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| FunctionalUnitsandBasicOperationalConcepts-LanguageofaComputerOperationsandOperands-InstructionRepresentation-LogicalOperationsanddecisionmaking-MIPSAddressing-BusStructure-Bus Operation | | |
| **PART-A (Multiple Choice Questions)** | | |
| **Q. No** | **Questions** | **Course Outcome** | **Competence BT Level** |
| 1 | Parallelism representation is critical to the success of ----------------------<br>a)High-performance                                         computing<br>b)Low-performance                                     computing<br>c)Scaling<br>d)Vectorization | CLO4 | BT1 |
| 2 | Parallel programming through a combination of -----------and -----------(,L1)<br><br>a.Patterns, examples<br><br>b.Algorithms , flowcharts<br><br>c.Models , methods<br><br>d.Classes ,objects | CLO4 | BT1 |
| 3 | What is multithreaded programming? (CLO-4,L1)<br><br>a) It's a process in which two different processes run simultaneously<br>b) It's a process in which two or more parts of same process run simultaneously<br>c) It's a process in which many different process are able to access same information<br>d) It's a process in which a single process can access information from many sources | CLO-4 | BT1 |
| 4 | Which of these are types of multitasking? (CLO-4,L2)<br><br>a) Process based<br>b) Thread based<br>**c) Process and Thread based**<br>d) Task based | CLO-4 | BT2 |
| 5 | What will happen if two thread of the same priority are called to be processed simultaneously? (CLO-4,L2)<br><br>a) Anyone will be executed first lexographically<br>b) Both of them will be executed simultaneously<br>c) None of them will be executed<br>**d) It is dependent on the operating system** | CLO-4 | BT2 |
| 6 | Which of these statements is incorrect?<br><br>a) By multithreading CPU idle time is minimized, and we can take maximum use of it<br><br>b) By multitasking CPU idle time is minimized, and we can take maximum use of it<br>c) Two thread in Java can have the same priority<br>d) A thread can exist only in two states, running and blocked | CLO-4 | BT2 |

| 7 | Identify the technique that allows more than one program to be ready for execution and provides the ability to switch from one process to another.<br><br>a) multitasking<br>b) multiprocessing<br>c) multitasking<br>d) multiprogramming | CLO-4 | BT2 |
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| 8 | The technique that increases the system's productivity.<br><br>a) multiprogramming<br><br>b) multitasking<br><br>c) multiprocessing<br><br>d) single-programming | CLO-4 | BT1 |
| 9 | _____is a property which more than one operation can be run simultaneously but it doesn't mean it will be. (<br><br>a. Concurrency<br><br>b.Semaphore<br><br>c.Mutual exclusion<br><br>d.parallel process | CLO-4 | BT1 |
| 10 | _____ is a light-weight cooperatively-scheduled execution unit.<br><br>a. gevent.Greenlet<br>b. gevent.spawn()<br>c.gevent.spawn_later()<br>d.gevent.spawn_raw() | CLO-4 | BT3 |
| 11 | Which keyword is used to define methods in Python?<br><br>(a) function<br>(b) def<br>(c) method<br>(d) class | CLO-4 | BT2 |
| 12 | Which one of the following options is CORRECT given three positive integers x, y and z, and a predicate?<br>$P(x) = \neg(x=1) \wedge \forall y(\exists z(x=y*z) \Rightarrow (y=x) \vee (y=1))$<br><br>**a) P(x) being true means that x is a prime number**<br>b) P(x) being true means that x is a number other than 1<br>c) P(x) is always true irrespective of the value of x<br>d) P(x) being true means that x has exactly two factors other than 1 and x | CLO-4 | BT3 |
| 13 | Suppose the predicate F(x, y, t) is used to represent the statement that person x can fool person y at time t. which one of the statements below expresses best the meaning of the formula $\forall x \exists y \exists t(\neg F(x, y, t))$?<br><br>(a) Everyone can fool some person at some time<br>(b) No one can fool everyone all the time<br>(c) Everyone cannot fool some person all the time<br>(d) No one can fool some person at some time | CLO-4 | BT3 |

| 14 | Which one of the following is the most appropriate logical formula to represent the statement? "Gold and silver ornaments are precious". | CLO-4 | BT3 |
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| | The following notations are used:<br>G(x): x is a gold ornament<br>S(x): x is a silver ornament<br>P(x): x is precious<br>(a) $\forall x(P(x)\rightarrow(G(x)\wedge S(x)))$<br>(b) $\forall x((G(x)\wedge S(x))\rightarrow P(x))$<br>(c) $\exists x((G(x)\wedge S(x))\rightarrow P(x)$<br>(d) $\forall x((G(x)\vee S(x))\rightarrow P(x))$ | | |
| 15 | Which one of the first order predicate calculus statements given below correctly express the following English statement?<br><br>Tigers and lions attack if they are hungry or threatened.<br><br>(A) $\forall x\left[(tiger(x)\wedge lion(x))\rightarrow\{(hungry(x)\vee threatened(x))\rightarrow attacks(x)\}\right]$<br><br>(B) $\forall x\left[(tiger(x)\vee lion(x))\rightarrow\{(hungry(x)\vee threatened(x))\wedge attacks(x)\}\right]$<br><br>(C) $\forall x\left[(tiger(x)\vee lion(x))\rightarrow\{attacks(x)\rightarrow(hungry(x)\vee threatened(x))\}\right]$<br><br>(D) $\forall x\left[(tiger(x)\vee lion(x))\rightarrow\{(hungry(x)\vee threatened(x))\rightarrow attacks(x)\}\right]$ | CLO-4 | BT3 |
| 16 | What is the correct translation of the following statement into mathematical logic? "Some real numbers are rational"<br><br>(A) $\exists x\ (real(x)\vee rational(x))$<br>(B) $\forall x\ (real(x)\rightarrow rational(x))$<br>(C) $\exists x\ (real(x)\wedge rational(x))$<br>(D) $\exists x\ (rational(x)\rightarrow real(x))$ | CLO-4 | BT3 |
| 17 | What is the first order predicate calculus statement equivalent to the following? Every teacher is liked by some student<br><br>(A) $\forall$(x) [teacher (x) → $\exists$ (y) [student (y) → likes (y, x)]]<br>(B) $\forall$ (x) [teacher (x) → $\exists$ (y) [student (y) ^ likes (y, x)]]<br>(C) $\exists$ (y) $\forall$ (x) [teacher (x) → [student (y) ^ likes (y, x)]]<br>(D) $\forall$ (x) [teacher (x) ^ $\exists$ (y) [student (y) → likes (y, x)]] | CLO-4 | BT3 |
| 18 | Which of the above two are equivalent?<br><br>(A) I and III<br>(B) I and IV<br>(C) II and III<br>(D) II and IV | CLO-4 | BT3 |
| 19 | _____is a builtin python module where all possible types are defined. .(<br><br>(a) overload<br>b)typing<br>c)function<br>d)literal<br>Ans: b | CLO-4 | BT2 |
| 20 | _____type represents a specific value of the specific type.<br><br>a) overload<br>b) typing | CLO-4 | BT1 |

| | c) literal<br>d) override<br>Ans: c | | |
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| 21 | _____ is required to define multiple function declarations with different input types and results.<br><br>a) overload<br>b) typing<br>c) literal<br>d) multiple | CLO-4 | BT1 |
| 22 | Which among the following is not Pure Function.<br>a) strlen()<br>b) pow()<br>c) sqrt()<br>d) printf() | CLO-4 | BT1 |
| 23 | Which among the following is not Impure Function.<br>a) strcpy()<br>b) printf()<br>c) rand()<br>d) time() | CLO-4 | BT1 |
| 24 | Which among the following is not an mutable data type?<br>a) List<br>b) bool<br>c) dictionary<br>d) set | CLO-4 | BT2 |
| 25 | Which among the following is not an immutable data type?<br>a) List<br>b) bool<br>c) string<br>d) tuple | CLO-4 | BT2 |
| **PART B (4 Marks)** | | | |
| 1 | State parallel programming paradigm. | CLO-4 | BT1 |
| 2 | Differentiate parallel programming with functional programming. | CLO-4 | BT2 |
| 3 | Explain about Multithreading. | CLO-4 | BT1 |
| 4 | Compare multiprocessing and multitasking. | CLO-4 | BT2 |
| 5 | Relate Serial processing concepts in Python. | CLO-4 | BT3 |
| 6 | Differentiate Serial Processing and Parallel Processing. | CLO-4 | BT3 |
| 7 | Demonstrate Multiprocessing module in Python. | CLO-4 | BT3 |
| 8 | Describe briefly about Process class. | CLO-4 | BT2 |
| **PART C (12 Marks)** | | | |
| 1 | Write a python program to implement producer consumer problems. | CLO-4 | BT3 |
| 2 | Implement the concept "Pool class" by importing a package pool. | CLO-4 | BT3 |
| 3 | Explain the differences between multithreading and multiprocessing with an example? | CLO-4 | BT1 |
| 4 | Write a python program to check every **key:value** pair in a dictionary and check if they match the **name:email** format using typing module. | CLO-4 | BT3 |

| 5 | Compare Concurrent programming paradigm and functional programming paradigm with example program. | CLO-4 | BT2 |