### MCQ’s on Unit-IV: Challenges in Multicore Programming

<table>
<thead>
<tr>
<th>Sr No</th>
<th>Question</th>
<th>Answers</th>
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<tbody>
<tr>
<td>1</td>
<td>Sequential Model of programming is a kind of model in which _________</td>
<td>c</td>
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<td></td>
<td>I. One task is executed one at a time</td>
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<td></td>
<td>II. There can be multiple tasks for execution</td>
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<td></td>
<td>a) Only I is true</td>
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<td>b) Only II is true</td>
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<td></td>
<td>c) Both I &amp; II is true</td>
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<td></td>
<td>d) Neither I nor II is true</td>
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<td>2</td>
<td>In ______ model the computer programs are set up in almost story form</td>
<td>b</td>
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<td></td>
<td>a) Parallel processing model</td>
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<td></td>
<td>b) Sequential processing model</td>
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<td>c) Distributed processing model</td>
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<td></td>
<td>d) None of these</td>
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<td>3</td>
<td>The concurrency challenge faced by the developer is___________</td>
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<td></td>
<td>a) Identifying the relationship between concurrently executing task</td>
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<td>b) Communicating between two or more task that are executing in parallel</td>
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<td>c) Decomposing software into instructions or set of task that are executed</td>
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<td>simultaneously</td>
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<td>d) All of these</td>
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<td>4</td>
<td>Concurrent task execute in________</td>
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<td></td>
<td>a) Single processing environment</td>
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<td>b) Multiprocessing environment</td>
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<td>c) Both a and b</td>
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<td>d) None of these</td>
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<td>5</td>
<td>For executing multiple tasks the context switching is more prominently used</td>
<td>a</td>
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<td>in________</td>
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<td>d) None of these</td>
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<td>6</td>
<td>In the following software development methodology there is interaction with</td>
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<td>the client at each phase</td>
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<td></td>
<td>a) Waterfall</td>
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<td></td>
<td>b) Structured</td>
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<td></td>
<td>c) Rapid prototyping</td>
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<td></td>
<td>d) None of these</td>
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7. In the following software development methodology each phase must be completed entirely before entering to the next phase.

a) Waterfall  
b) Structured  
c) Rapid prototyping  
d) None of these  

8. In the following software development methodology top down approach to software development is adopted.

a) Waterfall  
b) Structured  
c) Rapid prototyping  
d) None of these  

9. In the following software development methodology risk analysis and verification is of prime importance.

a) Waterfall  
b) Structured  
c) Rapid prototyping  
d) Spiral  

10. The hardware mechanism that enables a device to notify the CPU is called __________.

a) polling  
b) system call  
c) interrupt  
d) none of these  

11. Process is __________.

a) Program in execution  
b) an instance of program running on a computer  
c) the entity that can be assigned to or can be executed  
d) all of the above  

12. In software decomposition technique WBS means __________.

a) Work Breakdown Structure  
b) Work Binding Structure  
c) Work Breaking System  
d) None of these
13 In software decomposition technique AA means c
   a) Algorithmic Analysis  
b) Architectural Analysis  
c) Architectural Artifacts  
d) Analytical Artifacts

14 WBS typically reflects ______ decomposition while AA reflects ______ decomposition d
   a) object oriented, procedural  
b) procedural, object oriented  
c) procedural, algorithm  
d) object oriented, distributed

15 Which of the following is said to be object oriented programming paradigm? d
   a) C++  
b) Eiffel  
c) SmallTalk  
d) All of the above

16 Interprocess Communication (IPC) ______ b
   a) allows processes to communicate and synchronize their action using same address space  
b) allows processes to communicate and synchronize their actions using the separate address space  
c) allows the processes to only synchronize their action without communication  
d) none of these

17 An IPC provides the facility of ______ b
   a) read and write messages  
b) send and receive messages  
c) delete and modify messages  
d) none of these

18 Interprocess communication is ______ b
   a) communication within the processes  
b) communication between two processes  
c) communication between two threads of the same process  
d) none of these

19 Inter-process communication can be done through________ c
   a) System calls  
b) Mails  
c) Messages  
d) None of these
20. Message that can be sent by a process__________  c
   a) must be of fixed size
   b) must be of variable size
   c) can be of fixed or variable size
   d) none of these

21. The link between two processes A and B to send and receive messages is called______.  b
   a) message link
   b) communication link
   c) data link
   d) all of the above

22. Which of the following is the POSIX mechanism used for inter-process communication?  d
   a) POSIX message queues
   b) shared memory
   c) pipes
   d) all of these

23. ____ is a bidirectional communication link that utilizes port and IP address.  c
   a) semaphore
   b) shared memory
   c) sockets
   d) message queue

24. Among the following which is the real challenge of IPC mechanism?  d
   a) identifying the source and destination processes for communication
   b) releasing and locking up the proper data source
   c) having proper file permission for use
   d) all of these

25. What do you understand by the term reusable resource?  a
   a) the resource that can be used by one process at a time and is not depleted by that use
   b) the resource that can be shared by multiple threads
   c) the resource that can be used by more than one process at a time
   d) none of these

26. Following is real challenge in concurrent access to data or resource.  d
   a) data race
   b) deadlock
   c) indefinite postponement
   d) all of these

27. Data race condition is a condition in which______.  b
   a) one chunk of data is immediately followed by another chunk of data
   b) when two or more tasks are attempting to update the same data source at the same time.
   c) one resource is used by two or more processes immediately one after the other
   d) none of these
28 A set of processes is deadlock______.  c
   a) when each process gets terminated
   b) when all the processes are trying to kill each other
   c) when each process is blocked forever due to unavailability of resources
   d) all of these

29 Which of the following condition is required for deadlock to be possible?  d
   a) mutule exclusion
   b) resource can not be available as some process is already holding it
   c) process are waiting for some other resources
   d) all of these

30 Operating system checks for deadlock condition______.  c
   a) every time a resource request is made
   b) at fixed time interval
   c) both a and b)
   d) none of these

31 To avoid deadlock______.  a
   a) there must be fixed and adequate number of resource available
   b) allocation of resource must be done only once
   c) all the deadlock processes must be aborted
   d) none of these

32 Records, files, shared memory, program variables are called_____.  a
   a) software resources
   b) hardware resources
   c) hybrid resource
   d) can not be the resource

33 Printers, modems and multimedia devices are called______.  b
   a) software resources
   b) hardware resources
   c) hybrid resource
   d) can not be the resource

34 Which of the following is a synchronizing relationship_______.  c
   a) start to start
   b) finish to start
   c) both a and b)
   d) none of these

35 Which of the following is a synchronizing relationship_______.  c
   a) start to start
   b) finish to start
   c) both a and b)
   d) none of these

36 The synchronization relationship in which task A can not be start until task B called_______.  a
   a) start to start
   b) finish to start
   c) start to finish
   d) can not be the resource
d) finish to finish

37. The synchronization relationship in which task B can not start until Task A finishes is called _______.
   a) start to start
   b) finish to start c) start to finish
d) finish to finish

38. The synchronization relationship in which task A can not start until Task B finishes is called _______.
   a) start to start
   b) finish to start c) start to finish
d) finish to finish

39. The synchronization relationship in which task A can finish until Task B finishes is called _______.
   a) start to start
   b) finish to start c) start to finish
d) finish to finish

40. The UML dig that represent the run time configuration of processing node hardware and software component in system is called_______.
   a) component diagram
   b) deployment diagram
   c) class diagram d) none of these

41. The behavioral modeling of multiprocessing components can be represented by following UML diagram
   a) component diagram
   b) deployment diagram
   c) state diagram d) none of these

42. The POSIX stand for ________.
   a) post operating system interface extension
   b) portable operating system inter process communication
c) programmable operating system interaction
d) portable operating system interface

43. Operating system means--------
   a) the set of programs that allows the programmer to write his source code.
b) the set of program that control the working of computer.
c) the set of program that help in executing an application program.
d) the set of program that help in finding the error in an application program.

44. The Operating system role is demonstrated by-------
a) Software interface  
b) Resource management  
c) Both a and b  
d) None of these

45. During the interaction of developers with operating system, the actual operating calls and IPC are at--------
a) level 1 
b) level 2 
c) level 3 
d) level 4

46. During the interaction of developers with operating system, the application framework for parallel programming is at--------
a) level 1 
b) level 2 
c) level 3 
d) level 4

47. During the interaction of developers with operating system, the class libraries and OO components for multiprocessing are at--------
a) level 1 
b) level 2 
c) level 3 
d) level 4

48. During the interaction of developers with operating system, the posix spawn and thread functionalities at--------
a) level 1 
b) level 2 
c) level 3 
d) level 4

49. The Operating system core services include--------
a) process and memory management
b) I/O management
  c) file system management
  d) all of these

50 Process management function of operating system kernel includes-------- d
  a) process creation and termination
  b) process scheduling and dispatching
  c) process switching
  d) all of these

51 Standard set of functions through which interacts with kernel is defined by------- c
  a) kernel code
  b) compiler
  c) system libraries
  d) none of these

52 Using C++ the task can be implemented using------- c
  a) Process
  b) thread
  c) Combination of process and thread
  d) all of these

53 For creating a new operating system process-------- a
  a) pxis_spawn()
  b) pxis_create()
  c) create_process
  d) new()

54 For establishing the connection between a process and a message queue, following
  function is used-------- b
  a) mq_notify()
  b)mq_open()
  c)mq_create()
  d)none of these

55 For obtaining the status information and attributes of message queue, following
  function is used-------- c
  a) mq_notify() b)
  mq_setattr() c)
  mq_getattr() d)
  mq_receive()
56. Operating system API is used to associate software task with thread:
   a) create_thread()
   b) attach_thread()
   c) pthread_create()
   d) all of these

57. For controlling each process:
   a) scheduling policy is used
   b) priority for each process is useful
   c) both a and b
   d) none of these

58. Select the scheduling policy supported by POSIX standard:
   a) SCHED_FIFO
   b) SCHED_RR
   c) SCHED_SPORADIC
   d) all of these

59. Child processes obtained from:
   a) posix_spawn()
   b) pthread_create()
   c) create()
   d) both a and b

60. The process that calls posix_spawn() is called:
   a) parent process
   b) child process
   c) can be parent or can be child
   d) neither parent nor child

61. Correct instruction for execution of the threaded test.cpp program is:
   a) g++ -o output test.cpp -thread
   b) g++ -o output test.cpp -lthread
   c) g++ -o output test.cpp -lpthread
   d) none of these

62. Which feature of C++ help to adopt declarative approach to parallel programming?
   a) Abstraction
   b) Generic programming or use of templates
   c) Inheritance
   d) Polymorphism

63. Interface classes:
   a) makes the data accessible to any outside class
   b) transfer the data from one class to another
   c) provide wrapper for function, data or other classes
   d) none of these

64. Interface class is also called as:
   a) derived class
   b) adaptor class
   c) base class
d) none of these

65 Interface classes-------
   a) provide wrapper for function data and other classes
   b) if used along with posix, then cross platform components can be built
   c) can be used to add own building blocks to high level libraries.
   d) all of these

66 A process is
   a) same as program
   b) normally built with computer hardware
   c) a sequential program in execution
   d) none of these

67 The CMP stands for
   a) compact multiprocessor
   b) compact multi-programmer
   c) chip multiprocessor
   d) none of these

68 The aim of multiprogramming is to
   a) minimize CPU utilization
   b) maximize CPU utilization
   c) to have multiple processes in ready state
   d) none of these

69 In operating system, each process has its own________
   a) address space
   b) open files
   c) signal handler and global variables
   d) all of these

70 For creating the process _______ function is used.
   a) fork-exec()
   b) new
   c) create
   d) all of these

71 If a child process is created using posix_spwan() then child inherits_____ from
   parent process
   a) scheduling policy
   b) process group id
   c) file descriptor
   d) all of these

72 On success, the posix_spwan() function returns______.
   a) 0
   b) -1
   c) 1
   d) none of these

73 On success, the posix_spwan() function contains pid which is actually________.
   a) pid of parent process
   b) pid of child process
c) pid of the program in which posix_spawn() is called
d) none of these

74. The processes that execute system code are called________.  
   a) user processes  
   b) kernel processes  
   c) parent processes  
   d) child processes

75. The processes that execute their own code or sometimes make system function call 
   are called________.  
   a) user processes  
   b) kernel processes  
   c) parent processes  
   d) child processes

76. The processes that perform housekeeping tasks such as allocating memory, checking 
   device and so on are called________.  
   a) user processes  
   b) kernel processes  
   c) parent processes  
   d) child processes

77. Process control block is_______.  
   a) a block in memory  
   b) process type variable  
   c) data structure  
   d) secondary storage

78. A process stack does not contain_________.  
   a) local variables  
   b) function parameters  
   c) return addresses  
   d) PID of child process

79. The address of next instruction to be executed by current process is provided 
   by_______.  
   a) CPU register  
   b) program stack  
   c) program counter  
   d) none of these

80. The program code lies in_______.  
   a) stack segment  
   b) data segment  
   c) text segment  
   d) process control block

81. The stack segment grows_______.  
   a) downward towards the data segment  
   b) downward towards the text segment  
   c) upward towards the pcb  
   d) can not grow, it has fixed size
The process image is formed using __________.
d) PCB and stack segment
b) data segment c) text
segment
d) all of these

The PCB stands for ________.
a) process control block
b) program control block
c) process communication block
d) none of these

Kernel keeps track of state of each task by using the data structure called ________.
a) process control block
b) user control block
c) stack d) queue

The information such as current state, priority of process, pointers to parent/child
PCB is stored in __________ section of PCB.
a) process identification
b) process state information
c) process control information
d) none of these

The information such as content of user, control and status register, stack pointers is
stored in ________ section of PCB.
a) process identification
b) process state information
c) process control information
d) none of these

The information such as process id and parent process id is stored in ________
section of PCB.
a) process identification
b) process state information
c) process control information
d) none of these

The typical element of process image are ________.
b) 1. system data  2. user data
3. user program 4. system stack
a) 1,2,3 b) 2,3,4 c) 1,2,4
d) all of these

The process control block does not contain ________.
d) process id
b) process state information
c) process control information
d) bootstrap program

90 The entry of all PCB's of current processes is in __________.  
a) process table  
b) process register  
c) secondary memory  
d) none of these

91 The degree of multiprogramming is----  
a) the number of processes in ready state  
b) the number of processes in memory  
c) the number of processes executing per unit time  
d) none of these

92 A single thread allows a process to performs-----  
a) one task at a time  
b) multiple task at a time  
c) only system call task  
d) none of these

93 The number of processes completed per unit time is known as------  
a) output  
b) capacity  
c) execution  
d) throughout

94 The child process completes execution but the parent keeps executing, then the child process is in following state-----  
a) dead  
b) orphan  
c) zombie  
d) running

95 Process state is a part of----  
a) process control block  
b) file allocation table  
c) inode  
d) none of these

96 Virtual memory is------  
a) large main memory  
b) large secondary memory  
c) an illusion of large main memory  
d) none of these

97 The sleeping is a state which------  
a) can not continue to execute as it is waiting for an event to occur  
b) present in ready queue  
c) is signaled as stop  
d) none of these

98 Process in ready queue are----  
a) running processes
b) runnable processes
c) zombied processes
d) none of these

99. The state of the process after which it encounters wait on event or I/O is——-  
a) running
b) ready
c) sleeping
d) stopped

100. Which of the following transition is not possible——-  
a) stopped to ready
b) ready to running
c) running to sleeping
d) sleeping to running

101. Switching the CPU to another process requires to save state of the old process and loading new process state is called as——-  
a) time sharing
b) process blocking
c) context switching
d) none of these

102. Performs the job of allocating a process to the processor——-  
a) long term scheduler
b) short term scheduler
c) dispatcher
d) none of these

103. If the primary requirement is to provide good response time and share the resources equitably then the scheduling algorithm that can be applied is——-  
a) FIFO
b) round robin
c) priority based preemptive scheduling
d) none of these

104. With——-more than one process can be running simultaneously each on a different processor whereas with only one process can execute at a time  
a) multiprocessing, multiprogramming
b) multiprogramming, uniprogramming
c) uniprogramming, multiprogramming
d) none of these

105. In UNIX, following is an utility command for displaying the currently executing processes——-  
a) ls
b) ps
c) nice
d) man

106. Using ps utility for full listing of the processes following command is issued——-  
a) ls -f
b) ls -full
c) ls -j

107 Process information in the current shell can be obtained by using------
   a) kill
   b) ls
   c) bg
   d) none of this

108 Context switch occurs when------
   a) process is preempted
   b) process voluntarily gives up the processor
   c) process makes an I/O request or process switches from user mode to kernel mode
   d) in all of the above cases

109 Context switch changes the process mode from------
   a) user mode to kernel mode
   b) kernel mode to user mode
   c) kernel mode to kernel process
   d) both a and b

110 Each process is identified by------
   a) PCB
   b) process identifier
   c) device queue
   d) process stack

111 The return value for the fork system call is------for the child process and------for the parent process
   a) non-zero integer, zero
   b) zero, negative integer
   c) zero, non-zero integer
   d) none of these

112 A parent process calling------system call will be suspended until its children processes terminate
   a) Fork
   b) Wait
   c) Exec
   d) Exit

113 Which of the following system call does not return control to the calling point on termination?
   a) Fork
   b) Exec
   c) both a and b
   d) none of these

114 Which of the following system calls transforms executable binary file into a process?
   a) Fork
   b) Exec
   c) ioctl
d) none of these

115 Following is a function that returns two values if it succeeds------ a
   a) Fork
   b) Exec
   c) ioctl
   d) none of these

116 To simulate the command system, which of the following system calls are used? d
   a) Fork
   b) Exec
   c) Wait
   d) all of these