

(REVISED COURSE)

(3 Hours)

[Total Marks : 100

- N.B. (1) Question No. 1 is compulsory.
(2) Attempt any four questions from remaining six questions.
(3) Assumptions made should be clearly stated.
(4) Answers to questions should be grouped and written together, i.e. all answers to sub questions of individual questions like Q1, Q2, Q3 etc. should be answered one below other.
(5) All computer programs and program segment only in JAVA.
1. (a) Explain Applets in JAVA in terms of the following :-
(i) Creating an executable Applet
(ii) Designing a Web page which references an Applet
(iii) Adding Applets to HTML File
(iv) Running the Applet
(v) The Basic Applet Life Cycle, init(), start(), stop(), and destroy()
- (b) Write Object Oriented programs in JAVA to exemplify different types of visibility modifiers namely
(i) public
(ii) protected
(iii) private
(iv) private protected
(v) friendly (default)
2. (a) Write an object Oriented Program in JAVA that uses Euclid's Algorithm to display the greatest common divisor of two integers. The greatest common divisor of two numbers is the largest number that divides into both numbers. Here is how the algorithm works ?
(i) Find the remainder after dividing the larger number by the smaller number, using the modulus operator.
(ii) Change the larger number to the smaller number and change the smaller number to the remainder from step (i)
(iii) Keep doing this until the remainder is zero
Incorporate member functions for data input, displaying the result, default constructor and constructors with two parameters. Also create objects to reference the member functions.
- (b) Develop a JAVA program that determines the number of days in a given semester. Input to the program is the year, month, and day information of the first and the last days of a semester. The program should accept the date information as a single string instead of accepting the year, month and day information separately. The input string must be in the MM/DD/YYYY format.
3. (a) Write a JAVA program to compute the distances S fallen by an object in freefall. The formula is
$$S = S_0 + V_0 t + \frac{1}{2} a \cdot t^2$$

Make a table of S for t = 1, 5, 10, 15, 20, 100.
- (b) Write an object oriented program to arrange the names of students in descending order of their total marks, input data consists of student details such as name, ID.no, Marks of Mathematics, Physics, Chemistry. Use array of objects.

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4. With the help of suitable JAVA programs describe following : 20
(i) Over loading functions
(ii) Overriding functions
(iii) Final methods and classes
(iv) Abstract methods and classes
(v) Finalize () method.

5. (a) Write detailed note on Exception handling in JAVA in terms of following :- 10
(i) Try-catch
(ii) The finally keyword
(iii) Catching multiple exceptions
(iv) The throws keyword, Throwing Exception.

(b) With the help of suitable program explain Multithreaded programming in terms of following : 10
(i) Creating threads, extending the thread class
(ii) Stopping and blocking a thread
(iii) Lifecycle of a thread.

6. Interface Matrix 20
{
final static int M=5, N=5;//Matrix indices
void readMatrix();//Read a Matrix
void displayMatrix();//Display a Matrix
void addMatrix();// Add two Matrix
void multMatrix();//Multiply twomatrix
void transposeMatrix();//Transpose of Matrix
}
implement the above interface using a suitable JAVA class program and develop the main program.

7. Write notes on the following with the help of suitable program segments in JAVA : 20
(a) Vectors
(b) Strings
(c) Packages
(d) Interfaces

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