# A8-R4: BASICS OF OS, UNIX AND SHELL PROGRAMMING

**अवधि: 03 घंटे** **अधिकतम अंक: 100**

**DURATION: 03 Hours** **MAXIMUM MARKS: 100**

| **ओएमआर शीट सं.:** **OMR Sheet No.:** | | | | | | |
|---|---|---|---|---|---|---|

**रोल नं.:** **Roll No.:** | | | | | | |

**उत्तर-पुस्तिका सं.:** **Answer Sheet No.:** | | | | | | |

**परीक्षार्थी का नाम:** **परीक्षार्थी के हस्ताक्षर**:

**Name of Candidate: _____; Signature of candidate: _____**

| **परीक्षार्थियों के लिए निर्देश:** | **Instructions for Candidate:** |
|---|---|
| कृपया प्रश्न-पुस्तिका**,** ओएमआर शीट एवं उत्तर-पुस्तिका में दिये गए निर्देशों को ध्यान पूर्वक पढ़ें। | Carefully read the instructions given on Question Paper, OMR Sheet and Answer Sheet. |
| प्रश्न-पुस्तिका की भाषा अंग्रेजी है। परीक्षार्थी केवल अंग्रेजी भाषा में ही उत्तर दे सकता है। | Question Paper is in English language. Candidate can answer in English language only. |
| इस मॉड्यूल/पेपर के **दो भाग** है। **भाग एक** में चार प्रश्न और **भाग दो** में पाँच प्रश्न है। | There are **TWO PARTS** in this Module/Paper. **PART ONE** contains **FOUR** questions and **PART TWO** contains **FIVE** questions**.** |
| **भाग एक** "वैकल्पिक" प्रकार का है जिसके कुल अंक 40 है तथा **भाग दो**, "व्यक्तिपरक" प्रकार है और इसके कुल अंक 60 है। | **PART ONE** is Objective type and carries 40 Marks. **PART TWO** is subjective type and carries 60 Marks. |
| **भाग एक** के उत्तर, इस प्रश्न-पत्र के साथ दी गई **ओएमआर उत्तर-पुस्तिका** पर**,** उसमें दिये गए अनुदेशों के अनुसार ही दिये जाने है। **भाग दो** की उत्तर-पुस्तिका में **भाग एक** के उत्तर **नहीं** दिये जाने चाहिए। | **PART ONE** is to be answered in the **OMR ANSWER SHEET** only, supplied with the question paper, as per the instructions contained therein. **PART ONE** is **NOT** to be answered in the answer book for **PART TWO**. |
| **भाग एक** के लिए अधिकतम समय सीमा **एक घण्टा** निर्धारित की गई है। **भाग दो** की उत्तर-पुस्तिका, **भाग एक** की उत्तर-पुस्तिका जमा कराने के पश्चात दी जाएगी। तथापि, निर्धारित एक घंटे से पहले **भाग एक** पूरा करने वाले परीक्षार्थी **भाग एक** की उत्तर-पुस्तिका निरीक्षक को सौंपने के तुरंत बाद, **भाग दो** की उत्तर-पुस्तिका ले सकते हैं। | Maximum time allotted for **PART ONE** is **ONE HOUR.** Answer book for **PART TWO** will be supplied at the table when the answer sheet for **PART ONE** is returned. However, candidates who complete **PART ONE** earlier than one hour, can collect the answer book for **PART TWO** immediately after handing over the answer sheet for **PART ONE.** |
| **परीक्षार्थी, उपस्थिति-पत्रिका पर हस्ताक्षर किए बिना एवं अपनी उत्तर-पुस्तिका, निरीक्षक को सौंपे बिना, परीक्षा हाल नहीं छोड़ सकता हैं। ऐसा नही करने पर, परीक्षार्थी को इस मॉड्यूल/पेपर में अयोग्य घोषित कर दिया जाएगा।** | **Candidate cannot leave the examination hall/room without signing on the attendance sheet and handing over his Answer sheet to the invigilator. Failing in doing so, will amount to disqualification of Candidate in this Module/Paper.** |
| प्रश्न-पुस्तिका को खोलने के निर्देश मिलने के पश्चात एवं उत्तर देने से पहले उम्मीदवार यह जाँच कर यह सुनिश्चित कर ले कि प्रश्न-पुस्तिका प्रत्येक दृष्टि से संपूर्ण है। | After receiving the instruction to open the booklet and before answering the questions, the candidate should ensure that the Question booklet is complete in all respect. |

**नोट: यदि हिन्दी संस्करण में कोई त्रुटि / विसंगति पाई जाती है, तो उस अवस्था में अँग्रेजी संस्करण ही मान्य होगा ।**

**Note: In case of any discrepancy found in Hindi language, English version will be treated as final.**

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जब तक आपसे कहा न जाए तब तक प्रश्न-पुस्तिका न खोलें।

**DO NOT OPEN THE QUESTION BOOKLET UNTIL YOU ARE TOLD TO DO SO.**

**PART ONE**
**(Answer all the questions)**

**1. Each question below gives a multiple choice of answers. Choose the most appropriate one and enter in the "OMR" answer sheet supplied with the question paper, following instructions therein. (1x10)**

1.1 The nature of open source software
A) Software and source code available to all
B) The freedom to distribute software and source code
C) The ability to modify and create derived works
D) All of the above

1.2 What is the use of the Shell?
A) Communication media between user and Linux OS
B) Communication media between user and Hardware
C) Communication media between user and Application
D) None

1.3 What is the use of nice() command ?
A) To execute a new program in a process
B) To bias the existing priority of a process
C) To get parent process identifier.
D) None

1.4 Which of the following is not a network diagnostic tool?
A) Netstat B) Trap
C) TCP dump D) Ping

1.5 Which command is used to terminate a process?
A) shutdown B) haltsys
C) kill D) cancel

1.6 What is the System Call in Linux?
A) Function B) Predefined function
C) Properties D) None

1.7 The command ln-s creates a
A) Hard link B) Soft link
C) Symbolic link D) None of the above

1.8 What does the command tar –c do
A) Creates a new archive
B) Views the contents of an archive
C) Extracts the contents of an archive
D) None of the above

1.9 What command is used with vi editor to save file and remain in the editing mode?
A) x B) q!
C) :w D) :q

1.10 What are the tasks not done by system administrator?
A) Starting and stopping Linux
B) Maintaining the file system
C) Maintaining the user a/cs
D) Compilation of program

**2. Each statement below is either TRUE or FALSE. Choose the most appropriate one and enter your choice in the "OMR" answer sheet supplied with the question paper, following instructions therein. (1x10)**

2.1 It is possible to create new a file system in UNIX.
2.2 The Ctrl+Alt+Del key combination work on Linux.
2.3 Drives such as hard drive and floppy drives represented with drive letters.
2.4 chown is used for to change group of the file.
2.5 The fork creates a child that is a duplicate of the parent process.
2.6 The CPU is allowed to execute other programs while the DMA controller is transferring data.
2.7 pwd displays your current directory.
2.8 Symbolic links act similarly to shortcuts in Windows.
2.9 It is not possible to use shortcut for a long pathname.
2.10 vi editor is case-sensitive.


**ROUGH WORK SPACE:**

**3. Match words and phrases in column X with the closest related meaning/ word(s)/phrase(s) in column Y. Enter your selection in the "OMR" answer sheet supplied with the question paper, following instructions therein. (1x10)**

| X | | Y | |
|---|---|---|---|
| 3.1 | Top | **A.** | Command is mostly used to replace the text in a file. |
| 3.2 | XDMCP | **B.** | Inode contains pointers to the data blocks of the file. |
| 3.3 | Sed | **C.** | Software interrupts. |
| 3.4 | cc | **D.** | Collection of one or more process groups. |
| 3.5 | Tcpdump | **E.** | Executable file residing in a disk file. |
| 3.6 | Inode | **F.** | Always has a UID of zero. |
| 3.7 | Sessions | **G.** | Commonly used to monitor network traffic |
| 3.8 | Program | **H.** | Terminates a process. |
| 3.9 | Root | **I.** | Management of the operation and control of I/O devices. |
| 3.10 | Signals | **J.** | Window manager |
| | | **K.** | Monitor system performance. |
| | | **L.** | Removes contents of the line, leaving you in insert mode. |
| | | **M.** | Displays a continually updating report of system resource usage. |

**4. Each statement below has a blank space to fit one of the word(s) or phrase(s) in the list below. Choose the most appropriate option, enter your choice in the "OMR" answer sheet supplied with the question paper, following instructions therein. (1x10)**

| | | | | | |
|---|---|---|---|---|---|
| **A.** | Awk | **B.** | LILO | **C.** | Hard Links |
| **D.** | DNS | **E.** | NFS | **F.** | Region |
| **G.** | X-Server | **H.** | Cron | **I.** | Ping |
| **J.** | Hidden files | **K.** | Daemons | **L.** | Shell |
| **M.** | Grep | | | | |

4.1 _____ is used for sharing of files over a network.

4.2 The _____ allows any user in the system to schedule a program.

4.3 _____ handle tasks such as responding to incoming network connections, accepting logon requests from terminals and updating log files.

4.4 _____ is a boot loader for Linux.

4.5 A _____ is a continuous area of a process's address space.

4.6 _____ is one of the most powerful tools in UNIX used for processing the rows and columns in a file.

4.7 A _____ is an interactive user interface to an operating system.

4.8 _____ point directly to the physical file on disk.

4.9 _____ are preceded by a dot.

4.10 _____ is a search command that makes use of pattern-based searching.



**ROUGH WORK SPACE:**

**PART TWO**
**(Answer any FOUR questions)**

**5.**

a) What is open source software and its advantage?
b) Describe the root account.
c) What is GUI and how is it implemented in UNIX?

**(4+5+6)**

**6.**

a) What are environmental variables? List some.
b) How do you change permissions under Linux?
c) What are hard links and symbolic links? Differentiate between the two.
d) What is grep command?
e) What is a pipe, describe with an example?

**(4+3+4+2+2)**

**7.**

a) Write a shell script to calculate factorial of a given number. For eg. If the no is 5, its factorial is 5X4X3X2X1=120.
b) What is a CRON program?
c) Difference between the fork() and vfork() system call?
d) What is an advantage of executing a process in background?

**(6+3+3+3)**

**8.**

a) What, if anything, is wrong with the following commands?
   i) ls -l-s
   ii) cat file1, file2
   iii) ls - s Factdir
b) Describe shadow password file.
c) What are the different modes when using vi editor?
d) What is Awk? Give the ouput of
   awk 'BEGIN { for(i=1;i<=5;i++) print "square of", i, "is",i*i; }'

**(3+4+4+4)**

**9.**

a) What is Inode and how does it map to data block of a file?
b) Describe the various Runlevels used by Linux and UNIX.
c) How are files transferred with FTP? Illustrate with a example.

**(5+5+5)**



**ROUGH WORK SPACE:**

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