

Name : .....  
Roll No. : .....  
Invigilator's Signature : .....

**CS/MCA/SEM-5/MCAE-503A/2011-12  
2011**

**ADVANCED UNIX PROGRAMMING**

Time Allotted : 3 Hours

Full Marks : 70

*The figures in the margin indicate full marks.*

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

**GROUP – A**

**( Multiple Choice Type Questions )**

1. Choose the correct alternatives for any *ten* of the following :

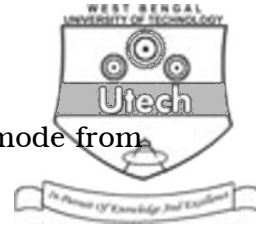
10 × 1 = 10

- i) Which of the following features of unix is used in Interprocess Communication ?
  - a) Signals
  - b) Pipes
  - c) Semaphore
  - d) Message Queue.
  
- ii) To simulate the command system, which of the system calls fork, wait or excel are used ?
  - a) Fork & wait
  - b) All the three
  - c) Fork & excel
  - d) Wait & excel.

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- iii) Context switch changes the process mode from
- a) user to kernel
  - b) kernel to user
  - c) kernel mode to kernel process
  - d) kernel process to kernel process.
- iv) Which of the following displays the Exit status of the last executed command ?
- a) echo \$#
  - b) echo \$\$
  - c) echo \$ ?
  - d) echo \$ !
- v) The PID of the Kernel process is
- a) undefined
  - b) 0
  - c) 1
  - d) 3.
- vi) Where does the kernel store the read and write offsets for named pipe ?
- a) File table
  - b) Inode
  - c) File descriptor table
  - d) None of these.

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- vii) The state of the file system is contained in
- a) inode block
  - b) boot block
  - c) superblock
  - d) data block.
- viii) A process can access its *U* area when it executes in
- a) kernel mode
  - b) user mode
  - c) any of the modes
  - d) none of these.
- ix) The file size in MB/kB can be determined under UNIX using the command
- a) Is - H
  - b) Is - h
  - c) Is - lh
  - d) Is - l.
- x) The alias command can be used in UNIX to
- a) assign the same name to two files
  - b) change the name of a file
  - c) produce a listing of the login ids of all users in the system
  - d) none of these.

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xi) In which of the following does Init reside?

- a) root
- b) bin
- c) etc
- d) usr.

xii) The shell command `cat x y > x`

- a) does not work
- b) replace the file `x` by file `y`
- c) does nothing other than error message
- d) none of these.

**GROUP – B**

**( Short Answer Type Questions )**

Answer any *three* of the following.  $3 \times 5 = 15$

- 2. a) What are reliable signals ? Explain the four primary features of reliable signals.
- b) Write in detail about the interrupted system calls. 2 + 3
- 3. Describe swapping and demand paging and describe their advantages. 2 + 3
- 4. a) Write about the timing comparison of "Semaphores vs Record locking".
- b) Write about the semaphore adjustment on exit. Explain about the importance of SEM\_UNDO. 5

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5. What is interprocess communication in UNIX ? Describe the algorithm for it.
6. a) Write in detail about the interrupted system calls.
- b) Write in detail about the kill and raise functions. 2 + 3

**GROUP - C**

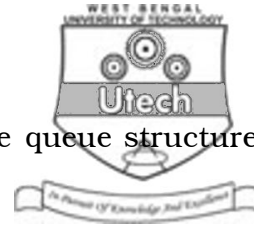
**( Long Answer Type Questions )**

Answer any *three* of the following. 3 × 15 = 45

7. a) What is shared memory ? What is the importance of it ?  
Explain in detail about the process of "Allocating a shared memory segment".
- b) What is .File descriptor ?
- c) Write on Unix file structure.
8. a) Name three administrative functions that cannot be performed by a non-privileged user.
- b) Why is the *su* command ? What is the difference between *su* and *su-bob* ? What do you mean by command line argument in shell ?
- c) Write a shell script to generate non-Fibonacci no. ?

3 + 2 + 2 + 3 + 5

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9. a) Draw and explain about the "Message queue structures in the kernel" ?
- b) With an example, explain in detail about the process of reading a message from the queue.

What is process ? How can you kill a process ?

3 + 6 + 2 + 4

10. a) What do you mean by daemon ? How will you kill a daemon ? Which process cannot be killed by kill command ?
- b) What is the function of *exec* system call ? What is the difference between a process run with (a) & and run with *nohup* ?
- c) What is the default value of *umask* in UNIX ? What will happen if we set value of *umask* as '066' ?
- d) What is the function of the touch command ? Describe briefly.
- e) What is the effect of the command 'touch temp' if the file temp does not exist ?

3 + 4 + 3 + 3 + 2

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11. Write short notes on any *three* of the following : 3 × 5

- a) File I/O
- b) awk
- c) Process control
- d) Process identifiers
- e) Sticky bit.

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