

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI • EXAMINATION – WINTER 2013****Subject Code: 163101****Date: 09-12-2013****Subject Name: Operating System Design****Time: 02:30 pm to 05:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) (i) Define Operating System. What are the services of Operating System? **04**
(ii) Explain Interrupt and Exception. **03**
(b) What is Kernel? Explain Block Diagram of System Kernel. **07**
- Q.2** (a) Draw Complete Process State Transition Diagram and Explain. **07**
(b) Describe Structure of Disk Inode? What is the use of Inode. Explain Inode in detail. **07**
- OR**
- (b) (i) Explain File System Structure. **04**
(ii) Write Steps for Context Switch. **03**
- Q.3** (a) Explain Read() System call. **07**
(b) List out all Scenarios the kernel may follow in getblk algorithm to allocate a buffer for a disk block. Explain any two scenario in detail. **07**
- OR**
- Q.3** (a) Explain Create() System call. **07**
(b) Explain Algorithm bmap for Conversion of Byte offset to block number in file system. Give proper example. **07**
- Q.4** (a) Write syntax and purpose of mount() System call. Which are the entries, mount table Contains? Discuss two cases for crossing mount points in file path names. **07**
(b) Explain unlink() system call. When does Race Condition exist? Explain with example. **07**
- OR**
- Q.4** (a) Write syntax and use of pipe system call. Explain Unnamed Pipe System call with example. **07**
(b) What is Region? Enlist all operations that manipulate Regions. Explain Attaching Region and Loading Region with example. **07**
- Q.5** (a) Give Classification of Signals. How does kernel handle signals in OS? **07**
(b) What is Shell? Explain System Boot and Init process. **07**
- OR**
- Q.5** (a) Explain Process Scheduling in UNIX System. **07**
(b) Explain fork() System call. **07**
