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B.Tech DEGREE EXAMINATION, NOVEMBER 2023

Seventh Semester

18ECE316T - EMBEDDED LINUX

(For the candidates admitted during the academic year 2020 - 2021 & 2021 - 2022)

Note:

i. **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.
ii. **Part - B** and **Part - C** should be answered in answer booklet.

Time: 3 Hours **Max. Marks: 100**

PART - A (20 × 1 = 20 Marks) Marks BL CO

Answer **all** Questions

1. The command that creates an empty file or updates the modification timestamp of an existing file — 1 | 1 | 1
   (A) mv (B) rm
   (C) touch (D) rmm
2. [student@localhost ~]$ wc -c display.sh
   What is output of above command? — 1 | 1 | 1
   (A) Display number of bytes in display.sh file (B) Display number of characters in display.sh file
   (C) Display number of lines in display.sh file (D) Display number of words in display.sh file
3. The command "chmod 757 filename" change the permissions of a file to _____. — 1 | 1 | 1
   (A) rwxr-xr-- (B) rwxr-xrwx
   (C) r—r—rw- (D) rw-rw-rw-
4. Which one of the following does not holds good for Vi editor. — 1 | 1 | 1
   (A) vi requires no GUI (B) vi is a very stable standard
   (C) vi is always there in every Linux distribution (D) vi requires GUI
5. _____ toolchain runs on a different type of system than the target, allowing the development to be done on a fast desktop PC and then loaded onto the embedded target for testing. — 1 | 1 | 2
   (A) Native (B) Cross
   (C) Self (D) Different
6. The GNU assembler pre-processor binutils is _____. — 1 | 1 | 2
   (A) as (B) gasp
   (C) ld (D) nm
7. To make the file executable for all user, use _____ command — 1 | 1 | 2
   (A) chmod (B) dhmod
   (C) phmod (D) rhmod
8. The command that add the file to the staging area is _____. — 1 | 1 | 2
   (A) Git add (B) Git push
   (C) Git pull (D) Git commit
9. The following step is not used in building the toolchain. — 1 | 2 | 3
   (A) Kernel headers setup (B) Binary utilities setup
   (C) Bootstrap compiler setup (D) Bootloader setup

10.	System.map contains _____. (A) The uncompressed image (B) The compressed image (C) The kernel symbols (D) The kernel configuration file	1	1	3
11.	Between the two levels of abstraction, the kernel sometimes needs to understand and interact with structured data coming from or going to certain devices through, (A) Interpretation components (B) Mediator components (C) Hardware components (D) Emulator components	1	1	3
12.	The makefile configuration target that Update current config using a GTK-based front end is (A) xconfig (B) gconfig (C) oldconfig (D) menu config	1	1	3
13.	The memory consists of one or more NAND flash chips packaged with a controller which handles the complexities of flash memory and presents a hardware interface similar to that of a hard disk is _____. (A) AND flash (B) OR flash (C) NOR flash (D) Managed flash	1	1	4
14.	To isolate the user's programs from ready access to critical kernel data structures and hardware devices _____ is used. (A) Software (B) Keyboard (C) Monitor (D) Device driver	1	1	4
15.	Serial ports and keyboards are example for _____. (A) character devices (B) Block devices (C) Parallel devices (D) Ring devices	1	1	4
16.	The bootup speed of System V init program is _____. (A) Fast (B) Slow (C) Medium (D) zero	1	2	4
17.	The POSIX function to create thread is _____. (A) pthread_crown (B) pthread_create (C) pthread_convert (D) pthread_call	1	1	5
18.	Invalid memory accesses are trapped and applications alerted by _____. (A) SIGPEGV (B) SIGSEGV (C) SIGQEGV (D) SIGREGV	1	1	5
19.	Valgrind contains _____ diagnostic tool that calculates the processor cache hit rate (A) Callgrind (B) Helgrind (C) Cachegrind (D) DRD	1	1	5
20.	_____ utility is used to measure scheduling latency. (A) Etrace (B) Gtrace (C) Ftrace (D) Htrace	1	1	5

PART - B (5 × 4 = 20 Marks)

Answer **any 5** Questions

		Marks	BL	CO
21.	List the components of a command line with an example.	4	2	1
22.	Distinguish find and locate command.	4	2	1
23.	Represent the functions performed by cloning process.	4	2	2
24.	Develop an example "hello world "program for Linux using C. Also compile, link and run the program.	4	3	2
25.	Describe generic architecture of an embedded linux system.	4	1	3

		Marks	BL	CO
26.	Discuss the features of file translational layer.	4	2	4
27.	Give the significance of "PERF" profiling tool.	4	2	5

PART - C (5 × 12 = 60 Marks)

Answer **all** Questions

		Marks	BL	CO
28.	(a) i) Elaborate Wild card characters in Linux with example. (6 Marks) ii) Explain "cmp" and "diff" command with suitable example. (6 Marks)	12	3	1
	(OR)			
	(b) Describe redirection process with a suitable example.			
29.	(a) Elaborate the lifecycle of how local files are committed to the local repository and then pushed to the central repository server with neat diagrams.	12	3	2
	(OR)			
	(b) Create a shell script called "first" that looks through all the files in the current directory for the string POSIX, and then prints the names of those files to the standard output. Also make the shell script executable.			
30.	(a) Illustrate the booting process and boot-loaders setup.	12	2	3
	(OR)			
	(b) Elaborate building Linux kernel on a target system.			
31.	(a) Describe various embedded system storage options and its parameters.	12	3	4
	(OR)			
	(b) Analyze the internals and architecture of device driver with suitable example.			
32.	(a) Describe creation and termination of a new process with suitable example.	12	3	5
	(OR)			
	(b) Explain GDB debugging in detail with suitable example.			

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