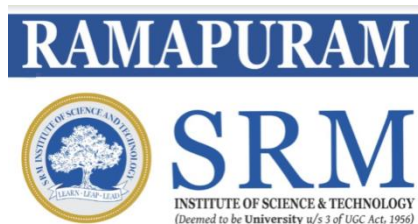


# **SRMINSTITUTE OF SCIENCE AND TECHNOLOGY**

RAMAPURAM CAMPUS, BHARATHISALAI, RAMAPURAM, CHENNAI - 600089

## **FACULTY OF ENGINEERING AND TECHNOLOGY**

### **DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**



## **QUESTIONBANK**

**DEGREE / BRANCH: B.TECH-CSE**

**IVSEMESTER**

**18CSC205J / OPERATING SYSTEMS**

**2018 Regulation**

**Academic Year 2020-2021 ODD SEMESTER**

# SRMINSTITUTE OF SCIENCE AND TECHNOLOGY

RAMAPURAM CAMPUS, BHARATHISALAI, RAMAPURAM, CHENNAI-600089

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

## QUESTION BANK

**SUBJECT : 18CSC205J/Operating Systems**

**SEM/YEAR:III/V**

### Course Outcomes

CLO-1 : Identify the need of an Operating system

CLO-2 : Know the Process management functions of an Operating system

CLO-3 : Understand the need of Memory Management functions of an Operating system

CLO-4 : Find the significance of Device management role of an Operating system

CLO-5 : Recognize the essentials of File Management part of an Operating system

CLO-6 : Gain an insight of Importance of an Operating system through practical

UNIT I			
Operating System Objectives and functions - Gaining the role of Operating systems - The evolution of operating system, Major Achievements - Understanding the evolution of Operating systems from early batch processing systems to modern complex systems - Process Concept– Processes, PCB - Understanding the Process concept and Maintenance of PCB by OS -Threads – Overview and its Benefits - Understanding the importance of threads - Process Scheduling : Scheduling Queues, Schedulers, Context switch - Understanding basics of Process Scheduling - Operations on Process – Process creation, Process termination - Understanding the system calls – fork(),wait(),exit() - Inter Process communication : Shared Memory, Message Passing ,Pipe() -Understanding the need for IPC - Process synchronization: Background, Critical section Problem - Understanding the race conditions and the need for the Process synchronization			
PART-A (Multiple Choice Questions)			
Q. No	Questions	Course Outcome	Competence BT Level
1	A process is selected from the _____ queue by the _____ scheduler, to be executed. a) blocked, short term                      b) wait, long term                      c) ready, short term	CO1	BTL1

	d) ready, long term Answer: c		
2	The switching of the CPU from one process or thread to another is called : a) process switch      b) task switch c) context switch d) All of these Answer: d	CO1	BTL1
3	Dispatch latency is : a) the speed of dispatching a process from running to the ready state b) the time of dispatching a process from running to ready state and keeping the CPU idle c) the time to stop one process and start running another one d) None of these Answer: c	CO1	BTL1
4	In Unix, Which system call creates the new process? a) fork b) create c) new d) none of the mentioned Answer:a	CO1	BTL1
5	The processes that are residing in main memory and are ready and waiting to execute are kept on a list called a) job queue    b) ready queue c) execution queue    d) process queue Answer:b	CO1	BTL1
6	The interval from the time of submission of a process to the time of completion is termed as a) waiting time      b) turnaround time    c) response time d) throughput Answer:b	CO1	BTL1
7	Which scheduling algorithm allocates the CPU first to the process that requests the CPU first? a) first-come, first-served scheduling b) shortest job scheduling c) priority scheduling d) none of the mentioned Answer:a	CO1	BTL1
8	In priority scheduling algorithm a) CPU is allocated to the process with highest priority b) CPU is allocated to the process with lowest priority c) equal priority processes can not be scheduled d) none of the mentioned Answer:a	CO1	BTL1
9	In multilevel feedback scheduling algorithm a) a process can move to a different classified ready queue b) classification of ready queue is permanent c) processes are not classified into groups d) none of the mentioned Answer:a	CO1	BTL1

<b>10</b>	CPU scheduling is the basis of _____. a) multiprocessor systems    b) multiprogramming operating systems c) larger memory sized systems    d) None of these Answer: b	CO1	BTL1
<b>11</b>	With multiprogramming, _____ is used productively. a) time b) space    c) money    d) All of these Answer: a	CO1	BTL1
<b>12</b>	The two steps of a process execution are : (choose two) a) I/O Burst    b) CPU Burst    c) Memory Burst    d) OS Burst Answer: a and b	CO1	BTL1
<b>13</b>	In the following cases non – preemptive scheduling occurs : (Choose two) a) When a process switches from the running state to the ready state b) When a process goes from the running state to the waiting state c) When a process switches from the waiting state to the ready state d) When a process terminates Answer: b and d	CO1	BTL1
<b>14</b>	In a memory mapped input/output : a) the CPU uses polling to watch the control bit constantly, looping to see if device is ready b) the CPU writes one data byte to the data register and sets a bit in control register to show that a byte is available c) the CPU receives an interrupt when the device is ready for the next byte d) the CPU runs a user written code and does accordingly Answer: b	CO1	BTL1
<b>15</b>	In a programmed input/output(PIO) : a) the CPU uses polling to watch the control bit constantly, looping to see if device is ready b) the CPU writes one data byte to the data register and sets a bit in control register to show that a byte is available c) the CPU receives an interrupt when the device is ready for the next byte d) the CPU runs a user written code and does accordingly Answer: a	CO1	BTL1
<b>16</b>	In an interrupt driven input/output : a) the CPU uses polling to watch the control bit constantly, looping to see if device is ready b) the CPU writes one data byte to the data register and sets a bit in control register to show that a byte is available c) the CPU receives an interrupt when the device is ready for the next byte d) the CPU runs a user written code and does accordingly Answer: c	CO1	BTL1
<b>17</b>	Which one of the following cannot be scheduled by the kernel? a) kernel level thread b) user level thread c) process d) none of the mentioned	CO1	BTL1

	Answer:b.		
<b>18</b>	<p>The objective of multi-programming is to : (choose two)</p> <p>a) Have some process running at all times</p> <p>b) Have multiple programs waiting in a queue ready to run</p> <p>c) To minimize CPU utilization</p> <p>d) To maximize CPU utilization</p> <p>Answer: a and d</p>	CO1	BTL1
<b>19</b>	<p>Which of the following do not belong to queues for processes ?</p> <p>a) Job Queue   b) PCB queue   c) Device Queue      d) Ready Queue</p> <p>Answer: b</p>	CO1	BTL1
<b>20</b>	<p>When the process issues an I/O request :</p> <p>a) It is placed in an I/O queue</p> <p>b) It is placed in a waiting queue</p> <p>c) It is placed in the ready queue</p> <p>d) It is placed in the Job queue</p> <p>Answer: a</p>	CO1	BTL1
<b>21</b>	<p>What is a trap/exception ?</p> <p>a) hardware generated interrupt caused by an error</p> <p>b) software generated interrupt caused by an error</p> <p>c) user generated interrupt caused by an error</p> <p>d) None of these</p> <p>Answer: b</p>	CO1	BTL1
<b>22</b>	<p>What is an ISR ?</p> <p>a) Information Service Request</p> <p>b) Interrupt Service Request</p> <p>c) Interrupt Service Routine</p> <p>d) Information Service Routine</p> <p>Answer: c</p>	CO1	BTL1
<b>23</b>	<p>Which facility dynamically adds probes to a running system, both in user processes and in the kernel?</p> <p>a) Dtrace   b) Dlocate   c) Dmap   d) Dadd</p> <p>Answer:a</p>	CO1	BTL1
<b>24</b>	<p>Which one of the following is not a real time operating system?</p> <p>a) VxWorks   b) Windows CE   c) RTLinux   d) Palm OS</p> <p>Answer:d</p>	CO1	BTL1
<b>25</b>	<p>The OS X has</p> <p>a) monolithic kernel</p> <p>b) hybrid kernel</p> <p>c) microkernel</p> <p>d) monolithic kernel with modules</p> <p>Answer:b</p>	CO1	BTL1
<b>PART B (4 Marks)</b>			
<b>1</b>	<p>Illustrate the factors that usually determine the degree of Multi Programming</p> <p>The number of Programs residing in Primary memory.</p>	CO1	BTL2

	<p>Passing of the control of the CPU rapidly between these programs.</p> <p>Protection of user process from one another.</p>		
<b>2</b>	<p>What are the Benefits of Multi Programming?</p> <p>Improves the System Performance.</p> <p>Allows Time Sharing.</p> <p>Supports multiple simultaneous interactive users</p>	CO1	BTL1
<b>3</b>	<p>What are the types of memory?</p> <p>i) Internal Processor Memory</p> <p>ii) Primary or Main Memory</p> <p>iii) Secondary/Auxiliary/Backing Store are the types of memory.</p>	CO1	BTL1
<b>4</b>	<p>What is Memory?</p> <p>A Memory is the place for storage of data &amp; information (or) it can be Defined as the work area of the computer where the microprocessor finds its data &amp; instructions while the computer is working.</p>	CO1	BTL1
<b>5</b>	<p>Explain Off-Line Processing and On-Line Processing?</p> <p>Rather than the CPU reading directly from the input, copying the content into CPU AND PROCESS.</p> <p>Transferring the contents from the input directly on to the CPU and transferring the Processed contents onto the printer is On-Line</p>	CO1	BTL2
<b>6</b>	<p>Give examples of Real Time Application</p> <p>Ex's are</p> <p>Flight Control</p> <p>Real Time Simulation</p> <p>Military Application</p> <p>Petroleum Refinery</p> <p>Process Control etc.</p>	CO1	BTL1
<b>7</b>	<p>Define Real Time Systems .</p> <p>It is another form of OS which are used in environments where a large number of events mostly external to the computer system must be accepted and processed in a short time or within certain deadlines.</p>	CO1	BTL1
<b>8</b>	<p>What is Time Sharing?</p> <p>Time Sharing ( or Multi tasking) is a logical extension of Multi Programming. It is a form of Multi Programmed OS which operates in an interactive mode with Quick response time</p>	CO1	BTL1
<b>9</b>	<p>What is Asymmetric Multi Processing?</p> <p>It is one in which each processor is assigned a specific task. A Master Processor controls the system and the other Processors are allocated work by the Master Processor.</p>	CO1	BTL1
<b>10</b>	<p>What is the advantage of Multi Processing Systems?</p> <p>A Multi Processing System is one in which there are more than one CPU, interleaved with each other. So it helps in improving the amount of work done.</p>	CO1	BTL1

11	<p>How does a process differ from a job?</p> <p>A process is an active entity with a program counter specifying the next instructions to execute and a set to associated resources, whereas a batchSystem executes jobs.(which is a collection of processes).</p>	CO1	BTL1
12	<p>What are the information contained in a PCB?</p> <p>A PCB contains pieces of information associated with a specific process,</p> <p>Namely</p> <p>Identifier</p> <p>process state</p> <p>program counter</p> <p>Context data</p> <p>CPU scheduling information</p> <p>Memory management information</p> <p>Accounting information</p> <p>I/O status information</p>	CO1	BTL1
13	<p>What are the operations on process?</p> <p>a.create a process</p> <p>b.destroy a process</p> <p>c.suspend a process</p> <p>d.resume a process</p> <p>e.change the priority of a process</p> <p>f.block a process</p> <p>g.wakeup a process</p> <p>h.dispatch a process</p> <p>i.enable a process to communicate with another</p>	CO1	BTL1
14	<p>What is the function of the ready queue?</p> <p>The ready queue stores threads that aren't currently running, that are capable of resuming execution. There may be several ready queues for each priority level, depending on the scheduling algorithm. The scheduler consults the ready queue to determine which process/thread to run next. As the name suggests, the ready queue is a <i>queue</i>, in order to schedule fairly.</p>	CO1	BTL1
15	<p>What is the relationship between threads and processes?</p> <p>A processes is a container for threads, which has it's own memory space. A process may contain one or more threads, which share that memory space, all of the file descriptors and other attributes. The threads are the units of execution within the process, they posess a register set, stack, program counter, and scheduling attributes - <i>per thread</i>.</p>	CO1	BTL1
16	<p>What is the function of a process control block?.</p> <p>A (PCB) contains many pieces of information associated with a specific</p> <p>Process. It serves as the repository for any information that may vary</p> <p>From process to process.</p>	CO1	BTL1

17	<p>What are the various process states?</p> <p>The various process states are</p> <ol style="list-style-type: none"> <li>New</li> <li>Ready</li> <li>Running</li> <li>Blocked</li> <li>Exit.</li> </ol>	CO1	BTL1								
18	<p>How does a process differ from a job?</p> <p>A process is an active entity with a program counter specifying the next instructions to execute and a set to associated resources, whereas a batchSystem executes jobs.(which is a collection of processes</p>	CO1	BTL1								
19	<p>What are the main functions of the kernel?</p> <p>To provide mechanism for creation and deletion of processes inter process communication synchronization of processes.</p>	CO1	BTL1								
20	<p>Write the functions of an OS .</p> <ol style="list-style-type: none"> <li>Memory Management.</li> <li>Processor management.</li> <li>Interrupt Handling.</li> <li>Accounting.</li> <li>Automatic job sequencing.</li> <li>Management and control of I/O devices</li> </ol>	CO1	BTL1								
PART C (12 Marks)											
1	<p>Explain the following</p> <ol style="list-style-type: none"> <li>The basic elements of a computer system</li> <li>Processor register</li> </ol>	CO1	BTL2								
2	<p>Explain the essential properties of the following operating systems.</p> <table> <tr> <td>a)Batch</td> <td>b)Interactive</td> </tr> <tr> <td>c)Time sharing</td> <td>d)Real Time</td> </tr> <tr> <td>e)Network</td> <td>f)parallel</td> </tr> <tr> <td>g)Distributed</td> <td>h)clustered</td> </tr> </table>	a)Batch	b)Interactive	c)Time sharing	d)Real Time	e)Network	f)parallel	g)Distributed	h)clustered	CO1	BTL2
a)Batch	b)Interactive										
c)Time sharing	d)Real Time										
e)Network	f)parallel										
g)Distributed	h)clustered										
3	<p>Explain the following</p> <ol style="list-style-type: none"> <li>OS control structures</li> <li>Process control structures</li> </ol>	CO1	BTL2								
4	<ol style="list-style-type: none"> <li>Explain in detail the various reasons involved in process creation and termination.</li> <li>Compare mode switching and process switching.</li> </ol>	CO1	BTL2								
5	Explain in detail the single thread and multithread process model with diagrams	CO1	BTL2								
6	Compare user level and kernel level threads with necessary diagrams.	CO1	BTL1								
7	Explain how micro kernel architecture differs from layered kernel architecture.	CO1	BTL2								
8	With neat diagram explain the five states involved in process model.	CO1	BTL1								



<b>9</b>	Explain in detail i)how interrupts are processed. ii)how multiple interrupts are handled.	CO1	BTL2
<b>10</b>	Explain the different I/O communication techniques	CO1	BTL2

**Note:**

**1. BT Level** – Blooms Taxonomy Level

**2. CO – Course Outcomes**

BTL1 –Remember   BTL2 – Understand   BTL3 – Apply   BTL4 – Analyze   BTL5 – Evaluate  
BTL6 – Create