

DEPARTMENT

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| **QUESTION BANK** | | | |
| **VI - SEMESTER B.TECH DEGREE EXAMINATION, JANUARY 2020** | | | |
| *(Details of Faculty Member prepared the Questions)* | | *(Details of Course)* | |
| Name of Faculty | Sumesh Raman | Course Code | CST 205 |
| Department | CSE | Course Name | OOPS Using Java |
| **N.B.**   * Please modify the given template/pattern corresponding to the question paper pattern given in the course plan and modules assigned. * Please read the guidelines for preparing questions for question papers.   1\* - Course Outcome: Please write the COs (CO1/CO2/CO3/CO4/CO5/CO6 etc) against each question. 2\* - Knowledge Level: Please write the K-Level (K1/K2/K3 etc) against each question.  3\* - Theory (T)/Problem(P)/Design(D) : Please specify the category of question Eg. Theory (**T**), Problem (**P**), Design (**D**) etc….  **4\*-** Difficulty Level: Please specify the relative difficulty level of the questions in terms of **Straight (S), Above Average (A), Difficult (D) and Tough(T)** | | | |

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| **PART A (MODULE II)** | | | | 1\* | 2\* | 3\* | 4\* |
|  |  | ***15 Marks Questions***  *Each question can have maximum four sub division*  ***(Prepare maximum Questions possible, covering all areas of the modules assigned )*** | Marks | Course Outcome | Knowledge Level | Theory(**T**)/ Problem(**P**)/ Design(**D**) | Difficulty Level **(S/A/D/T)** |
| 1 | (a) | Demonstrate the role of ‘super’ keyword in the context of inheritance in Java with appropriate examples. | (5) | II | L2 | T | A |
|  | (b) | Is it possible to create an object for class A using, A ob = new A(); if the class contains only parameterized constructor? Why? | (5) | II | L2 | T | A |
|  | (c) | Write a program to check whether a string is palindrome or not. The input is to be accepted through command line parameter. | (5) | II | L2 | T | A |
|  |  | Describe the following statements in Java.:  i) switch and for ii) break and continue | (5) | II | L2 | T | S |
| 2 | (a) | Define a Java class having overloaded methods to calculate area of rectangle and circle. Discuss the different sampling techniques | (5) | II | L2 | T | D |
|  | (b) | What is the use of constructor in Java? Give examples. | (5) | II | L2 | T | A |
|  | (c) | Write a java program to show the significance of method overriding in achieving run time polymorphism. Discuss difference between method overriding and method overloading. | (5) | II | L2 | P | A |
|  |  | Point out the significance of ‘this’ keyword with an example. | (5) | II | L2 | T | A |
| 3 | (a) | Briefly explain the primitive data types used in Draw the Use case diagram of a movie reservation system. Java. | (5) | II | L3 | T | S |
|  | (b) | With the help of examples, explain how inheritance is implemented in Java. | (5) | II | L2 | T | D |
|  | (c) | Write a Java program that accepts N integers through console and compute their  average. | (5) | II | L2 | P | A |
|  |  | Develop a java package named primepackage, with a class Prime containing a  static method that check whether a number is prime or not and returns that  information. Import this package in another class and use to check a number is  prime or not. | (5) | II | L2 | D | A |
| 4 | (a) | What are the notations used to represent a public, private, protected and package scope members in a class diagram? | (5) | II | L2 | T | A |
|  | (b) | What is the syntax for representing a method and a data member in a class diagram? | (5) | II | L2 | T | S |
|  | (c) | Model a Java class in such a manner that it is restricted to have only one instance(4)  throughout the program in which it is used. | (5) | II | L3 | P | D |
|  |  |  | (5) | II | L2 | T | A |
| 5 | (a) | Consider a scenario where a class ‘Rectangle’ with two data members ‘Length’, ‘Breadth’ has to be defined and initialized. Sometimes there would be a need that the instance initialization should happen by copying the value from an already initialized instance to the new instance. Model such a class with appropriate constructors and illustrate the working of the class. | (5) | II | L3 | D | A |
|  |  |  |  |  | L2 | T | A |

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|  | (b) | Why is that, in Java the size of ‘char’ datatype is of 2 bytes while that in C is of 1 byte? | (5) | II | L3 | T | A |
|  | (c) | Write a Java program with a class ‘Complex’ to represent complex numbers. Model  the class in such a way that it uses constructor overloading aspects to initialize its instances. Support the design with codes to demonstrate its working. | (5) | II | L2 | P | A |
|  |  |  | (5) | II | L3 | T | A |
| 6 | (a) | Illustrate with an example, how a class in Java can be prevented from getting inherited? | (5) | II | L2 | T | S |
|  | (b) | Consider a scenario where there are two classes: ‘BaseClass’ and ‘DerivedClass’, such that ‘DerivedClass’ is inherited from ‘BaseClass’. A function ‘public void myFunction()’ is defined in both classes. State just the code sequences that would lead to a method overriding scenario and why this scenario is known as run time polymorphism? | (5) | II | L3 | D | D |
|  | (c) | With a suitable example summarize how 0 to 100% abstraction can be achieved through the use of Abstract class in Java? | (5) | II | L2 | T | A |
|  |  | Explain how objects are passed as function parameters with a suitable example. | (5) | II | L3 | T | A |
| 7 | (a) | What are parameterized constructors? Is it possible to define a parameterized  constructor for a class without defining a parameter-less constructor? | (5) | II | L2 | T | A |
|  | (b) | Explain method overloading with the help of an example. | (5) | II | L3 | T | S |
|  | (c) | Define a class Queue for representing a queue data structure. The class must(6)  define a default constructor, a parameterized constructor and functions for en-  queue, de-queue and display operations. Write a Java program to implement  this. | (5) | II | L2 | D | D |
|  |  | Explain how inheritance is implemented in Java. What is the use of ‘super’(5)  keyword? Illustrate its usage with suitable examples. | (5) | II | L3 | T | A |
| 8 | (a) | What are abstract classes? | (5) | II | L2 | T | A |
|  | (b) | Explain the properties of a Constructor. | (5) | II | L3 | T | A |
|  | (c) | Write a Java program to perform concatenation of two strings read as3  Command line arguments. | (5) | II | L2 | T | S |
|  |  | Explain any four data types in Java | (5) | II | L2 | T | D |
| 9 | (a) | Create a class called Box with member variables length, breadth and height,6  and a default and parameterized constructor. a member function to display the  volume of a box. Write a Java program to test the class. | (5) | II | L2 | D | A |
|  | (b) | Write a Java program to sort an array of integers. | (5) | II | L2 | T | A |
|  | (c) | How can we prevent a class from instantiation? | (5) | II | L2 | T | A |
|  |  | Why is the main method in java qualified as public, static, and void? | (5) | II | L2 | T | A |
| 10 | (a) | Write a java program to check whether a given number is prime or not. | (5) | II | L2 | T | S |
|  | (b) | Show the use of different types of shift operators in java with the help of suitable  examples. | (5) | II | L2 | T | D |
|  | (c) | Draw a table showing the visibility of all access specifiers available in java  language with respect to; same class, same package sub-class, same package non  sub-class, different package sub-class, different package non sub-class. | (5) | II | L2 | D | A |
|  |  | Is it possible create an object for a class A using, A ob = new A();  if the class contains only parameterized constructor? Justify. | (5) | II | L2 | T | A |
|  |  | What are the uses of “finally” statement in exception handling? | (5) | II | L2 | T | A |
|  |  | Demonstrate how polymorphism can be implemented using method overriding  with suitable example. | (5) | II | L2 | T | S |
|  |  | Explain briefly about method overloading with an example. | (5) | II | L2 | T | D |
|  |  | Write a Java program to calculate the area of different shapes namely circle, rectangle, and triangle using the concept of method overloading | (5) | II | L2 | T | A |
|  |  | What are the advantages of inheritance? | (5) | II | L2 | T | A |
|  |  | Show how the following inheritance hierarchy can be implemented in Java. | (5) | II | L2 | D | A |