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T.E. (Computer Engineering)

**EMBEDDED OPERATING SYSTEMS**

(2012 Pattern) (Semester - II)

[Max. Marks : 70]

Time : 2½ Hours]

Instructions to the candidates :

1) Answer: Q.No. 1 or Q.No. 2, Q.No. 3 or Q.No. 4, Q.No. 5 or Q.No. 6, Q.No. 7 or Q.No. 8, Q.No. 9 or Q.No. 10.

2) Neat diagrams must be drawn wherever necessary.

3) Figures to the right indicate full marks.

4) Assume suitable data, if necessary.

- Q1) a) What is priority inversion? What are the solutions available to handle the priority inversion? [6]  
b) What is Readers-Writers problem? [4]

OR

- Q2) a) Explain the RISC architectural features of ARM. [4]  
b) What are the quality points that rate a scheduling algorithm? [4]  
c) Name four Embedded Operating Systems. [2]

- Q3) a) What are the reasons for the growth and popularity of Embedded Linux? [3]

- b) Explain steps involved in compiling Linux Kernel for ARM-XXScale architecture as a target. [5]  
c) Name four executables or binaries of Embedded Linux. [2]

OR

- Q4) a) What is cross development environment for Linux? Elaborate. [5]  
b) What is Busy Box? How to configure it? Explain its usefulness in embedded systems. [5]

OR

- Q5) a) Name and explain the typical bootloader used for embedded/target board? Also mention the commands available with such a bootloader. [6]  
b) How to format and partition a USB stick? Explain the commands used. [7]  
c) How flash memory is used in embedded/target board? What are its limitations? [4]

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- Q6) a) What are the different types of device drivers? Explain depmod and rmmod. [6]  
b) How MTD utility is useful for target boards? How to enable and use MTD services? [6]  
c) What is Das U-Boot? What are U-Boot command sets? [5]

- Q7) a) What is core dump? How to debug a core dump? [7]  
b) Recognize and explain the following: [6]  
i) ps  
ii) strace  
iii) mtrac

- c) What is KGDB? [4]

OR

- Q8) a) What is a stepper motor? How to interface BBB with Stepper motor? [7]  
b) How do modern processors and compilers make it difficult to debug Linux kernel? [6]  
c) What are the challenges faced while debugging Linux application code? [4]

- Q9) a) Explain in details steps involved while porting Linux on a target board. [8]  
b) What are the scheduling policies used by Linux to schedule real time processes? [6]  
c) Explain Zygot for Embedded Android. [2]

OR

- Q10) a) What are real-time processes? Which latency periods affect their performance? [8]  
b) What is real-time scheduling in Linux? [4]  
c) Explain System Server and Activity Manager for Embedded Android. [4]

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