

# Question Paper

Exam Date & Time: 18-Apr-2018 (10:00 AM - 01:00 PM)



## MANIPAL ACADEMY OF HIGHER EDUCATION

**SCHOOL OF INFORMATION SCIENCES (SOIS)**  
**SECOND SEMESTER Master of Engineering - ME (Embedded Systems)**  
**DEGREE EXAMINATION - April 2018**  
**Wednesday, 18 April 2018**  
**Time : 10:00 am to 1:00 pm**  
**Device Drivers [ESD 604]**

**Marks: 100**

**Duration: 180 mins.**

### Answer all the questions.

- 1) Describe the structure of a linux kernel. (10)
- 2) Comment on user space and kernel space programming (10)
- 3) How can we have explicit init and cleanup functions in modules? When do we use \_\_init and \_\_exit? (10)
- 4) Comment on kmalloc and kfree. Give examples to use it. (10)
- 5) How can we debug modules using the proc file-system? Give an example. (10)
- 6) What are spin-locks? Where do we use spin locks? Distinguish between spin-locks and semaphores (10)
- 7) How can you build your own task queue inside the linux kernel? how can you insert tasks into this queue? How can you schedule this queue? (10)
- 8) How should we write an interrupt handler. Describe the usage of bottom half in interrupt handlers. (10)
- 9) How do we enable interrupt in parallel-port. Give an example. (10)
- 10) Outline the basic tasks of the read and the write methods in a device driver. Illustrate with an example. (10)

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