Total No. of Questions – [09] Total No. of Printed Pages: 2

| G.R. No. | |
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Paper Code - PM9 - 132 (ESE)

**DECEMBER 2019 / ENDSEM**

**F. Y. M. TECH. (COMPUTER ENGINEERING) (SEMESTER - I)**

**COURSE NAME: OPERATING SYSTEM DESIGN**

**COURSE CODE: CSPA11182**

**(PATTERN 2018:R1)**

Time: [3 Hour] [Max. Marks: 50]

**Instructions to candidates:**

1) **Answer Q.1, Q.2, Q.3, Q.4 OR Q.5, Q.6 OR Q.7, Q.8 OR Q.9**
2) **Figures to the right indicate full marks.**
3) **Use of scientific calculator is allowed**
4) **Use suitable data where ever required**

Q.1 a) Why can't you change the control registers in user mode? [3]

**OR**

b) Why is r0 always 0? How is this useful? [3]

**Q.2** a) What is init process? [3]

**OR**

b) Explain what process dispatching is? [3]

**Q 3** a) Explain the terms *new* and *malloc*. [2]

**OR**

b) Compare segment registers to base and limit registers? [2]

**Q 4** Suppose we have 48 bit virtual address space. Design two level paging systems for this. How big are the master page tables, the secondary page tables, and the page frames? How many pages total will there be in the logical address space, and how much memories will the page tables take for a program that used the entire address space? [14]

**OR**

**Q 5** a) What is virtualization? Explain the five stage virtualization process. [8]

b) Explain the difference between sharing the resource and multiplexing a resource? [6]

**Q 6** a) What does it mean to name a device with the file naming system? [8]

b) What are the advantages of a keyed file? [6]

**OR**

**Q 7** Suppose you wanted to write a program that could take input from one to two possible sources and count the length of the input. [14]

The two input are either:

a. A pipe or a file

b. A message queue or a file

Discuss which of the program would be easier to write

**Q 8** a) What is double buffering? Why is it useful? [8]

b) Why is it useful to be able to access memory as a device? [6]

**OR**

**Q 9** a) What do we mean by the upper and lower levels of a device driver? [8]

b) Why do SCSI device requests often have to go through two device drivers? [6]