlet.
7   Define the servlet interface.
8   Differentiate between GenericServlet and HttpServlet.
9   How to find out whether the session will be alive or not.
10   Explain the significance of deployment descriptor in servlet.
11   What changes are observed after increasing the buffer size using attribute buffer'?
12   Explain the points of difference between ServletConfig and ServletContext.
13   Which two objects are accepted when a servlet receives a call from a client?
14   Explain the difference between GET and POST service methods.
15   When is it necessary to use the ServletContext?
16   What is the order in which the following methods are called? service(),do get() and dopost()
17   Why no constructor is provided in servlet?
18   Can a constructor be written in servlet?
19   What is the function of Servletconfig and ServletContext?
20   What do you mean by action=get?
21   What is JSF?
22   What is Hibernate?
23   Define the container types defined by J2EE specification.
24   What is the lifecycle of a servlet?
25   Define servlet collaboration.
26   What is the difference between a web server and an application server?
27   What is connecting pooling?
28   What is the difference between get and post request methods?

III   Long Answer Type Questions:

1   What are the merits of servlets over CGI?
2   How can the servlets in two difference applications communicate with each other?
3   How does a server find out when to invoke the init or destroy methods of servlet?

4   Explain the difference between servlets and applets.
5   What is the method of passing an argument from one servlet to another?
6   How are client requests handled by the Http servlet?
7   Explain the difference between multi thread and single thread model servlet.
8   What are the parameters of servlet context?
9   What do you understand by the servlet life cycle?
10   What are the different kinds of servlets?
11   How can we receive one servlet's context information at another servlet?
12   What lines of code are necessary before the use of PrintWriter?
13   What is the way to override an init method in servlets?
14   What is the number of ServletConfig and Servlet context objects in a single application?
15   Explain the need of Servlets.
16   What is a war (web archive) file?
17   What is the use of attribute in servlets?
18   What is the difference between Cookies and httpSession?
19   What is the difference between ServletConfig and ServletContext?
20   Differentiate between forward () method and sendRedirect() method.
21   Discuss the relation between servlet container and servlet, clearly explaining how multiple simultaneous requests are served by a Servlet.
22   Create a login servlet to demonstrate the usage of cookies. Assume that the servlet gets the UserID and Password as request parameters.
23   Use a servlet to save the following data received from a HTML in a database.
        (i) Name (input through a text box)
        (ii) Gender (input through a set of radio buttons)
        (iii) Hobbies (input through a set of check boxes)

UNIT - II

I   Test Your Skills:
(a)   State Whether the Following Statements are True or False:

1   Every JSP web pages created in Netbeans has its own ApplicationBean, SessionBean, and RequestBean files.
2   Event-processing life-cycle method init is involved every time a page loads.
3   Every component on JSP web pages is bound to a property in the Java page bean file.
4   A single JSFcomponent may have multiple validation components placed on it.
5   If no expiration date is set for a cookie, that cookie will be destroyed at theend of the browser session.
6   Each JSF components maps to exactly one corresponding XHTML element.
7   Expression in the JSF Expression Language syntax are delimited by <!—and -- >.
8   JSP pages are high level extension of servlets and they enable the developers to embed java code in html pages.
9   javax.servlet.jsp package defines only JSPPage interface.
10   The paths followed by a JSP are Compilation and Cleanup
11   The _ jspService has the signature as public void _jspService(HttpServletResponse response, HttpServletRequest request) throws ServletException, IOException.

12   You can obtain a JspEngineInfo object using the getSpecificationVersion() method of the JspFactory class.
13   The include directive in the JSP pages are used to include a file during the translation phase.
14   The page directive attribute isErrorPage defines the URL of another JSP that reports on Java unchecked runtime exceptions.
15   The jsp:forward action element is used to terminate the execution of the current JSP page and switch control to another resource.

Ans.   (1)(F), (2)(F), (3)(T), (4)(F), (5)(T), (6)(F), (7)(T), (8)(T), (9)(F), (10)(F), (11)(F), (12)(F), (13)(T), (14)(F), (15)(T)

(b)   Multiple Choice Questions:

1   What are the contents of web module?
      (a)   JSP files
      (b)   Java classes
      (c)   Gif and Html files and
      (d)   Web component deployment descriptors

2   What gets printed when the following JSP code is invoked in a browser? Select the one correct answer.
      <%= if(Math.random() < 0.5) %>
      hello
      <%= } else { %>
      hi
      <%= } %>

      (a)   The browser will print either hello or hi based upon the return value of random.
      (b)   The string hello will always get printed.
      (c)   The string hi will always get printed.
      (d)   The JSP file will not compile.

3   Which of the following are examples of JSP directive? Select the two correct answers.
      (a)   include
      (b)   exclude
      (c)   import
      (d)   taglibrary

4   A JSP page uses the java.util.ArrayList class many times. Instead of referring the class by its complete package name each time, we want to just use ArrayList. Which attribute of page directive must be specified to achieve this? Select the one correct answer.
      (a)   extends
      (b)   import
      (c)   include
      (d)   package

(e)   classpath

5   A JSP page needs to generate an XML file. Which attribute of page directive may be used to specify that the JSP page is generating an XML file?
(a)   contentType
(b)   generateXML
(c)   type
(d)   outputXML

6   JSP pages have access to implicit objects that are exposed automatically. Name the implicit object that is of type HttpSession.
(a)   session
(b)   application
(c)   httpSession
(d)   httpsession

7   JSP pages have access to implicit objects that are exposed automatically. One such object that is available is request. The request object is an instance of which class?
(a)   HttpRequest
(b)   ServletRequest
(c)   Request
(d)   HttpServletRequest

8   Which of these are legal attributes of page directive? Select the two correct answers.
(a)   include
(b)   scope
(c)   errorPage
(d)   session

9   What is the limitation of creating ActionServlet instances per web application?
(a)   Two
(b)   Three
(c)   Unlimited
(d)   One

10   ActionServlet, RequestProcessor and Action classes are the components of
(a)   View
(b)   Model
(c)   Deployment
(d)   Controller

11   Which of the java bean tags is used to show the bean value on the web page?
(a)   < bean:define>
(b)   < bean:message>
(c)   < bean:show>
(d)   < bean:write>

12   Which of the following are server side programming languages?
       1.HTML
       2.JavaScript
       3.JSP
       4.Sevlets
       (a)   1,2,3,4
       (b)   1,2
       (c)   3,4
       (d)   None

13   What JSP is basically used today?
       (a)   To make controller
       (b)   To make GUI
       (c)   In writing business logic
       (d)   Deprecated
       (e)   None

14   What is the purpose of <noscript> tag in Java Script?
       (a)   Prevents scripts on the page from executing.
       (b)   Enclose text to be displayed by non –JavaScript browsers.
       (c)   Suppresses the result to be displayed on the web page.
       (d)   None of the above.

15   Java Script entities start with _____and end with _____
       (a)   Semicolon, colon
       (b)   Semicolon, Ampersand
       (c)   Ampersand, colon
       (d)   Ampersand, semicolon.

16   Which of the following is a server-side Java Script object?
       (a)   Function
       (b)   File
       (c)   FileUpload
       (d)   Date

17   Which of the following is a client-side Java Script object?
       (a)   Function
       (b)   File
       (c)   FileUpload
       (d)   Date

18   Which of the following is the correct way for writing Java Script array?
       (a)   var salaries = new Array(1:39438, 2:39839 3:83729)
       (b)   var salaries = new (Array1=39438, Array 2=39839 Array 3=83729)
       (c)   var salaries = new Array(39438, 39839,83729)
       (d)   var salaries = new Array() values = 39438, 39839 83729

19   Which of the following syntax is correct to refer an external script called "formValidation.js"?
      (a)   <script href = "formValidation.js">
      (b)   <script source = "formValidation.js">
      (c)   <script name = "formValidation.js">
      (d)   <script src = "formValidation.js">

20   What is the alternate name for Java script?
      (a)   LimeScript
      (b)   Both a and d
      (c)   ECMScript
      (d)   ECMAScript

21   What type of image map could be used with Java Script?
      (a)   Client-side image maps
      (b)   Server-side image maps.
      (c)   Both A and B
      (d)   Localhost image maps

22   Which of the following are capable of Java Script functions?
      (a)   Returning multiple values
      (b)   Accepting parameters and returning values
      (c)   Accepting parameters
      (d)   All choices are correct

23   Which of the following is not a valid JavaScript variable name?
      (a)   2java
      (b)   _java_and_java_names
      (c)   Javaandjava
      (d)   None of the above

24   What java wrapper type is created when a JavaScript object is sent to Java?
      (a)   ScriptObject
      (b)   JavaObject
      (c)   Jobject
      (d)   JSObject

25   Which of the following is correct to write "Hello World " on the web page?
      (a)   System.out.println("Hello World")
      (b)   print("Hello World")
      (c)   document.write("Hello World")
      (d)   response.write("Hello World")

26   How does Java Script store dates in objects of Date type?
      (a)   The number of days since 1st, 1900
      (b)   The number of seconds since January 1st, 1970

(c)   The number of milliseconds since January 1st, 1970

(d)   The number of picoseconds since January 1st, 1970

27   Which attribute needs to be changed to make elements invisible?
(a)   Visibility
(b)   Visible
(c)   Invisibility
(d)   Invisible

28   Which machine actually executed the Java Script?
(a)   The web server
(b)   The machine which is running a web server.
(c)   Java Script engine
(d)   Both A and C

29   Which attribute is used to hold the Java Script Version?
(a)   SCRIPT
(b)   VERSION
(c)   LANGUAGE
(d)   VER

30   JavaScript RegExp Object has modifier 'i' to _____
(a)   Perform case-sensitive matching
(b)   Perform case-insensitive matching
(c)   Perform both case-sensitive&case-insensitive matching
(d)   None of above

31   How many ServletContext objects are available for an entire web application?
(a)   One each per servlet
(b)   One each per request
(c)   One each per response
(d)   Only one

32   Which of the following delegates the request handling to the RequestProcessor instance?
(a)   ActionServlet
(b)   Action class
(c)   Deployment descriptor
(d)   None of the above

33   How many instances can be created per application module by the RequestProcessor class?
(a)   Four
(b)   Three
(c)   One
(d)   Uncountable instances

34   An instance of Action is invoked by

(a) ActionServlet
(b) ActionListener
(c) RequestProcessor
(d) All of the above

35 Application module selection is done by
(a) Action class
(b) ActionServlet
(c) RequestProcessor
(d) All of the above

36 Which of the following methods is overridden by Action class?
(a) execute()
(b) service()
(c) run()
(d) destroy()

37 Which of the following should always forwards or redirect to a resource (view) after completed?
(a) HttpResponse object
(b) ActionServlet
(c) Action class
(d) Request Processor

38 Which of the following acts as a bridge between user-invoked URI and a business method?
(a) HttpRequest
(b) Action class
(c) ActionServlet
(d) RequestProcessor

39 Struts framework
(a) should always decouple the application from a specific model implementation
(b) provides model components
(c) does not support JavaBeans and EJB
(d) has built-in support for the model

40 Which of the following tags in struts-config.xml file defines the availability of necessary Struts JSP custom tag libraries?
(a) < jsp-lib>
(b) < struts-taglib>
(c) < taglib>
(d) < jsp-taglib>

41 Which can generate HTML dynamically on the client but can hardly interact with the web server to perform complex tasks like database access and image processing etc. in JSP?
(a) vs.Static HTML

(b)   vs.Server-Side Includes
(c)   vs.Pure Servlets
(d)   Vs.JavaScript

42   Which attribute specifies a JSP page that should process any exceptions thrown but not caught in the current page?
(a)   The ErrorPage Attribute
(b)   The IsErrorPage Attribute
(c)   Both A & B
(d)   None of the above

43   What technique is used for the authentication mechanism in the servlet specification?
(a)   Role Based Authentication
(b)   Form Based Authentication
(c)   Both A & B
(d)   None of the above

44   In JSP Action tags which tags are used for bean development?
(a)   jsp:useBean
(b)   jsp:setPoperty
(c)   jsp:getProperty
(d)   All mentioned above

45   Which two interfaces does the javax.servlet.jsp package have?
(a)   JspPage
(b)   HttpJspPage
(c)   PageContext
(d)   Both A & B

46   Which of the following is an advantage of the statement – Separation of business logic from JSP?
(a)   Custom Tags in JSP
(b)   JSP Standard Tag Library
(c)   All the above
(d)   None of the above

47   JSPs eventually are compiled into Java servlets, you can do as much with JSPs as you can do with Java servlets.
(e)   True
(f)   False

48   How many jsp implicit objects are there and these objects are created by the web container that are available to all the jsp pages?
(a)   8
(b)   9
(c)   10

(d)   7

49   JavaServer Pages often serve the same purpose as programs implemented using the
      Common Gateway Interface (CGI)
      (a)   True
      (b)   False

50   Which action tags are used in JSP for developing web application with Java Bean?
      (a)   jsp:useBean
      (b)   jsp:setProperty
      (c)   jsp:getProperty
      (d)   Both B & C

Ans. (1)(a), (2)(d), (3)(a), (4)(b), (5)(a), (6)(a), (7)(d), (8)(c, d), (9)(a), (10)(d), (11)(d),
      (12)(c), (13)(b), (14)(b), (15)(d), (16)(b), (17)(c), (18)(c), (19)(d), (20)(d), (21)(a),
      (22)(c), (23)(a), (24)(d), (25)(c), (26)(c), (27)(a), (28)(b), (29)(c), (30)(b), (31)(d),
      (32)(a), (33)(c), (34)(c), (35)(b), (36)(a), (37)(d), (38)(b), (39)(a), (40)(c), (41)(d),
      (42)(b), (43)(a), (44)(d), (45)(d), (46)(a), (47)(a), (48)(b), (49)(a), (50)(d)

(c)   Fill in the Blanks:

1   The _____ JSF component is usedto display error messages if validation fails.
2   A component that checks the input in another component before submitting that input to
      the server is called a(n) _____.
3   Every page bean class inherits from class_____.
4   When a page loads the first time, the _____ event occurs first, followed by
      the _____ event.
5   The _____ file contains the functionality for a JSP.
6   A (n) _____ can be used in a custom validator method to validate the format of
      user input.

Ans. (1)(SOAP message or SOAP envelop), (2)(Representational State Transfer (REST)),
      (3)((POJO) Plain Old Java Object), (4) (HTTP), (5)(operationName), (6)(XML
      serialization).

II   Short Answer Type Questions:

1   What is a JSP page?
2   How do JSP pages work?
3   Does JSP technology require the use of other Java platform APIs?
4   How is a JSP page invoked and compiled?
5   What you will handle the runtime exception in your jsp page?
6   What is a JSP and what is it used for?
7   What is the difference between custom JSP tags and beans?
8   What are the two kinds of comments in JSP and what's the difference between them.
9   What are the implicit objects?
10   How many JSP Scripting elements and what are they? Define a servlet.

11   What are different types of comments in JSP?
12   Can we define a class in a JSP Page?
13   What is JSP Expression Language and what are its benefits?
14   What is jsp-config in deployment descriptor?
15   How can we prevent implicit session creation in JSP?
16   What is the need of session tracking?
17   What is the difference between include directive and jsp:include action?
18   What is the use of implicit object applications?
19   Why is the use of scriptlets discouraged?

III   Long Answer Type Questions:

1   What does JSP scripting component include? Explain with a program.
2   Describe the servlet architecture and the various interfaces invoked by the servlet container
3   Describe JSP standard actions. How does a standard action provide JSP implementers with access to several of the most common tasks performed in JSP? Explain the need of Servlets.
4   Explain the concept of web services.
5   Use a one dimensional array and write a script to solve the following problem. Read in 20 numbers, each of which is between 10 and 100. As each number is read, print it only if it is not a duplicate of a number that has already been read.
6   Write a script that inputs a telephone number as a string in the form (555)555-555. The script should use strings method split to extract the area code as token and the last four digits of the phone numbers as a token. Display the area code in one test field and the seven digit phone number in another text field.
7   What are the two major protocols for accessing email from servers?
8   What are the advantages of web services?
9   List out some web service technologies?
10   How does the Java Server Pages technology work?
11   What is difference between JspWriter and Servlet PrintWriter?
12   What is JSP Custom Tag and explain its components.
13   What are JSP lifecycle methods?
14   What are the benefits of PageContext implicit object? How do we configure init params for JSP?
15   How can we handle exceptions thrown by JSP service method?
16   Explain the JSP lifecycle.
17   Write a JSP that generates a Hit Count.
18   Explain any five attributes associated with a JSP page directive.
19   Explain the need for message driven beans in detail.

UNIT - III

I   Test Your Skills:
(a)   State Whether the Following Statements are True or False:

1   The getReference method can throw an EntityNotFoundException.
2   A proxy class communicating with a web service normally uses SOAP to send receive messages
3   Session tracking is automatically enabled in a client of a web service
4   A user-defined type used in a web service must define both get and set methods for any property that will be serialized
5   RESTful web services are implemented using web standards, such as HTTP, XML and JSON.
6   EJB applications are much more complex and more difficult to build and administer than servlets/JSP applications.
7   There is a clear division of labour in the development, deployment, and administration of an EJB application.
8   The developer of an EJB application needs to focus on all system level services like transaction handling, logging, load balancing, persistence mechanism, exception handling and so on.
9   Message driven bean is an enterprise bean class that contains business process–related logic.
10   All session beans must implement *javax.ejb.EntityBean*
11   The EJB container acts as a layer of indirection called the *EJB object* between the client code and the bean.
12   The application assembler is the *consumer of the beans* supplied by the bean provider.
13   RMI is the Java language's native way to communicate between distributed objects, such as two different objects running on different machines.
14   JDBC is an API for accessing relational databases.
15   The JavaMail service enables you to send e-mail messages in a platform-dependent manner.

Ans.   (1)(T), (2)(T), (3)(F), (4)(F), (5)(F), (6)(T), (7)(T), (8)(F), (9)(F), (10)(F), (11)(T), (12)(T), (13)(T), (14)(T),(15)(F)

(b)   Multiple Choice Questions:

1   Which statement correctly identifies the goals of the designers of the EJB architecture?
     (a)   The EJB architecture requires that users be aware of the low-level transaction details of the Java EE platform.
     (b)   The EJB architecture is the standard component architecture for building distributed business applications in the Java programming language. (*)
     (c)   Although the EJB architecture defines the contracts that enable tools to develop and deploy components, each application server vendor must produce its own set of additional tooling.
     (d)   The EJB architecture provides a standard way of persisting state data using the Java Persistence API, Java Data Objects, and JDBC.

2   Which   statement   about   life-cycle   callback   methods   is   correct?
(a)   Life-cycle callback methods must be implemented in the bean class.
(b)   Life-cycle callback methods can have public, private, protected, or package-level access. (*)
(c)   A life-cycle callback method can only have a single callback annotation. In other words, you cannot define a single method and give it two different callback annotations.
(d)   Life-cycle callback methods can be declared as static.

3   Which of the following types of Enterprise Java Bean will be most likely to be difficult to port from one App Server to another?
(a)   Stateful Session Beans
(b)   Stateless Session Bean
(c)   BMP (Bean Managed Persistence) Entity Bean
(d)   CMP (Container Managed Persistence) Entity Bean

4   Which interface should be implemented by a stateful session bean if it needs to synchronize its conversational state with the transactional context?
(a)   javax.transaction.UserTransaction
(b)   javax.ejb.SessionSynchronization
(c)   javax.ejb.EJBContext
(d)   javax.transaction.TransactionContext

5   Which of the following exceptions is thrown by the ejbLoad() method of an entity bean when the database row to be loaded is not found ?
(a)   NoSuchEntityException
(b)   EJBException
(c)   RemoteException
(d)   ObjectNotFoundException

6   Which of the following is the format for EJB deployment descriptor files?
(a)   XML
(b)   XSL
(c)   HTML
(d)   Java
(e)   DHTML.

7   EJB is a
(a)   Middleware
(b)   Scalable component architecture
(c)   Component architecture to integrate legacy systems
(d)   Component architecture to encapsulate business logic
(e)   All of the above.

8   Which of the following EJB has no state?
         i.   Message-Driven Bean.
         ii.   BMP Entity Bean.
         iii.   Stateless Session Bean.
         iv.   Stateful Session Bean.
         (a)   Both (I) and (II) above
         (b)   Both (II) and (III) above
         (c)   Both (III) and (IV) above
         (d)   Both (I) and (IV) above
         (e)   Both (I) and (III) above.

9   Which of the following is true for EJB?
         (a)   EJB is server-side component architecture for distributed applications in Java
         (b)   EJB facilitates scalable, secure and transaction-oriented applications
         (c)   EJB supports portability and reusability
         (d)   EJB specification allows different vendor implementation of it
         (e)   All of the above.

10   Which of the following EJB type has no Remote interfaces?
         (a)   Message-Driven Bean
         (b)   BMP Entity Bean
         (c)   CMP Entity Bean
         (d)   Session Bean
         (e)   Sessionless Bean.

11   Which role in EJB architecture is responsible for EJB Server?
         (a)   EJB Deployer
         (b)   Application Assembler
         (c)   Network Engineer
         (d)   Server Provider
         (e)   Tool Vendor.

12   Which of the EJB has a passive state in its life cycle?
         I.   Stateless Session Bean.
         II.   Message-Driven Bean.
         III.   BMP Entity Bean.

         (a)   Only (I) above
         (b)   Only (II) above
         (c)   Only (III) above
         (d)   Both (I) and (II) above
         (e)   Both (II) and (III) above.

13   Which part of multi-tier enterprise application contains EJB component?
         (a)   Application Server
         (b)   Web Server

(c)   Database Server

(d)   Fat Client

(e)   Thin Client.

14   Which of the following distributed object technology is/are not included in Java?

I.   CORBA.

II.   DCOM.

III.   RMI.

IV.   EJB.

(a)   Only (I) above

(b)   Only (II) above

(c)   Only (III) above

(d)   Only (IV) above

(e)   All (I), (II), (III) and (IV) above.

15   Which of the following is not a property of EJB transaction?

(a)   Atomicity

(b)   Consistency

(c)   Isolation

(d)   Distributed

(e)   Durability.

16   Which of the following is not true for servlet?

(a)   It is persistent

(b)   Platform independent

(c)   High performance

(d)   It is multi threaded

(e)   It is single threaded.

17   Which JSP tag is used to transfer processing to another JSP page?

(a)   <jsp:include>

(b)   <jsp:forward>

(c)   <jsp:redirect>

(d)   <jsp:useBean>

(e)   <jsp:use:include>.

18   Which of the following is an approach for state maintenance in Web applications?

(a)   Hidden Form Field

(b)   URL Rewriting

(c)   Cookies

(d)   HTTP Session

(e)   All of the above.

19   Which of the following is not a container for EJB?

I.   Internet Information Server.

II.   Java System Application Server.

III.   Tomcat.
IV.   WebLogic.
(a)   Both (I) and (II) above
(b)   Both (II) and (III) above
(c)   Both (III) and (IV) above
(d)   Both (I) and (IV) above
(e)   Both (I) and (III) above.

20   Which EJB usually represents persistent data?
(a)   Entity Bean
(b)   Stateless Session Bean
(c)   Stateful Session Bean
(d)   Message-Driven Bean
(e)   Static Bean.

21   Which is least visibility scope for Java bean in JSP?
(a)   Page
(b)   Session
(c)   Request
(d)   Application
(e)   Global.

22   Which of the following is/are true for JSP technology?
I.   It is persistent.
II.   Platform independent.
III.   Browser executes the code.
(a)   Only (I) above
(b)   Only (II) above
(c)   Both (I) and (II) above
(d)   Both (II) and (III) above
(e)   All (I), (II) and (III) above.

23   Which of the following is true for JNDI?
(a)   Database service
(b)   Naming and Directory Service
(c)   Network Service
(d)   Web Service
(e)   XML Service.

24   Which method of the request object is used to extract values of the input fields in a form when it is submitted?
(a)   getParameter
(b)   getParameterNames
(c)   getValues
(d)   putValues

(e)   getParameters.

25   Which of the following is true for CORBA?
    (a)   Protocol for distributed computing
    (b)   Database specification
    (c)   Specification for distributed objects
    (d)   Components can be language neutral
    (e)   Both (c) and (d) above.

26   Which EJB uses EJB-QL for query operations?
    (a)   BMP Entity Bean
    (b)   CMP Entity Bean
    (c)   Session Bean
    (d)   Message-Driven Bean
    (e)   MCP Entity Bean.

27   Which of the following is true for Java Bean?
    (a)   It can not be a GUI component
    (b)   It never implements serializable interface
    (c)   It has zero-argument constructor
    (d)   It is a distributed component
    (e)   It has a non zero argument constructor.

28   Which of the following is not true for <jsp:useBean> tag in JSP page?
    (a)   Locates a bean instance
    (b)   Stores object reference of the bean in a variable
    (c)   Creates an instance if fails to locate the bean instance
    (d)   Does not execute the body tag if any
    (e)   All the above.

29   Which of the following is not an implicit object in JSP?
    I.   Request.
    II.   Session.
    III.   Vector.
    IV.   In.
    (a)   Both (I) and (II) above
    (b)   Both (II) and (III) above
    (c)   Both (I) and (III) above
    (d)   Both (II) and (IV) above
    (e)   Both (III) and (IV) above.

30   Which is not a valid scope for Java bean in JSP?
    (a)   Page
    (b)   Session
    (c)   Request
    (d)   Application

(e)   Global.

31   Which two of the following is responsible to creates ejb-jar files?
        1. The bean provider.
        2. The application assembler.
        3. The deployer.
        4. The system administrator.
        (a)   1 and 2
        (b)   2 and 3
        (c)   3 and 4
        (d)   4 and 1

32   Which two of the following must be included in every ejb-jar file?
        1. Stubs for the EJBHome and EJBObject interface.
        2. The JAR Manifest file.
        3. A deployment descriptor.
        4. The JNDI context.
        5. The EJB's home interface.
        (a)   1 and 3
        (b)   2 and 5
        (c)   3 and 5
        (d)   4 and 2

33   Which statement about session beans is true?
        (a)   In both stateless and statefull session classes, the bean provider must write the
                method public void remove()
        (b)   The method << remove >> in the component interface can be accessed only by
                the remote clients
        (c)   The bean's handle must be provided by the client, in order to ask the EJBHome
                for removing a session bean
        (d)   None of the above

34   Which of the following can be directly invoked by the client?
        (a)   ejbPassivate
        (b)   business methods
        (c)   setSessionContext
        (d)   newInstance

35   Which is the method available in SessionContext interface?
        (a)   afterBegin()
        (b)   getRollbackOnly()
        (c)   setSessionCotext()
        (d)   getUserTransaction()

36   Which statements about a session bean class are true?

(a)   It is a final class
(b)   Overloaded constructors are supported
(c)   Their business methods can be 'private'
(d)   The ejbCreate() method must not be a final method

37   Upon invoking getRollbackOnly() method by a business method in an entity bean, which transaction attribute settings will lead the ejb container to throw an exception?
(a)   Required
(b)   RequiresNew
(c)   Never
(d)   Mandatory

38   When a session bean has container-managed demarcation value of 'Supports', which three methods run in an unspecified transaction context?
1. ejbActivate
2. getRollbackOnly
3. getUserTransaction
4. ejbRemove
5. afterBegin
6. afterCompletion
(a)   1,4,3
(b)   4,2,6
(c)   1,4,6
(d)   2,5,6

39   EJB system's performance tuning is the responsibility of
(a)   Bean Provider
(b)   EJB Deployer
(c)   Application Assembler
(d)   Tool Vendor

40   The EJB Transaction Attribute that ensures the method call that always takes place in a transaction, either client started or container started' are
(a)   TX_SUPPORTS
(b)   TX_MANDATORY
(c)   TX_REQUIRED and TX_REQUIRES_NEW
(d)   Either A or B

41   JMS is mainly used to send and receive message from one application to another.
(a)   True
(b)   False

42   Abbreviate the term JMS?
(a)   Java Message Service
(b)   Java Monitor Service
(c)   Java Message Session

(d)   Java Monitor Session

43   A message driven bean is like statefull session bean that encapsulates the business logic
      and doesn't maintain state.
      (a)   True
      (b)   False

44   EJB QL is a Query Language provided for navigation across a network of enterprise
      beans and dependent objects defined by means of container managed persistence.
      (a)   True
      (b)   False

45   Which case of a session bean obtains the UserTransaction object via the EJBContext
      using the getUserTransaction() method in EJB transaction management?
      (a)   Bean-managed transactions
      (b)   Container-managed transactions
      (c)   Both A & B
      (d)   None of the above

46   Which services are provided to EJB components by the EJB container?
      (a)   Transaction support
      (b)   Persistence support
      (c)   Naming support
      (d)   All mentioned above

47   Which EJB container must provide an implementation of Java Naming and Directory
      Interface (JNDI) API to provide naming services for EJB clients and components?
      (a)   Transaction support
      (b)   Persistence support
      (c)   Naming support
      (d)   All mentioned above

48   Which session bean maintain their state between client invocations but are not required to
      maintain their state across server crashes or shutdowns?
      (a)   Stateful Session Bean
      (b)   Stateless Session Bean
      (c)   Singleton Session Bean
      (d)   None of the above

49   EJB is a specification for J2EE server, not a product; Java beans may be a graphical
      component in IDE.
      (a)   True
      (b)   False

50   A session bean represents a multiple clients inside the Application Server.
      (a)   True

       (b)   False

Ans.   (1)(b), (2)(b), (3)(d), (4)(b), (5)(a), (6)(a), (7)(e), (8)(e), (9)(e), (10)(a), (11)(d), (12)(c),
      (13)(a), (14)(b), (15)(d), (16)(e), (17)(b), (18)(e), (19)(e), (20)(a), (21)(a), (22)(c), (23)(b),
      (24)(b), (24)(a), (25)(e), (26)(b), (27)(c), (28)(d), (29)(e), (30)(e), (31)(a), (32)(c),
      (33)(c), (34)(b), (35)(c), (36)(d), (37)(c), (38)(c), (39)(b), (40)(c), (41)(a), (42)(a), (43)(b),
      (44)(a), (45)(a), (46)(d), (47)(c), (48)(c), (49)(a), (50)(b)

(c)   Fill in the Blanks:

1   Copies of a server group are called _____.
2   _____ manages the execution of enterprise beans for J2EE applications.
3   EJB technology is the core of _____.
4   _____is used for normal two-way socket communication.
5   _____was originally designed around remote invocation using the Java Remote Method Invocation (RMI) mechanism, and later extended to support to standard CORBA transport for these calls using RMI/IIOP.
6   The session beans implement business methods that call_____.

Ans.   (1)(Clones), (2)(Enterprise JavaBeans (EJB) container), (3)(J2EE), (4) (Server Socket), (5)(EJB), (6)(EntityBeans).

II   Short Answer Type Questions:

1   What is EJB architecture (components)?
2   What is the difference between ejbCreate() and ejbPostCreate?
3   Can I invoke Runtime.gc() in an EJB?
4   Is it legal to have static initializer blocks in EJB?
5   What is the difference between EJB and RMI
6   What is the difference between ejbStore() and ejbLoad()?
7   What is the difference between ejbCreate() and ejbPostCreate()?
8   What is Instance pooling?
9   List out the benefits of components architecture?
10   Write down the classification of component based on a container?
11   Is it possible to share an HttpSession between a JSP and EJB? What happens when I change a value in the HttpSession from inside an EJB?
12   What is EJB QL?
13   Brief description about local interfaces?
14   What is an EJB Context?
15   How EJB Invocation happens?
16   What are the features of enterprise applications?

III   Long Answer Type Questions:

1   What is the difference between normal Java object and EJB?
2   Define Component.

3   How will you propagate exception thrown inside session bean to JSP or Servlet client?
4   What is the difference between JNDI context, Initial context, session context and ejb context?
5   What is ejbdoc? Difference between connector, server, container?
6   What is the difference between the NRU and LRU cache?
7   What is the difference between EAR, JAR and WAR file
8   What are the data used for build the enterprise applications?
9   What is Container? What are the facilities offered by a container?
10 Why an onMessage call in Message-driven bean is always a separate transaction?
11 What is the difference between Message Driven Beans and Stateless Session beans?
12 What are the criteria for a method to be a life cycle method?
13 Explain deployment descriptor.
14 What are the CallBack methods of Session Bean and Entity Bean?
15 Explain EJB architecture.
16 How does EJB invocation take place? Explain in detail.
17 How do we package J2EE components?
18 Discuss different types and subtypes of enterprise java beans.
19 Create the remote interface and bean class for a stateful session bean that allows deposit and withdraw in a bank account.
20 Write a business method for a stateless session bean that finds an entity bean on the basis of its primary key and returns some attribute of the found bean.

UNIT - IV

I   Test Your Skills:
(a)   State Whether the Following Statements are True or False:

1   Message Driven Beans (MDBs) can be pooled by the EJB container.
2   Both stateless and stateful session beans can design with bean-managed transactions.
3   A session bean can be designed with bean-managed and container-managed transaction demarcation, at the same time.
4   Stateless session beans are asynchronous message consumers
5   Session beans are used to manage the interactions of entity and other session beans, access resources, and generally perform tasks on behalf of the client.
6   A session bean instance is a relatively short-lived object
7   Typically session beans do not survive application server crashes, nor do they survive machine crashes.
8   Session bean instances are shared between multiple clients.
9   Stateless beans have conversational state.
10 setSessionContext(SessionContext ctx) method associates our bean with a session context.
11 setSessionContext() initializes our bean.
12 An object-relational (O/R) mapper may map our objects to any kind of relational database schema.
13 An entity bean does not perform complex tasks or workflow logic, such as billing a customer. Rather, an entity bean is the customer itself.

14   Entity Bean Instances cannot be pooled
15   Session beans are persistent.

Ans.   (1)(T), (2)(T), (3)(F), (4)(F), (5)(T), (6)(T), (7)(T), (8)(F), (9)(F), (10)(T), (11)(F), (12)(T), (13)(T), (14)(F), (15)(F)

(b)   Multiple Choice Questions:

1   Which statement characterizes stateless session beans?
        (a)   They allow the PostConstruct, PreDestroy, and PrePassivate life-cycle callbacks.
        (b)   They require home interfaces.
        (c)   When a client looks up a stateful session bean in the JNDI, the same bean is returned every time.
        (d)   They are asynchronous message consumers.

2   A message-driven bean can have an instance of a MessageDrivenContext injected. Which method can be successfully invoked on this interface from a message-driven bean?
        (a)   getEJBHome
        (b)   getCallerPrincipal (*)
        (c)   isCallerInRole
        (d)   getEJBLocalHome

3   Which statement about entities is correct?
        (a)   Entities must be annotated with the @Entity annotation.
        (b)   Entities can be final classes.
        (c)   Entities can have a single no-arg constructor with protected visibility.
        (d)   Instance variables of an entity can have private, protected, public, or package visibility.

4   Which statement is correct about the EntityManager API?
        (a)   The merge, persist, remove, and getReference methods must be invoked within a transaction context.
        (b)   It is safe (no exception is thrown) to call merge or getTransaction on a JTA EntityManager instance.
        (c)   The getReference method can throw an EntityNotFoundException.
        (d)   Runtime exceptions thrown by the refresh and createQuery methods of the EntityManager interface do NOT cause the transaction to be rolled back.

5   Which statement about JTA and resource-local entity managers is correct?
        (a)   The default transaction type for an entity manager is JTA in both Java EE and Java SE environments.
        (b)   You cannot use a resource-local entity manager in a Java EE environment.
        (c)   The EntityTransaction interface must be used when using a resource-local entity manager. (*)
        (d)   Application-managed entity managers can be only a JTA transaction type.

6   Which of the following is not true for servlet?
     (a)   It is persistent
     (b)   Platform independent
     (c)   High performance
     (d)   It is multi threaded
     (e)   It is single threaded.

7   Which JSP tag is used to transfer processing to another JSP page?
     (a)   <jsp:include>
     (b)   <jsp:forward>
     (c)   <jsp:redirect>
     (d)   <jsp:useBean>
     (e)   <jsp:use:include>.

8   Which of the following is an approach for state maintenance in Web applications?
     (a)   Hidden Form Field
     (b)   URL Rewriting
     (c)   Cookies
     (d)   HTTP Session
     (e)   All of the above.

9   Which of the following is not a container for EJB?
     I.   Internet Information Server.
     II.   Java System Application Server.
     III.   Tomcat.
     IV.   WebLogic.
     (a)   Both (I) and (II) above
     (b)   Both (II) and (III) above
     (c)   Both (III) and (IV) above
     (d)   Both (I) and (IV) above
     (e)   Both (I) and (III) above.

10   Which EJB usually represents persistent data?
     (a)   Entity Bean
     (b)   Stateless Session Bean
     (c)   Stateful Session Bean
     (d)   Message-Driven Bean
     (e)   Static Bean.

11   Which is least visibility scope for Java bean in JSP?
     (a)   Page
     (b)   Session
     (c)   Request
     (d)   Application
     (e)   Global.

12   Which of the following is/are true for JSP technology?
        I.   It is persistent.
        II.   Platform independent.
        III.   Browser executes the code.
        (a)   Only (I) above
        (b)   Only (II) above
        (c)   Both (I) and (II) above
        (d)   Both (II) and (III) above
        (e)   All (I), (II) and (III) above.

13   Which of the following is true for JNDI?
        (a)   Database service
        (b)   Naming and Directory Service
        (c)   Network Service
        (d)   Web Service
        (e)   XML Service.

14   Which method of the request object is used to extract values of the input fields in a form
        when it is submitted?
        (a)   getParameter
        (b)   getParameterNames
        (c)   getValues
        (d)   putValues
        (e)   getParameters.

15   Which of the following is true for CORBA?
        (a)   Protocol for distributed computing
        (b)   Database specification
        (c)   Specification for distributed objects
        (d)   Components can be language neutral
        (e)   Both (c) and (d) above.

16   Which method of the servlet is/are called several times in its life?
        (a)   init()
        (b)   doPost()
        (c)   destroy()
        (d)   Both (a) and (b) above
        (e)   Both (a) and (c) above.

17   Which EJB uses EJB-QL for query operations?
        (a)   BMP Entity Bean
        (b)   CMP Entity Bean
        (c)   Session Bean
        (d)   Message-Driven Bean
        (e)   MCP Entity Bean.
18   Which object is used to forward the request processing from one servlet to another?

(a)   ServeltContext
(b)   ServletConfig
(c)   RequestDispatcher
(d)   ResponseDispatcher
(e)   ResponseRedirect.

19   Which is not a valid scope for Java bean in JSP?
(a)   Page
(b)   Session
(c)   Request
(d)   Application
(e)   Global.

20   Which of the following allows substitution of code to occur at the translation time in a JSP page?
(a)   <jsp:include> Tag
(b)   <@ include> directive
(c)   <@ page> directive
(d)   Declaration block
(e)   None of the above.

21   Which of the following property of Java Bean represents a single value?
(a)   Simple property
(b)   Boolean property
(c)   Indexed property
(d)   Both (a) and (b) above
(e)   Both (b) and (c) above.

22   Which of the following is used to redirect the response from a servlet to a JSP page?
(a)   response.sendRedirect()
(b)   request.sendRedirect()
(c)   request.forward()
(d)   response.forward()
(e)   request.dispatch().

23   Which of the following is true for Java Bean?
(a)   It can not be a GUI component
(b)   It never implements serializable interface
(c)   It has zero-argument constructor
(d)   It is a distributed component
(e)   It has a non zero argument constructor.

24   Which of the following is not true for <jsp:useBean> tag in JSP page?
(a)   Locates a bean instance
(b)   Stores object reference of the bean in a variable
(c)   Creates an instance if fails to locate the bean instance

(d)   Does not execute the body tag if any
(e)   All the above.

25   Which of the following is not an implicit object in JSP?
I.   Request.
II.   Session.
III.   Vector.
IV.   In.
(a)   Both (I) and (II) above
(b)   Both (II) and (III) above
(c)   Both (I) and (III) above
(d)   Both (II) and (IV) above
(e)   Both (III) and (IV) above.

26   Which statement is true for the Class java.util.HashSet?
(a)   The collection is guaranteed to be immutable.
(b)   The elements in the collection are unique.
(c)   The elements in the collection are ordered.
(d)   The elements in the collection are synchronized.

27   Which cannot directly cause a thread to stop executing?
(a)   Calling a yield method.
(b)   Calling the start method on another Thread object.
(c)   Calling the notify method on an object.
(d)   Calling wait method on an object.

28   Which of the following statement is true?
(a)   An anonymous inner class can access final variables in any
(b)   Enclosing scope.
(c)   An anonymous inner class may be declared as protected.
(d)   An anonymous inner class can implement multiple interfaces.

29   Which of the following below are abilities of Reflection API in Java?
(a)   Determining state of an object
(b)   Both B and C
(c)   Determining duplicate classes
(d)   Determination of the class of an object

30   Which of the methods should be implemented if any class implements the Runnable interface?
(a)   start()
(b)   run()
(c)   wait()
(d)   notify() and notifyAll()

31   Business delegate pattern

(a)   Hides remote services complexity
(b)   Reduces coupling and increases manageability
(c)   Eases failure recovery
(d)   All of the above

32   Which of the following is not a life-cycle method for a Stateful Session Bean?
(a)   Post Construction
(b)   Pre Destruction
(c)   Post Activation
(d)   Pre Construction

33   Which of the following is true?
(a)   Preserving of any state across method calls does not performed by Stateless session beans
(b)   Multiple users can access Stateful session beans at the same time
(c)   Both are correct

34   Stateful Session beans contain
(a)   Home Interface
(b)   Remote Interface
(c)   Bean class
(d)   All of the above

35   Which of the following regarding business methods in a bean class is incorrect?
(a)   Both session bean and entity bean business methods are always same
(b)   For Java RMI API, the argument and return types must always be legal types
(c)   The throws clause may include any exceptions defined by your application.
(d)   None of the above

36   Choose the incorrect statement from the following about Home methods in a bean class for CMP (Container Managed Persistence).
(a)   The throws clause of the method may include the java.rmi.RemoteException.
(b)   Relationships must not be accessed by the method
(c)   The persistence state of the bean must not be accessed by the method
(d)   The static declaration can not be done for the method.

37   Given the following code in a stateful session bean business method;
try { Socket skt = new Socket(x,y); } catch (Exception ex) { ex.printStackTrace(); }
Assuming that x and y are the port and IP addresses respectively of a running service, which is running on the same server, which of the following is correct?
(a)   Failure in Compilation
(b)   Failure in Deployment
(c)   An exception is thrown at runtime
(d)   Indeterminate. The code is not guaranteed to be ported to all EJB 2.0 containers, though it may deploy.

38   Which of the following is true about EJB transactions?
        (a)   Nested transactions are supported by EJB 2.0
        (b)   Isolation levels specification is supported by EJB 2.0
        (c)   Bean-managed transaction demarcation must not be used in Message-driven
                beans
        (d)   Bean-managed transaction demarcation must not be used in Entity beans

39   Which of the following are guaranteed capabilities of EJB 2.0?
        (a)   Run-as security identity functionality.
        (b)   The extension of JDBC 2.0
        (c)   Both A and B
        (d)   Neither A nor B

40   From the following APIs, which API does NOT guarantee to be supported by EJB 2.0
        containers?
        (a)   JAXP
        (b)   JNDI
        (c)   JXTA
        (d)   JDBC

41   Which component does the Entity bean represent the persistent data stored in the
        database?
        (a)   Server-side component
        (b)   Client-side component
        (c)   server and client side component
        (d)   None of the above

42   EJB is a specification for J2EE server, not a product; Java beans may be a graphical
        component in IDE.
        (a)   True
        (b)   False

43   EJB is like COM, Abbreviate the term COM?
        (a)   Component Object Model
        (b)   Component Oriented Model
        (c)   Common Object Model
        (d)   Common Oriented Model

44   JMS is also known as a messaging service.
        (a)   True
        (b)   False

45   The life cycle of session bean is not maintained by the application server (EJB
        Container).
        (a)   True
        (b)   False

46   What represents a persistent global data from the database?
        (a)   Entity Bean
        (b)   Session Bean
        (c)   Both A & B
        (d)   None of the above

47   Which component does the Entity bean represents the persistent data stored in the database?
        (a)   Server-side component
        (b)   Client-side component
        (c)   server and client side component
        (d)   None of the above

48   In EJB, middleware services are provided by EJB Container automatically.
        (a)   True
        (b)   False

49   Which middleware services are provided by EJB?
        (a)   Security
        (b)   Transaction Management
        (c)   Both A & B
        (d)   None of the above

50   Which server-side component is required to be deployed on the server?
        (a)   EJB
        (b)   RMI
        (c)   Both A & B
        (d)   None of the above

Ans.   (1)(a), (2)(b), (3)(c), (4)(c), (5)(c), (6)(e), (7)(b), (8)(e), (9)(e), (10)(a), (11)(a), (12)(c), (13)(b), (14)(a), (15)(e), (16)(b), (17)(b), (18)(c), (19)(e), (20)(b), (21)(d), (22)(a), (23)(c), (24)(d), (25)(e), (26)(b), (27)(c), (28)(b), (29)(d), (30)(b), (31)(d), (32)(d), (33)(a), (34)(d), (35)(b), (36)(a), (37)(d), (38)(d), (39)(c), (40)(c), (41)(a), (42)(a), (43)(a), (44)(a), (45)(b), (46)(a), (47)(a), (48)(a), (49)(c), (50)(a)

(c)   Fill in the Blanks:

1   _____ are used to manage the interactions of entity and other session beans, access resources, and generally perform tasks on behalf of the client.
2   In _____, an instance of these non-persistent EJBs maintains state across methods and transactions.
3   In _____, an instance of these persistent EJBs represents an object view of the data, usually rows in a database. They have a primary key as a unique identifier.
4   In _____, an instance of these EJBs is integrated with the Java Message Service (JMS) to provide the ability for message-driven beans to act as a standard JMS

message consumer and perform asynchronous processing between the server and the JMS message producer.

5   In _____, an instance of these non-persistent EJBs provides a service without storing an interaction or conversation state between methods. Any instance can be used for any client.

6   Retrieve Home Object reference from Naming Service via _____.

Ans.   (1) (Session beans), (2) (Stateful session bean), (3)(Entity bean), (4)(Message-driven bean), (5)(Stateless session bean), (6)(JNDI).

II   Short Answer Type Questions:

1   What is Entity Bean?
2   What is Session Bean?
3   Difference between SessionBean remove () and EntityBean remove () method?
4   Is it possible to share an HttpSession between a JSP and EJB? What happens when I change a value in the HttpSession from inside an EJB?
5   What is the difference between a Coarse Grained and Fine Grained?
6   What is difference Entity Bean and a Coarse Grained?
7   What are the Interfaces need to create to implement Session Bean with Example?
8   What are the parameters must follow for Session Bean?
9   What is the callbacks method in Session Bean?
10   What is the difference between Message Driven Beans and Stateless Session beans?
11   What happens if remove ( ) is never invoked on a session bean?
12   What is JMS?
13   What is the difference between Java Naming And Directory Interface?
14   What are Java Message Driven beans?
15   How is entity beans implemented?
16   Explain the differences between home interface and remote interface.
17   How are remote interface methods implemented?
18   Differentiate Between Bean-Managed and Container-Managed Persistence.
19   Explain the difference between topic and queue in JMS?
20   What are the advantages of JMS?

III   Long Answer Type Questions:

1   How do you check whether the session is active in Stateful session bean?
2   Difference between session bean entity bean Message driven bean?
3   What are the session beans? Explain the types of session beans.
4   What are the steps involved in developing a stateless session bean?
5   Describe the lifecycle of stateful session beans.
6   What are the steps involved in developing a stateful session beans?
7   Describe the lifecycle of stateful session beans.
8   Explain the steps involved in deploying a session bean.
9   What is the difference between sessioncontext and entitycontext?
10   How can i maintain a user session between servlets and stateful session ejb's?

11 Is it possible to share an HttpSession between a JSP and EJB? What happens when I change a value in the HttpSession from inside an EJB?
12 Explain the different services given by Java Naming Service.
13 Explain the components of JMS.
14 Explain how Application server handles the JMS Connection?
15 Explain the use of local interfaces while modeling business objects.
16 Explain the types of entity beans.
17 Differentiate between the lifecycles of a stateful and a stateless session bean.
18 Explain the JMS programming model.
19 Explain with the help of code snippets, how asynchronous messages may be generated using a MDB.
20 Explain the difference between a queue and a topic.
21 Discuss MVC architecture in detail.