

2017

Time : 3 hours

Full Marks : 60

Pass Marks : 27

Candidates are required to give their answers in  
their own words as far as practicable.

The figures in the margin indicate full marks.

Answer from all the Sections as directed.

Section – A

Answer all questions.

$$1 \times 8 = 8$$

1. Fill in the blanks :

(a) A software interrupt is also known as \_\_\_\_\_.

(b) \_\_\_\_\_ is a memory management scheme that permits physical address space of a process to be non-contiguous.

(c) In a \_\_\_\_\_, processes never finish executing and the system resources are tied up preventing other jobs from starting.

- (d) \_\_\_\_\_ acts as an intermediary between the User and Kernel.
- (e) To return to command mode in vi editor from the editing mode, \_\_\_\_\_ key has to be pressed.
- (f) The value of a variable in UNIX can be displayed by giving \_\_\_\_\_ Command.
- (g) For a comment entry in shell script, \_\_\_\_\_ character is used.
- (h) For mathematical computations and string manipulation, \_\_\_\_\_ command is used in UNIX script.
2. State whether the following statements are 'True' or 'False':  $1 \times 8 = 8$
- (a) Virtual memory is a technique that allows the execution of processes that may not be completely in the memory.
- (b) In pre-emptive scheduling, once the CPU is allocated, the process keeps the CPU till it terminates or switches to the waiting state.
- (c) We can search a pattern in a file using grep command.

- (d) CMP command is used for compressing two files.
  - (e) Long-term scheduler is also called job scheduling.
  - (f) mv command is used to renaming file.
  - (g) The amount of work completed in a unit of time is called throughput.
  - (h) Paging is a scheduling algorithm.
3. Choose the most appropriate option :  $1 \times 8 = 8$
- (a) To access the services of operating system, the interface is provided by the :
    - (i) System calls
    - (ii) Library
    - (iii) API
    - (iv) Assembly instructions
  - (b) Compiler designing phases :
    - (i) Lexical analysis
    - (ii) Semantic analysis
    - (iii) Syntax analysis
    - (iv) All of the above

(c) The command head-13 will display :

- (i) Last 13 lines
- (ii) 13th line
- (iii) First 13 lines
- (iv) None of the above

(d) Logical address is generated by :

- (i) CPU
- (ii) Memory
- (iii) Page map table
- (iv) None of the above

(e) The most liberal directory permission is :

- (i) 777
- (ii) 666
- (iii) 888
- (iv) None of the above

(f) User passwords, in Unix System are stored

in :

- (i) /etc/passwd
- (ii) /etc/inittab

- (iii) /etc/user
  - (iv) None of the above
- (g) A ready queue is :
- (i) An inverted list
  - (ii) A circular linked list
  - (iii) A linked list
  - (iv) None of the above
- (h) Memory relocation avoids :
- (i) Internal fragmentation
  - (ii) External fragmentation
  - (iii) Both (i) and (ii)
  - (iv) None of the above

### Section – B

4. Answer any four questions of the following :

$$3 \times 4 = 12$$

- (a) Write short notes on the following :
- (i) Mail command
  - (ii) Page map table
  - (iii) Write command
  - (iv) Process control block

- (b) Explain round-robin scheduling with suitable example.
- (c) Differentiate time sharing and real time system.
- (d) Write a shell script to find the factorial of a given number.
- (e) Explain the essential features of an operating system.
- (f) What is Kernel in operating system ? Explain.

### Section – C

5. Answer any **four** questions of the following :

$$6 \times 4 = 24$$

- (a) Write a shell script to enter a string and check whether the entered string is null or not. If it is null, then appropriate message should be displayed and if it is not null, the length of the string should be displayed. This process should be repeated five times.
- (b) What is a deadlock ? Explain it with all its necessary conditions.
- (c) Explain the following :
  - (i) Multiprogramming

- (ii) Spooling
- (iii) Buffering
- (d) Write a shell program to reverse a string.
- (e) Discuss the Unix system architecture.
- (f) Write Unix commands for the following :
  - (i) Rename a file
  - (ii) Join two files
  - (iii) List all users logged
  - (iv) Display last 5 lines of a file
  - (v) Find user name and terminal type
  - (vi) Change file permission



**2016**

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*Answer from all the Sections as directed.*

**Section – A**

**Answer all questions :**

1. Choose the correct answer of the following :

$$1 \times 11 = 11$$

(a) The programming of first generation  
computers was done in \_\_\_\_\_

- (i) Assembly language
- (ii) Machine language
- (iii) High level language
- (iv) C language

(b) Multiprogramming is \_\_\_\_\_

- (i) Single program executive on a machine
- (ii) More than one program executing on a machine
- (iii) Single program executing on more than one machine
- (iv) More than one program executing on multiple machines

(c) mk dir command is used to \_\_\_\_\_

- (i) Make directory
- (ii) Make life
- (iii) Both (i) and (ii)
- (iv) None of these

(d) \_\_\_\_\_ command is used to search a pattern in a file.

- (i) Ls
- (ii) grep
- (iii) chgrp
- (iv) rm

(e) The device files are also known as \_\_\_\_\_ in unix operating system.

- (i) Special purpose file

- (ii) Special file
  - (iii) Regular file
  - (iv) Ordinary file
- (f) The \_\_\_\_\_ command is used to compare 2 sorted files, and displays the output in 3 columns.
- (i) cmp
  - (ii) comm
  - (iii) diff
  - (iv) None of these
- (g) A process is said to be \_\_\_\_\_ if most of the time it is busy in paging rather than execution.
- (i) Crashing
  - (ii) Dashing
  - (iii) Thrashing
  - (iv) Bashing
- (h) The movement of processes between main memory and secondary storage and vice versa is known as :
- (i) Trapping
  - (ii) Swapping

- (iii) Rushing
  - (iv) Processing
- (i) The wastage of the memory which can be assigned to a partition is called :
- (i) External Fragmentation
  - (ii) Internal Fragmentation
  - (iii) Compaction
  - (iv) Relocation
- (j) Following is not a partition allocation technique :
- (i) First Fit
  - (ii) Best Fit
  - (iii) Worst Fit
  - (iv) Good Fit
- (k) Even after increasing the number of frames in FIFO algorithm, if page fault frequency increases, it is known as :
- (i) Melody's anomaly
  - (ii) Belady's anomaly
  - (iii) Cripps' anomaly
  - (iv) None of the above

2. Fill in the blanks :  $1 \times 3 = 3$

(a) \_\_\_\_\_ is one of the two system calls in message passing systems.

(b) The round robin scheduling is efficient for \_\_\_\_\_.

(c) Long-term scheduler is also known as \_\_\_\_\_.

3. Write 'True' or 'False' :  $1 \times 10 = 10$

(a) Unix is a single user operating system.

(b) Chmod ug + x my file allows only owner of the file to execute it.

(c) The unix shell acts as the command interpreter.

(d) Korn shell was developed by Bill Joy.

(e) The inode block contains the data of the files of unix file system.

(f) In case of user level threads the kernel maintains a thread table to keep track of user level threads.

(g) An unsafe state always leads to a deadlock.

(h) -z string returns false if length of the string is zero, in a unix shell script.

(i) For executing a shell script Sh command can be used.

(j) Chown command is used to change File access mode of a file.

### Section – B

4. Answer any four of the following :  $3 \times 4 = 12$

(a) What are System Calls ? Describe the various types of system calls.

(b) Write short notes on the following :

(i) Context Switch

(ii) Multilevel Queue Scheduling

(iii) Process Control Block

(c) Explain the following unix command :

(i) rm

(ii) cat

(iii) ls

(iv) cp

(d) Describe the 3 modes of vi-editor.

(e) Write a shell script to find the greater number from two numbers.

(f) Discuss about the different components of unix operating system.

- (g) Briefly explain the concept of paging with its block diagram.

### Section - C

5. Answer any four of the following :  $6 \times 4 = 24$

- (a) Explain deadlock with an example. What are the four conditions necessary for the deadlock ? Explain the Resource Allocation Graph to depict the deadlock.
- (b) Consider four processes  $P_1, P_2, P_3$  and  $P_4$  with their arrival times required CPU burst (in milli seconds) and priorities as shown in the following table :

Process	$P_1$	$P_2$	$P_3$	$P_4$
Arrival time	0	1	3	4
CPU burst (ms)	8	5	3	2
Priority	5	3	1	2

Assuming that the lower priority member means the higher priority how will these processes be scheduled according to non-preemptive scheduling algorithm ? Compare the average waiting time and average turn around time.

- (c) Explain briefly about the different types of scheduling algorithm.

(d) Write short notes on the following :

- (i) Merge command
- (ii) Chmod command
- (iii) Write command
- (iv) Vi editor

(e) Define thread. How is it different from a process ? List some advantages of thread over the traditional processes. Discuss the types of multithreading in detail.

(f) Calculate the number of page faults for the following reference string using FIFO, optimal and LRU algorithm with frame size 3 :

5 0 2 1 0 3 0 2 4 3 0 3 2 1 3 0 1 5.

(g) How is a process different from a program ? Explain the process state transition with the help of a diagram.



to copy information or data from one place to another

copying or moving data from one place to another

BB - 3/3 (400) (8) Voc(H-2) — BCA (7)

**2015**

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their own words as far as practicable.*

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*Answer from all Sections as directed.*

### **Section – A**

*Answer all questions.*

1. Choose the correct answer of the following :

$$1 \times 14 = 14$$

(a) Operating system is a / an :

- (i) Application software
- (ii) Customised software
- (iii) Generalised software
- (iv) None of these

- (b) In the blocked state :
- (i) The processes waiting for I/O are found
  - (ii) The process which is running is found
  - (iii) The processes waiting for the processor are found
  - (iv) None of these
- (c) Switching the CPU to another process requires to save state of old process and loading state of the new process is called :
- (i) Process blocking
  - (ii) Context switching
  - (iii) Time sharing
  - (iv) None of these
- (d) Which type of file org. is supported by magnetic tape ?
- (i) Random file
  - (ii) Sequential files
  - (iii) Index sequential
  - (iv) All of these

(e) Deadlock is a situation that occurs due to :

- (i) Lack of resource
- (ii) Ambiguity
- (iii) Failure of processor
- (iv) Size of process

(f) UNIX Operating System is :

- (i) Portable
- (ii) Multitasking
- (iii) Multiuser
- (iv) All of these

(g) Shell is a :

- (i) Hardware component
- (ii) Command interpreter
- (iii) Compiler
- (iv) Tool in CPU scheduling

(h) Cmp command is used to :

- (i) Remove the file
- (ii) Create the file
- (iii) Copying the file
- (iv) Comparison of file

- (i) Which command terminates a running program or process ?
- (i) Abort  
(ii) End  
(iii) Kill  
(iv) Terminate
- (j) The test command compares two numeric values using \_\_\_\_\_ operator.
- (i) =  
(ii) ==  
(iii) - eq  
(iv) None of these
- (k) The WC command counts :
- (i) Word  
(ii) Line  
(iii) Character  
(iv) All of these
- (l) Interval between the time of submission and completion of Job is called :
- (i) Waiting tire

- (ii) Turn around time
  - (iii) Through put
  - (iv) None of these
- (m) \_\_\_\_\_ allocates the largest free fragments available in the memory.
- (i) Best fit
  - (ii) Worst fit
  - (iii) First fit
  - (iv) None of these
- (n) Virtual memory is \_\_\_\_\_.
- (i) An extremely large main memory
  - (ii) An extremely large secondary memory
  - (iii) An illusion of extremely large main memory
  - (iv) A type of memory used in super-computer

2. Write True or False :  $1 \times 10 = 10$

- (a) UNIX does not support multitasking.
- (b) All devices are considered as files in UNIX.

- (c) mv command is used to copy a file.
- (d) Password command is used to change and display the password.
- (e) The UNIX Kernel acts as an Agent between the Shell and the Hardware.
- (f) Any running program is called process.
- (g) mkdir command can create more than one directory at a time.
- (h) Multiple partition allocation technique reduces external fragmentation.
- (i) PS command displays the process status of every running process of all the users.
- (j) The 1st block of UNIX file system is known as super block.

### Section – B

3. Answer any four of the following :       $3 \times 4 = 12$

- (a) Explain the difference between internal and external fragmentations.
- (b) Discuss the different types of files in UNIX.
- (c) Write a shell script to accept a number. Check and display whether it is a prime number or not.

(d) Explain the following UNIX commands :

- (i) find
- (ii) grep
- (iii) comp
- (iv) ls

(e) Describe the objective of long term schedulers.

(f) Write a shell script to find the factorial of a given number.

(g) What are the necessary conditions for a deadlock situation to arise ?

### Section – C

4. Answer any four of the following :  $6 \times 4 = 24$

(a) Discuss Spooling and Buffering in operating system.

(b) Write a shell program to find average of ten numbers entered by the user.

(c) Explain the essential features of an O. S.

(d) What is Kernel ? What are the main functions of Kernel ?

- (e) Explain the various blocks of UNIX.
- (f) Write notes on any **two** of the following :
- (i) Multiuser and multitasking
  - (ii) Interrupts
  - (iii) Process states
  - (iv) Echo
- (g) Explain any five commands used in visual editor.



**2 0 1 4**

Full Marks : 60  
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**Answer all Sections**

**Section—A**

1. Select the correct answers :  $14 \times 1$

(a) UNIX is written in

- (i) 'C' language
- (ii) Perl
- (iii) EDA language
- (iv) None of these

(b) Which of the following is the heart  
of any OS?

- (i) Hardware
- (ii) Kernel
- (iii) Software
- (iv) Users

- (c) Operating system is a
- system software
  - application software
  - generated software
  - None of these
- (d) Korn Shell was developed by
- David Korn
  - Steve Korn
  - Bill Joy
  - Steve Bourne
- (e) If a directory has 10 files, the number of entries in directory file will be
- 10
  - 12
  - 9
  - 0
- (f) The command used for comparing two files is
- comp
  - uniq

- (iii) compare
  - (iv) diff
- (g) The command used for setting default permission of the files and directories is
- (i) chmod
  - (ii) default
  - (iii) umask
  - (iv) chstat
- (h) The smallest unit of the processing is
- (i) process
  - (ii) bit
  - (iii) byte
  - (iv) thread
- (i) The example of non-preemptive scheduling is
- (i) first-come first-serve
  - (ii) robin-round
  - (iii) round-robin
  - (iv) LIFO

- (j) A process includes three segments—text, data and
- (i) CPU
  - (ii) scheduler
  - (iii) queue
  - (iv) stack
- (k) Deadlock is a situation that occurs due to
- (i) lack of resource
  - (ii) failure of processor
  - (iii) size of process
  - (iv) ambiguity
- (l) Which of the following commands is used to copying the files?
- (i) Grep
  - (ii) Cp
  - (iii) Find
  - (iv) None of these
- (m) PSZ is used to set prompt for
- (i) command line
  - (ii) vi

(iii) directory

(iv) scripts writing

(n) The gzip command compresses the file with extension

(i) .gzip

(ii) .gz

(iii) gp

(iv) .g

2. State True or False of the following :

10×1

(a) All devices are considered as files in UNIX.

(b) The first block of UNIX file system is known as superblock.

(c) UNIX does not support multitasking in long-list format.

(d) IS-1 display files and directories in long-list format.

(e) Command is used to copying a files.

(f) Cmp command is not used to comparing two files.

K/4(488)

(Turn Over)

- (g) rm command is not used to remove the files.
- (h) Kernel is not a part of OS.
- (i) Long-term scheduler is also called job scheduling.
- (j) UNIX support multiprogramming, time sharing and multiprocessing.

### Section—B

3. Answer *any four* questions : 4×3

- (a) What is operating system? What are the main functions of the OS ?
- (b) What is shell? Explain all types of the shell in UNIX.
- (c) Explain the following UNIX commands :
  - (i) chmod
  - (ii) wc
  - (iii) ls
  - (iv) sort
- (d) Explain the architecture of the UNIX OS.

- (e) Explain the process control block.
- (f) What is deadlock? What are the necessary conditions for deadlock situations to arise?
- (g) Write a shell script to find the greater number from two numbers.

### Section—C

4. Answer any four questions :                   4×6

- (a) What do you understand by fragmentation? Explain the difference between external and internal fragmentation.
- (b) Explain the various scheduling algorithms.
- (c) Write a shell script to accept 'n' number check and display total even and odd numbers.
- (d) Explain Round-Robin (RR) scheduling with suitable example.
- (e) Write briefly about the various memory management algorithms.
- (f) Explain the three modes of Vi (Visual) editor.

(g) Explain the following UNIX commands :

- (i) cut
  - (ii) grep
  - (iii) comm
  - (iv) mkdir
  - (v) cmp

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2013

Full Marks : 60  
Pass Marks : 27

Time : 3 hours

The figures in the right-hand margin indicate marks

Answer all Sections

Section—A

1. Select the correct answers : 14×1

- (a) Switching the CPU to another process requires to save state of the old process and loading new process state is called
- (i) process blocking
  - (ii) context switching
  - (iii) time sharing
  - (iv) None of these
- (b) Which type of file organization is supported by magnetic tape?
- (i) Random files
  - (ii) Sequential files

- (iii) Indexed sequential
  - (iv) All of these
- (c) Interval between the time of submission and completion of the job is called
- (i) waiting time
  - (ii) turnaround time
  - (iii) throughput
  - (iv) response time
- (d) \_\_\_\_\_ allocates the largest free fragment available in the memory.
- (i) Best-fit
  - (ii) Worst-fit
  - (iii) First-fit
  - (iv) None of these
- (e) Deadlock is a situation that occurs due to
- (i) lack of resource
  - (ii) ambiguity
  - (iii) failure of processor
  - (iv) size of process

- (f) DMA is used for
- (i) memory deallocation
  - (ii) memory allocation
  - (iii) I/O device accessing
  - (iv) bulk memory transfers
- (g) — vi command undoes most recent changes.
- (i) : wq
  - (ii) : o
  - (iii) u
  - (iv) z
- (h) — commands display only first or last few lines of a file.
- (i) First and last
  - (ii) Viewhead and viewtail
  - (iii) Cat-f and cat-l
  - (iv) head and tail
- (i) — vi command copies text to the clipboard.
- (i) YY
  - (ii) C
  - (iii) : C
  - (iv) : Y

(j) The \_\_\_\_\_ symbol directs command output to a file.

- (i) \*
- (ii) \$
- (iii) >
- (iv) <

(k) Which command terminates a running program or process?

- (i) Abort
- (ii) End
- (iii) Kill
- (iv) Terminate

(l) The test command compares two numeric values using the \_\_\_\_\_ operator.

- (i) =
- (ii) ==
- (iii) -eq
- (iv) None of these

(m) The wc command counts

- (i) word
- (ii) line

- (iii) character
  - (iv) All of these
- (n) UNIX operating system is
- (i) portable
  - (ii) multitasking
  - (iii) multi-user
  - (iv) All of these

2. State True or False :

10×1

- (a) chmod ugo +x myfile allows only owner of the file to execute it.
- (b) passwd command is used to display and change the password.
- (c) tee command directs output stream to one or more files.
- (d) du displays the disk space usage.
- (e) date command displays system date in mm/dd/yyyy format.
- (f) tar command is used to send message from one user to another.
- (g) mkdir command can create more than one directory at a time.

- (h) Ageing is a technique of improving the priority of process waiting in queue for CPU allocation.
- (i) Multiple partition allocation technique reduces external fragmentation.
- (j) ps command displays the process status of every running process of all the users.

### Section—B

3. Answer *any four* questions : 4x3

- (a) Explain any two communication commands used in UNIX.
- (b) Differentiate between the following :
- (i) find and grep command
  - (ii) cmp and comm command.
- (c) Explain the difference between internal and external fragmentation.
- (d) List the demerits of contiguous file allocation.
- (e) Discuss the different types of file in UNIX.

(f) What are the necessary conditions for a deadlock situation to arise?

### Section—C

4. Answer any four questions : 4×6

(a) Discuss the structure of UNIX operating system.

(b) Given memory partitions of 100 KB, 500 KB, 200 KB, 300 KB and 600 KB (in order), how would each of the first-fit, best-fit and worst-fit algorithms place processes of 212 KB, 417 KB, 1112 KB and 426 KB (in order)? Which algorithm makes the most efficient use of memory?

(c) What are the different kinds of protection that an operating system is supposed to extend? Discuss the mechanisms used in providing protections.

(d) Write a shell program to find average of ten numbers entered by user.

(e) Write the purpose of following commands :

- (i) : set showmode
- (ii) : wq
- (iii) ln
- (iv) chmod
- (v) rm -r
- (vi) echo

(f) Write short notes on *any two* of the following :

- (i) LRU page replacement algorithm
- (ii) Multiuser and multitasking
- (iii) Interrupts
- (iv) Process states.

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2012

BCA

SEVENTH PAPER

Full Marks : 60

Pass Marks : 27

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The figures in the margin indicate full marks  
for the questions

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own words as far as practicable

### SECTION—A

Select the correct answer :  $1 \times 14 = 14$

- (a) Operating system is a/an
  - (i) application software
  - (ii) customised software
  - (iii) generalized software
  - (iv) None of the above
  
- (b) In the blocked state
  - (i) the processes waiting for I/O are found
  - (ii) the process which is running is found
  - (iii) the processes waiting for the processor are found
  - (iv) None of the above

(c) Multiprogramming systems

- (i) are easier to develop than single-programming systems
- (ii) execute each job faster
- (iii) execute more jobs in the same time
- (iv) are used only on large mainframe computers

(d) The number of processes completed per unit time is known as

- (i) output
- (ii) throughput
- (iii) efficiency
- (iv) capacity

(e) The Banker's algorithm is used

- (i) to prevent deadlock in operating systems
- (ii) to detect deadlock in operating systems
- (iii) to rectify a deadlocked state
- (iv) None of the above

- (f) Fence register is used for
- CPU protection
  - memory protection
  - file protection
  - All of the above
- (g) A page fault occurs
- when the page is not in the memory
  - when the page is in the memory
  - when the process enters the blocked state
  - when the process is in the ready state
- (h) Virtual memory is
- an extremely large main memory
  - an extremely large secondary memory
  - an illusion of extremely large main memory
  - a type of memory used in super-computers
- (i) The mechanism that brings a page into memory only when it is needed is called
- segmentation
  - fragmentation
  - demand paging
  - page replacement

- (j) Shell is a
- (i) hardware component
  - (ii) command interpreter
  - (iii) compiler
  - (iv) tool in CPU scheduling
- (k) cmp command is used to
- (i) remove the file
  - (ii) create the file
  - (iii) copying the file
  - (iv) comparison of files
- (l) UNIX is written in
- (i) C language
  - (ii) EDA language
  - (iii) Perl
  - (iv) Pascal language
- (m) Which of the following is a command for searching a pattern in a file?
- (i) Find
  - (ii) Grep
  - (iii) Lookup
  - (iv) None of the above
- (n) A shell variable cannot start with
- (i) an alphabet
  - (ii) a number
  - (iii) a special symbol other than an underscore
  - (iv) Both (ii) and (iii) above

2. Write True or False :

- (a) ls-l displays files and directories in long-list format.  $1 \times 10 = 10$
- (b) UNIX does not support multitasking.
- (c) In FIFO page-replacement technique, lowest page fault occurs.
- (d) The UNIX kernel acts as an agent between the shell and the hardware.
- (e) who is a special case of who am I command.
- (f) A user can change his password using pwd command.
- (g) The wc command works only on text files.
- (h) In a mutual exclusion, there are many processes at a time can use the resource.
- (i) Shortest job first-algorithm has lowest waiting time.
- (j) Any running program is called process.

### SECTION—B

$3 \times 4 = 12$

3. Answer any four questions :

- (a) What is operating system? What are the main functions of operating system?

( Turn Over )

( 6 )

- (b) How is Segmentation different from Paging?
- (c) Describe the differences among short-term, medium-term and long-term scheduling.
- (d) Discuss Spooling and Buffering in operating system.
- (e) What is shell? Explain all types of shell in UNIX.
- (f) Write a shell script to accept two files name from user and check whether the target file is exist or not. If target file not exist, then copy the source file into the target file.
- (g) Write a shell script to find the greatest number among three numbers.

### SECTION—C

4. Answer any four questions : 6×4=24

- (a) What do you understand by fragmentation? Explain the difference between external and internal fragmentations.
- (b) How is a process different from a program? Explain the process state transition with the help of a diagram.

- (c) Consider the following set of processes with the length of CPU brust time given in microseconds :

<i>Process</i>	<i>Arrival time</i>	<i>Brust time</i>
$P_1$	0	8
$P_2$	1	4
$P_3$	2	9
$P_4$	3	5

Find the average waiting time and average turnaround time using preemptive and non-preemptive SJF algorithms.

- (d) Discuss disk allocation method with free-space management.
- (e) Discuss the architecture of UNIX operating system.
- (f) Write a shell script to accept  $n$  numbers, check and display total even and odd numbers.
- (g) Explain the following UNIX commands :
- (i) chmod
  - (ii) wc
  - (iii) ls
  - (iv) sort

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2011

BCA

## SEVENTH PAPER

Full Marks : 60Pass Marks : 27

Time : 3 hours

The figures in the margin indicate full marks  
for the questions

Candidates are required to give their answers in their  
own words as far as practicable

## SECTION—A

Write True or False :

$$1 \times 14 = 14$$

- (a) A real-time system is used when rigid time requirement is placed on the operation of a processor.
- (b) An Interrupt can be generated only by the Hardware.
- (c) A process can be defined as a program in execution.
- (d) First-Fit, Best-Fit, Worst-Fit are CPU allocation algorithms.

msa—600/777

( Turn Over )

- (e) Virtual memory is a technique that allows the execution of processes that may not be completely in the memory.
- (f) In pre-emptive scheduling, once the CPU is allocated, the process keeps the CPU till it terminates or switches to the waiting state.
- (g) Two types of memory fragmentation are external fragmentation and internal fragmentation.
- (h) We can search a pattern in a file using grep command.
- (i) The head-5 command will display the last five lines of a file.
- (j) Chmod command is used to change the privileges of a file.
- (k) UNIX is an example of time-sharing operating system.
- (l) To delete a line in vi editor, yy key is pressed.
- (m) The devices are considered as ordinary files in UNIX.
- (n) Several UNIX commands can be given on the same line by separating them with the character : (colon).

2. Fill in the blanks :

$$1 \times 10 = 10$$

- (a) The CPU scheduler is also known as \_\_\_\_\_.
- (b) When a process is waiting to be assigned to a processor, it is in the \_\_\_\_\_ state.
- (c) A software interrupt is also known as \_\_\_\_\_.
- (d) \_\_\_\_\_ is a memory management scheme that permits physical address space of a process to be non-contiguous.
- (e) In a \_\_\_\_\_, processes never finish executing and the system resources are tied up preventing other jobs from starting.
- (f) \_\_\_\_\_ acts as an intermediary between the user and kernel.
- (g) To return to command mode in vi editor from the editing mode, \_\_\_\_\_ key has to be pressed.
- (h) The value of a variable in UNIX can be displayed by giving \_\_\_\_\_ command.
- (i) For a comment entry in shell script, \_\_\_\_\_ character is used.
- (j) For mathematical computations and string manipulation, \_\_\_\_\_ command is used in UNIX script.

## SECTION—B

3. Answer any four questions :  $3 \times 4 = 12$

- (a) Write short notes on :
  - (i) Page map table
  - (ii) Process control block
- (b) Explain round-robin scheduling with suitable example.
- (c) Write briefly about various memory-management algorithms.
- (d) Write short notes on :
  - (i) Mail command
  - (ii) Write command
- (e) Write a shell script to generate Fibonacci series till first ten terms.  
(Hint : 0, 1, 1, 2, 3, ...)
- (f) Explain briefly the three modes of vi editor .

## SECTION—C

4. Answer any four of the following :  $6 \times 4 = 24$

- (a) What is a deadlock? Explain it with all its necessary conditions.
- (b) Explain the following terms :
  - (i) Multiprogramming
  - (ii) Multitasking

- (c) Explain in detail about CPU scheduling.
- (d) Write a shell script to enter a string. The script should check whether the entered string is null or not. If it is null, then appropriate message should be displayed and if it is not null, the length of the string should be displayed. This process should be repeated five times.
- (e) Describe some important features of UNIX.
- (f) Explain the following UNIX commands :
- (i) cut
  - (ii) grep
  - (iii) comm

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2010

BCA

SEVENTH PAPER

Full Marks : 60  
Pass Marks : 27

Time : 3 hours

*The figures in the margin indicate full marks  
for the questions*

*Candidates are required to give their answers in their  
own words as far as practicable*

SECTION—A

1. Select the correct answer :  $1 \times 14 = 14$

- (a) Unix is
- (i) computer language
  - (ii) translator
  - (iii) command
  - (iv) operating system
- (b) Translator is
- (i) shell variable
  - (ii) command
  - (iii) compiler
  - (iv) All of the above

- (c) Shell variable is  
(i) HOME  
(ii) PATH  
(iii) MAIL  
(iv) All of the above
- (d) The command head-13 will display  
(i) last 13 lines  
(ii) 13th line  
(iii) first 13 lines  
(iv) None of the above
- (e) Cat command is used to  
(i) create new file  
(ii) open existing file  
(iii) merge two files  
(iv) All of the above
- (f) First state of process is  
(i) new  
(ii) ready  
(iii) running  
(iv) terminated
- (g) mkdir command is used to  
(i) create file  
(ii) create directory  
(iii) remove directory  
(iv) remove file

(Continued)

- (h) LS command is used to  
(i) long listing of files  
(ii) deleting file  
(iii) creating file  
(iv) renaming file
- (i) Round Robin is a  
(i) Memory Management Scheme  
(ii) Memory Management Technique  
(iii) Scheduling Algorithm  
(iv) All of the above
- (j) CP command is used to  
(i) common in two files  
(ii) comparing two files  
(iii) copying files  
(iv) creating file
- (k) Compiler designing phases  
(i) lexical analysis  
(ii) syntax analysis  
(iii) semantic analysis  
(iv) All of the above
- (l) Unix supports  
(i) multiprogramming  
(ii) multiprocessing  
(iii) time sharing  
(iv) All of the above

(m) Disk allocation method is

- (i) first fit
- (ii) best fit
- (iii) indexed allocation
- (iv) All of the above

(n) Process state is

- (i) new
- (ii) ready
- (iii) running
- (iv) All of the above

2. State True or False :

$1 \times 10 = 10$

- (a) Compiler is a translator.
- (b) CMP command is used to compressing two files.
- (c) Kernel is a part of operating system.
- (d) Long-term scheduler is also called job scheduling.
- (e) mv command is used to renaming file.
- (f) The amount of work completed in a unit of time is called throughput.
- (g) SJF is a scheduling algorithm.
- (h) Paging is a memory management technique.
- (i) Unix does not support multitasking.
- (j) rmdir command deletes file.

## SECTION—B

Answer any four questions :  $3 \times 4 = 12$

- (a) Explain the utility of Lex and Yacc.
- (b) What is kernel in operating system?
- (c) Differentiate time sharing and real time system.
- (d) Explain the following :
  - (i) FcFs
  - (ii) SjF
- (e) What is paging?
- (f) Write shell script to find the greater number from two numbers.
- (g) Write a shell script to check whether a given number is palindrome or not.

## SECTION—C

Answer any four of the following :  $6 \times 4 = 24$

- (a) Discuss the Unix system architecture.
- (b) Explain the following :
  - (i) cat
  - (ii) ls
  - (iii) mkdir
- (c) Discuss the compiler designing phases.

- (d) Explain the following :
- (i) Multiprogramming
  - (ii) Spooling
  - (iii) Buffering
- (e) Write shell program to convert decimal number to binary number.
- (f) What is scheduling? Describe the objective of all scheduler.
- (g) Write a shell programm to reverse the string.

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