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SUMMER – 2022 EXAMINATION  
MODEL ANSWER

Subject: Java Programming

Subject Code: 22412

**Important Instructions to examiners:**

- 1) The answers should be examined by key words and not as word-to-word as given in the model answer scheme.
- 2) The model answer and the answer written by candidate may vary but the examiner may try to assess the understanding level of the candidate.
- 3) The language errors such as grammatical, spelling errors should not be given more Importance (Not applicable for subject English and Communication Skills).
- 4) While assessing figures, examiner may give credit for principal components indicated in the figure. The figures drawn by candidate and model answer may vary. The examiner may give credit for anyequivalent figure drawn.
- 5) Credits may be given step wise for numerical problems. In some cases, the assumed constant values may vary and there may be some difference in the candidate's answers and model answer.
- 6) In case of some questions credit may be given by judgement on part of examiner of relevant answer based on candidate's understanding.
- 7) For programming language papers, credit may be given to any other program based on equivalent concept.
- 8) As per the policy decision of Maharashtra State Government, teaching in English/Marathi and Bilingual (English + Marathi) medium is introduced at first year of AICTE diploma Programme from academic year 2021-2022. Hence if the students in first year (first and second semesters) write answers in Marathi or bilingual language (English +Marathi), the Examiner shall consider the same and assess the answer based on matching of concepts with model answer.

Q. No	Sub Q.N.	Answer	Marking Scheme
1.	a) Ans.	<b>Attempt any <u>FIVE</u> of the following: Enlist the logical operators in Java.</b> && : Logical AND    : Logical OR ! : Logical NOT	<b>10 2M 1M each Any two operators</b>
	b) Ans.	<b>Give the syntax and example for the following functions</b> i) min () ii) Sqrt () i) min() <b>Syntax: (Any one of the following)</b> static int min(int x, int y) Returns minimum of x and y static long min(long x, long y) Returns minimum of x and y static float min(float x, float y) Returns minimum of x and y static double min(double x, int y) Returns minimum of x and y	<b>2M  1M for each function with example</b>



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		<p><b>Example:</b> int y= Math.min(64,45);</p> <p><b>ii)Sqrt()</b></p> <p><b>Syntax:</b> static double sqrt(double arg) Returns square root of arg.</p> <p><b>Example:</b> double y= Math.sqrt(64);</p>	
	<p><b>c)</b> <b>Ans.</b></p>	<p><b>Define the interface in Java.</b> Interface is similar to a class. It consist of only abstract methods and final variables. To implement an interface a class must define each of the method declared in the interface. It is used to achieve fully abstraction and multiple inheritance in Java.</p>	<p><b>2M</b></p> <p><i>1M for each point, Any two points</i></p>
	<p><b>d)</b> <b>Ans.</b></p>	<p><b>Enlist any four inbuilt packages in Java.</b> 1.java.lang 2.java.util 3.java.io 4.java.awt 5.java.net 6.java.applet</p>	<p><b>2M</b></p> <p><i>½ M for each package Any four packages</i></p>
	<p><b>e)</b> <b>Ans.</b></p>	<p><b>Explain any two methods of File Class</b></p> <p>1. boolean createNewFile(): It creates a new, empty file named by this abstract pathname automatically, if and only if no file with the same name exists. if(file.createNewFile()) System.out.println("A new file is successfully created.");</p> <p>2. String getName(): It returns the name of the file or directory denoted by the object's abstract pathname. System.out.println("File name : " + file.getName());</p> <p>3. String getParent(): It returns the parent's pathname string of the object's abstract pathname or null if the pathname does not name a parent directory. System.out.println("Parent name : " + file.getParent());</p>	<p><b>2M</b></p> <p><i>1M for each method Any two methods</i></p>



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		<p>4. boolean <code>isFile()</code>: It returns True if the file denoted by the abstract pathname is a normal file, and False if it is not a normal file. <code>System.out.println("File size (bytes) : " + file.isFile());</code></p> <p>5. boolean <code>canRead()</code>: It returns True if the application can read the file denoted by the abstract pathname, and returns False otherwise. <code>System.out.println("Is file readable : " + file.canRead());</code></p> <p>6. boolean <code>canWrite()</code>: It returns True if the application can modify the file denoted by the abstract pathname, and returns False otherwise. <code>System.out.println("Is file writeable : " + file.canWrite());</code></p> <p>7. boolean <code>canExecute()</code>: It returns True if the application can execute the file denoted by the abstract pathname, and returns False otherwise. <code>System.out.println("Is file executable : " + file.canExecute());</code></p>	
	<p><b>f)</b> <b>Ans.</b></p>	<p><b>Write syntax of ellipse.</b> <b>Syntax:</b> <code>void fillOval(int top, int left, int width, int height)</code> The filled ellipse is drawn within a bounding rectangle whose upper-left corner is specified by top and left and whose width and height are specified by width and height</p> <p>OR</p> <p><b>Syntax:</b> <code>void drawOval(int top, int left, int width, int height)</code> The empty ellipse is drawn within a bounding rectangle whose upper-left corner is specified by top and left and whose width and height are specified by width and height</p>	<p><b>2M</b> <b>2M for correct syntax</b></p>
	<p><b>g)</b> <b>Ans.</b></p>	<p><b>Enlist any four compile time errors.</b> 1)Missing semicolon 2)Missing of brackets in classes and methods 3)Misspelling of variables and keywords. 4)Missing double quotes in Strings. 5)Use of undeclared variable. 6)Incompatible type of assignment/initialization. 7)Bad reference to object.</p>	<p><b>2M</b> <b>½ M for each error</b></p> <p><b>Any four can be considered</b></p>



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2.	a) Ans.	<p><b>Attempt any <u>THREE</u> of the following:</b> <b>Explain any four features of Java</b></p> <p><b>1.Object Oriented:</b> In Java, everything is an Object. Java can be easily extended since it is based on the Object model.</p> <p><b>2.Platform Independent:</b> Unlike many other programming languages including C and C++, when Java is compiled, it is not compiled into platform specific machine, rather into platform independent byte code. This byte code is distributed over the web and interpreted by the Virtual Machine (JVM) on whichever platform it is being run on.</p> <p><b>3.Simple:</b> Java is designed to be easy to learn. If you understand the basic concept of OOP Java, it would be easy to master.</p> <p><b>4.Secure:</b> With Java's secure feature it enables to develop virus-free, tamper-free systems. Authentication techniques are based on public-key encryption.</p> <p><b>5.Architecture-neutral:</b> Java compiler generates an architecture-neutral object file format, which makes the compiled code executable on many processors, with the presence of Java runtime system.</p> <p><b>6.Multithreaded:</b> With Java's multithreaded feature it is possible to write programs that can perform many tasks simultaneously. This design feature allows the developers to construct interactive applications that can run smoothly.</p> <p><b>7.Interpreted:</b> Java byte code is translated on the fly to native machine instructions and is not stored anywhere. The development process is more rapid and analytical since the linking is an incremental and light-weight process.</p>	12 4M  <i>1M for each feature Any four features</i>
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	<b>b) Ans.</b>	<b>Write a Java program to copy the content of one file into another.</b> <pre>import java.io.*; class filecopy { public static void main(String args[]) throws IOException { FileReader fr= new FileReader("file1.txt"); FileWriter fo= new FileWriter("file2.txt"); int ch; try { while((ch=fr.read())!= -1) { fo.write(ch); } System.out.println("file copied successfully"); fr.close(); fo.close(); } finally { if(fr!=null) fr.close(); if(fo!=null) fo.close(); }}}</pre>	<b>4M</b> <i>2M for correct logic,</i>  <i>2M for code</i>									
	<b>c) Ans.</b>	<b>Write the difference between vectors and arrays. (any four points)</b> <table border="1" data-bbox="378 1514 1300 1841"><thead><tr><th data-bbox="378 1514 480 1549">S.No</th><th data-bbox="480 1514 813 1549">Array</th><th data-bbox="813 1514 1300 1549">Vector</th></tr></thead><tbody><tr><td data-bbox="378 1549 480 1698">1</td><td data-bbox="480 1549 813 1698">An array is a structure that holds multiple values of the same type.</td><td data-bbox="813 1549 1300 1698">The Vector is similar to array holds multiple objects and like an array; it contains components that can be accessed using an integer index.</td></tr><tr><td data-bbox="378 1698 480 1841">2</td><td data-bbox="480 1698 813 1841">An array is a homogeneous data type where it can hold only objects of one data type</td><td data-bbox="813 1698 1300 1841">Vectors are heterogeneous. You can have objects of different data types inside a Vector.</td></tr></tbody></table>	S.No	Array	Vector	1	An array is a structure that holds multiple values of the same type.	The Vector is similar to array holds multiple objects and like an array; it contains components that can be accessed using an integer index.	2	An array is a homogeneous data type where it can hold only objects of one data type	Vectors are heterogeneous. You can have objects of different data types inside a Vector.	<b>4M</b>  <i>1M for each point</i>  <i>Any four points</i>
S.No	Array	Vector										
1	An array is a structure that holds multiple values of the same type.	The Vector is similar to array holds multiple objects and like an array; it contains components that can be accessed using an integer index.										
2	An array is a homogeneous data type where it can hold only objects of one data type	Vectors are heterogeneous. You can have objects of different data types inside a Vector.										



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		3	After creation, an array is a fixed-length structure	The size of a Vector can grow or shrink as needed to accommodate adding and removing items after the Vector has been created	
		4	Array can store primitive type data element.	Vector are store non primitive type data element.	
		5	Declaration of an array int arr[] = new int [10];	Declaration of Vector: Vector list = new Vector(3)	
		6	Array is the static memory allocation.	Vector is the dynamic memory allocation	
	<b>d)</b>	<b>Explain exception handling mechanism w.r.t. try, catch, throw and finally.</b>			<b>4M</b>
	<b>Ans.</b>	<b>try:</b> Program statements that you want to monitor for exceptions are contained within a try block. If an exception occurs within the try block, it is thrown. <b>Syntax:</b> try { // block of code to monitor for errors } <b>catch:</b> Your code can catch this exception (using catch) and handle it in some rational manner. System-generated exceptions are automatically thrown by the Java runtime system. A catch block immediately follows the try block. The catch block can have one or more statements that are necessary to process the exception. <b>Syntax:</b> catch (ExceptionType1 exOb) { // exception handler for ExceptionType1 }			<b>1M for each</b>



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		<p><b>throw:</b> It is mainly used to throw an instance of user defined exception. <b>Example:</b> throw new myException("Invalid number"); assuming myException as a user defined exception</p> <p><b>finally:</b> finally block is a block that is used to execute important code such as closing connection, stream etc. Java finally block is always executed whether exception is handled or not. Java finally block follows try or catch block.</p> <p><b>Syntax:</b> finally { // block of code to be executed before try block ends }</p>	
3.	a)  Ans.	<p><b>Attempt any <u>THREE</u> of the following:</b> <b>Write a Java Program to find out the even numbers from 1 to 100 using for loop.</b></p> <pre>class test { public static void main(String args[]) {     System.out.println("Even numbers from 1 to 100 :");     for(int i=1;i&lt;=100; i++)     {         if(i%2==0)             System.out.print(i+" ");     } }</pre>	12 4M  <i>2M for Program logic</i>  <i>2M for program syntax</i>
	b) Ans.	<p><b>Explain any four visibility controls in Java.</b></p> <p>Four visibility control specifiers in Java are public, default, private and protected. The visibility control in java can be seen when concept of package is used with the java application.</p> <ol style="list-style-type: none"><li>1) private :The access level of a private specifier is only within the class. It cannot be accessed from outside the class.</li><li>2) default :When no specifier is used in the declaration, it is called as default specification. Default scope for anything declared in java</li></ol>	4M  <i>3M for Explanatio n</i>



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		<p>is implicit public. With this it can be accessed anywhere within the same package.</p> <p>3) protected :The access level of a protected specifier is within the package and outside the package through derived class.</p> <p>4) public :The access level of a public specifier is everywhere. It can be accessed from within the class, outside the class, within the package and outside the package.</p> <p>5) private protected access: The visibility level is between protected access and private access. The fields are visible in all subclasses regardless of what package they are in.</p> <p>These five access specifiers can be mapped with four categories in which packages in java can be managed with access specification matrix as:</p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <thead> <tr> <th style="border: none;">Access Modifier</th> <th>Public</th> <th>Protected</th> <th>Friendly (default)</th> <th>Private protected</th> <th>private</th> </tr> <tr> <th style="border: none;">Access Location</th> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </thead> <tbody> <tr> <td style="border: none;">Same Class</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> </tr> <tr> <td style="border: none;">Sub class in same package</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> <td>No</td> </tr> <tr> <td style="border: none;">Other classes in same package</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> <td>No</td> <td>No</td> </tr> <tr> <td style="border: none;">Sub class in other packages</td> <td>Yes</td> <td>Yes</td> <td>No</td> <td>Yes</td> <td>No</td> </tr> <tr> <td style="border: none;">Non sub classes in other packages</td> <td>Yes</td> <td>No</td> <td>No</td> <td>No</td> <td>No</td> </tr> </tbody> </table>	Access Modifier	Public	Protected	Friendly (default)	Private protected	private	Access Location						Same Class	Yes	Yes	Yes	Yes	Yes	Sub class in same package	Yes	Yes	Yes	Yes	No	Other classes in same package	Yes	Yes	Yes	No	No	Sub class in other packages	Yes	Yes	No	Yes	No	Non sub classes in other packages	Yes	No	No	No	No	<p><i>1M for access specification table</i></p>
Access Modifier	Public	Protected	Friendly (default)	Private protected	private																																								
Access Location																																													
Same Class	Yes	Yes	Yes	Yes	Yes																																								
Sub class in same package	Yes	Yes	Yes	Yes	No																																								
Other classes in same package	Yes	Yes	Yes	No	No																																								
Sub class in other packages	Yes	Yes	No	Yes	No																																								
Non sub classes in other packages	Yes	No	No	No	No																																								
	<p><b>c) Ans.</b></p>	<p><b>Explain single and multilevel inheritance with proper example.</b></p> <p>Single level inheritance:            In single inheritance, a single subclass extends from a single superclass.</p> <div style="text-align: center; margin: 10px 0;"> <pre>           graph BT             B[Class B] -- extends --&gt; A[Class A]           </pre> </div> <p>Example :            class A            {</p>	<p><b>4M</b></p> <p><i>1M for each explanation</i></p> <p><i>1M for each example</i></p>																																										



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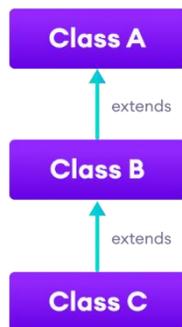
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```
void display()
{
System.out.println("In Parent class A");
}
}
class B extends A //derived class B from A
{
void show()
{
System.out.println("In child class B");
}
public static void main(String args[])
{
B b= new B();
b.display(); //super class method call
b.show(); // sub class method call
}
}
```

*Note : any other relevant example can be considered.*

**Multilevel inheritance:**

In multilevel inheritance, a subclass extends from a superclass and then the same subclass acts as a superclass for another class. Basically it appears as derived from a derived class.



Example:

```
class A
{
void display()
```

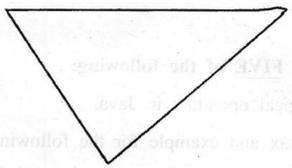


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	<pre>{ System.out.println("In Parent class A"); } } class B extends A //derived class B from A { void show() { System.out.println("In child class B"); } } class C extends B //derived class C from B { public void print() { System.out.println("In derived from derived class C"); } public static void main(String args[]) { C c= new C(); c.display(); //super class method call c.show(); // sub class method call c.print(); //sub-sub class method call } } } </pre> <p><i>Note : any other relevant example can be considered.</i></p>	
<p>d)</p>	<p>Write a java applet to display the following output in Red color. Refer Fig. No. 1.</p>  <p>Fig No. 1.</p>	<p>4M</p>
<p>Ans.</p>	<pre>import java.awt.*; import java.applet.*; public class myapplet extends Applet</pre>	<p>2M for correct logic</p>



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		<pre>{     public void paint(Graphics g)     {         int x[]={ 10,200,70};         int y[]={ 10,10,100};         g.setColor(Color.red);         g.drawPolygon(x,y,3);     } } /*&lt;applet code=myapplet height=400 width=400&gt; &lt;/applet&gt;*/</pre>	<p><i>2M for correct syntax</i></p>
4.	a) <b>Ans.</b>	<p><b>Attempt any <u>THREE</u> of the following:</b> <b>Explain switch case and conditional operator in java with suitable example.</b> <b>switch...case statement:</b> The switch...case statement allows us to execute a block of code among many alternatives. Syntax : switch (expression) { case value1:     // code break; case value2:     // code break; ... ... default:     // default statements }</p> <p>The expression is evaluated once and compared with the values of each case. If expression matches with value1, the code of case value1 are executed. Similarly, the code of case value2 is executed if expression matches with value2.</p>	<p><b>12</b> <b>4M</b></p> <p><i>1M for explanation n switch case statement</i></p> <p><i>1M for example</i></p>



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	<p>break is a required statement, which is used to take break from switch block, if any case is true. Otherwise even after executing a case, if break is not given, it will go for the next case. If there is no match, the code of the default case is executed.</p> <p><b>Example :</b> // Java Program to print day of week // using the switch...case statement class test1 { public static void main(String[] args) { int number = 1; String day; switch (number) { case 1: day = "Monday"; break; case 2: day= "Tuesday"; break; case 3: day = "Wednesday"; break; case 4: day= "Thursday"; break; case 5: day = "Friday"; break; case 6: day= "Saturday"; break; case 7: day = "Sunday"; break; default: day= "Invalid day"; } }</p>	
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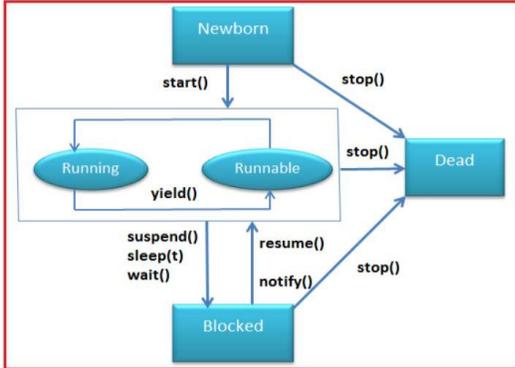
	<pre>System.out.println(day); } }</pre> <p><i>Note : any other relevant example can be considered.</i></p> <p><b>Conditional Operator:</b> The Conditional Operator is used to select one of two expressions for evaluation, which is based on the value of the first operands. It is used to handling simple situations in a line. Syntax: expression1 ? expression2:expression3; The above syntax means that if the value given in Expression1 is true, then Expression2 will be evaluated; otherwise, expression3 will be evaluated.</p> <p><b>Example</b> class test { public static void main(String[] args) { String result; int a = 6, b = 12; result = (a==b ? "equal":"Not equal"); System.out.println("Both are "+result); } }<p><i>Note : any other relevant example can be considered.</i></p></p>	<p><i>1M for explanation</i> <i>n</i> <i>Conditiona</i> <i>l operator</i></p> <p><i>1M for example</i></p>
<p><b>b)</b> <b>Ans.</b></p>	<p><b>Draw and explain life cycle of thread.</b> Life cycle of thread includes following states :</p> <ol style="list-style-type: none"><li>1.Newborn</li><li>2. Runnable</li><li>3. Running</li><li>4. Blocked</li><li>5. Dead</li></ol>	<p><b>4M</b></p>



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			<p><i>2M for diagram</i></p>
		<p><b>New</b> – A new thread begins its life cycle in the new state. It is also referred to as a born thread. This is the state where a thread has been created, but it has not yet been started. A thread is started by calling its start() method.</p> <p><b>Runnable</b> – The thread is in the runnable state after the invocation of the start() method, but the scheduler has not selected it to be the running thread. It is in the Ready-to-run state by calling the start method and waiting for its turn.</p> <p><b>Running</b> – When the thread starts executing, then the state is changed to a “running” state. The method invoked is run ().</p> <p><b>Blocked</b>–This is the state when the thread is still alive but is currently not eligible to run. This state can be implemented by methods such as suspend()-resume(), wait()-notify() and sleep(time in ms).</p> <p><b>Dead</b> – This is the state when the thread is terminated. The thread is in a running state and as soon as it is completed processing it is in a “dead state”. Once a thread is in this state, the thread cannot even run again.</p>	<p><i>2M for explanation</i></p>
	<p><b>c)</b></p> <p><b>Ans.</b></p>	<p><b>Write a java program to sort an 1-d array in ascending order using bubble-sort.</b></p> <pre>public class BubbleSort { public static void main(String[] args)</pre>	<p><b>4M</b></p> <p><i>2M for correct logic</i></p>



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	<pre>{ int arr[]={3,60,35,2,45,320,5}; System.out.println("Array Before Bubble Sort"); for(int i=0; i&lt;arr.length; i++)     {     System.out.print(arr[i] + " ");     } System.out.println(); int n = arr.length; int temp = 0; for(int i=0; i&lt; n; i++)     {     for(int j=1; j &lt; (n-i); j++)         {         if(arr[j-1] &gt;arr[j])             {             //swap elements             temp = arr[j-1];             arr[j-1] = arr[j];             arr[j] = temp;             }         }     } System.out.println("Array After Bubble Sort"); for(int i=0; i&lt;arr.length; i++)     {     System.out.print(arr[i] + " ");     } }</pre>	<p><i>2M for correct syntax</i></p>
<p><b>d) Ans.</b></p>	<p><b>Explain how to create a package and how to import it</b> To create package following steps can be taken: 1) Start the code by keyword 'package' followed by package name. Example : package mypackage; 2) Complete the code with all required classes inside the package with appropriate access modifiers. 3) Compile the code with 'javac' to get .class file.</p>	<p><b>4M</b>  <i>3M for steps to create</i></p>



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		<p>Example: javac myclass.java to get myclass.class</p> <p>4) Create a folder which is same as package name and make sure that class file of package is present inside it. If not, copy it inside this folder.</p> <p>To import the package inside any other program : Make use of import statement to include package in your program. It can be used with '*' to gain full access to all classes within package or just by giving class name if just one class access is required. Example : import mypackage.myclass; or importmypackage.*;</p>	<p><i>1M to import</i></p>
e)	<p><b>Explain</b></p> <p>i) <b>drawLine</b> ii) <b>drawOval</b> iii) <b>drawRect</b> iv) <b>drawArc</b></p> <p><b>Ans.</b> i) drawLine(): It is a method from Graphics class and is used to draw line between the points(x1, y1) and (x2, y2). <b>Syntax :</b> drawLine(int x1, int y1, int x2, int y2)</p> <p>ii) drawOval():Its is a method from Graphics class and is used to draw oval or ellipse and circle. <b>Syntax :</b> drawOval(int x, ,int y, int width, int height) It is used to draw oval with the specifiedwidth and height. If width and height are given equal, then it draws circle otherwise oval/ellipse. iii) drawRect():It is a method from Graphics class and it draws a rectangle with the specified widthand height. <b>Syntax :</b> drawRect(int x, int y, int width, int height) iv) drawArc():It is a method from Graphics class and is used to draw a circular or elliptical arc. <b>Syntax :</b> drawArc(int x, int y, int width, int height, intstartAngle, intswEEPAngle)</p>	<p>4M</p> <p><i>1M for each</i></p>	



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		where first four are x, y, width and height as in case of oval or rect. The next two are start angle and sweep angle. When sweep angle is positive, it moves in anticlockwise direction. It is given as negative, It moves in clockwise direction.	
5.	a)	<b>Attempt any <u>TWO</u> of the following:</b> <b>How to create user defined package in Java. Explain with an suitable example.</b>	<b>12</b> <b>6M</b>
	<b>Ans.</b>	<p>A <b>java package</b> is a group of similar types of classes, interfaces and sub-packages It also provides access protection and removes name collisions.</p> <p><b>Creation of user defined package:</b> To create a package a physical folder by the name should be created in the computer. Example: we have to create a package myPack, so we create a folder d:\myPack The java program is to be written and saved in the folder myPack. To add a program to the package, the first line in the java program should be package &lt;name&gt;; followed by imports and the program logic.</p> <pre>package myPack; import java.util; public class Myclass {     //code }</pre> <p><b>Access user defined package:</b> To access a user defined package, we need to import the package in our program. Once we have done the import we can create the object of the class from the package and thus through the object we can access the instance methods.</p> <pre>import mypack.*; public class MyClassExample{     public static void main(String a[]) {         Myclass c= new Myclass();</pre>	<p><b>3M</b> <b>Package creation</b></p> <p><i>(Note: Code snippet can be used for describing)</i></p> <p><b>3M for Example</b></p>



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		<pre>} }</pre> <p><b>Example:</b></p> <pre>package package1; public class Box {     int l= 5;     int b = 7;     int h = 8;     public void display()     {         System.out.println("Volume is:"+(l*b*h));     } }</pre> <p><b>Source file:</b></p> <pre>import package1.Box; class volume { public static void main(String args[]) {     Box b=new Box();     b.display(); } }</pre>	<p>(Note Any other similar example can be considered )</p>
	<p><b>b)</b></p> <p><b>Ans.</b></p>	<p><b>Write a Java program in which thread A will display the even numbers between 1 to 50 and thread B will display the odd numbers between 1 to 50. After 3 iterations thread A should go to sleep for 500ms.</b></p> <pre>Import java.lang.*; class A extends Thread {     public void run()     {         try         {             for(int i=2;i&lt;=50;i=i+2)             {</pre>	<p><b>6M</b></p> <p><b>3M Correct program with syntax</b></p>



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	<pre>        System.out.println("\t A thread :"+i);         if(i == 6) // for 3<sup>rd</sup> iteration             sleep(500);     }     }     catch(Exception e)     {         System.out.println("A thread interrupted");     } } } class B extends Thread {     public void run()     {         try         {             for(int i=1;i&lt;50;i=i+2)             {                 System.out.println("\t B thread :"+i);             }         }         catch(Exception e)         {             System.out.println("B thread interrupted");         }     } } class OddEven {     public static void main(String args[])     {         new A().start();         new B().start();     } }</pre>	<p><i>3M Correct logic</i></p>
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	<p>c) Ans.</p>	<p><b>What is constructor? List types of constructor. Explain parameterized constructor with suitable example.</b></p> <p><b>Constructor:</b> A constructor is a special member which initializes an object immediately upon creation.</p> <ul style="list-style-type: none"><li>• It has the same name as class name in which it resides and it is syntactically similar to any method.</li><li>• When a constructor is not defined, java executes a default constructor which initializes all numeric members to zero and other types to null or spaces.</li><li>• Once defined, constructor is automatically called immediately after the object is created before new operator completes.</li></ul> <p><b>Types of constructors:</b></p> <ol style="list-style-type: none"><li>1. Default constructor</li><li>2. Parameterized constructor</li><li>3. Copy constructor</li><li>4. Constructor with no arguments or No-Arg Constructor or Non-Parameterized constructor.</li></ol> <p><b>Parameterized constructor:</b> When constructor method is defined with parameters inside it, different value sets can be provided to different constructor with the same name.</p> <p><b>Example</b></p> <pre>class Student { int roll_no;     String name;     Student(int r, String n) // parameterized constructor     {         roll_no = r;         name=n;     }     void display()     {         System.out.println("Roll no is: "+roll_no);         System.out.println("Name is : "+name);     } }</pre>	<p>6M</p> <p><i>2M for Definition</i></p> <p><i>1M List types</i></p> <p><i>(Any 3 )</i></p> <p><i>1M parameterized constructor</i></p> <p><i>2M Example</i></p> <p><i>(Any Other Example Can be</i></p>
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		<pre>public static void main(String a[]) {     Student s = new Student(20,"ABC"); // constructor     with parameters     s.display(); }</pre>	<i>considered</i> )
6.	a)	<b>Attempt any <u>TWO</u> of the following:</b> <b>Write a Java Program to count the number of words from a text file using stream classes.</b>	<b>12</b> <b>6M</b> (Note : Any other relevant logic shall be considered )
	Ans.	<pre>import java.io.*; public class FileWordCount { public static void main(String are[]) throws IOException {     File f1 = new File("input.txt"); int wc=0; FileReader fr = new FileReader (f1); int c=0;      try { while(c!=-1)     {         c=fr.read();         if(c==(char) ' ') wc++;     } System.out.println("Number of words :"+(wc+1));     }     finally     {         if(fr!=null) fr.close();     } }</pre>	<b>3M</b> <b>Correct</b> <b>program</b> <b>with syntax</b>  <b>3M</b> <b>Correct</b> <b>logic</b>
	b)	<b>Explain the difference between string class and string buffer class.</b> <b>Explain any four methods of string class</b>	<b>6M</b>



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Ans.	Sr. No.	String	StringBuffer	
	1	String is a major class	StringBuffer is a peer class of String	<i>1M each Any 2 points</i>
	2	Length is fixed	Length is flexible	
	3	Contents of object cannot be modified	Contents of object can be modified	
	4	Object can be created by assigning String constants enclosed in double quotes.	Objects can be created by calling constructor of StringBuffer class using new operator.	
	5	String s="MSBTE"	StringBuffer s=new StringBuffer ("MSBTE")	
		<b>Methods of string class</b>		<i>1M each Any 4 Methods correct explanation</i>
		<b>1)toLowerCase ():</b> Converts all of the characters in this String to lower case. Syntax: s1.toLowerCase() Example: String s="Sachin"; System.out.println(s.toLowerCase()); Output: sachin		
		<b>2) toUpperCase():</b> Converts all of the characters in this String to upper case <b>Syntax: s1.toUpperCase()</b> Example: String s="Sachin"; System.out.println(s.toUpperCase()); Output: SACHIN		
		<b>3)trim ():</b> Returns a copy of the string, with leading and trailing whitespace omitted. <b>Syntax: s1.trim()</b> Example: String s=" Sachin "; System.out.println(s.trim());		



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	<p>Output:Sachin</p> <p><b>4)replace ():</b>Returns a new string resulting from replacing all occurrences of old Char in this string with new Char.</p> <p><b>Syntax: s1.replace('x','y')</b></p> <p>Example: String s1="Java is a programming language. Java is a platform.";</p> <pre>String s2=s1.replace("Java","Kava"); //replaces all occurrences of "Java" to "Kava" System.out.println(s2);</pre> <p>Output: Kava is a programming language. Kava is a platform</p> <p><b>5. length():</b></p> <p><b>Syntax: int length()</b></p> <p>It is used to return length of given string in integer.</p> <p>Eg. String str="INDIA"</p> <pre>System.out.println(str.length()); // Returns 5</pre> <p><b>6. charAt():</b></p> <p><b>Syntax: char charAt(int position)</b></p> <p>The charAt() will obtain a character from specified position .</p> <p>Eg. String s="INDIA"</p> <pre>System.out.println(s.charAt(2) ); // returns D</pre> <p><b>7. substring():</b></p> <p><b>Syntax:</b></p> <p><b>String substring (int startindex)</b></p> <p>startindex specifies the index at which the substring will begin.It will returns a copy of the substring that begins at startindex and runs to the end of the invoking string</p> <p>Example:</p> <pre>System.out.println(("Welcome".substring(3)); //come</pre> <p>(OR)</p> <p><b>String substring(int startindex,int endindex)</b></p> <p>Here startindex specifies the beginning index, and endindex specifies the stopping point. The string returned all the characters from the</p>	
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	<p>beginning index, upto, but not including, the ending index. <i>Example :</i> System.out.println(("Welcome".substring(3,5));//co</p> <p><b>8. compareTo():</b> <b>Syntax: int compareTo(Object o) or int compareTo(String anotherString)</b> There are two variants of this method. First method compares this String to another Object and second method compares two strings lexicographically. Example. String str1 = "Strings are immutable"; String str2 = "Strings are immutable"; String str3 = "Integers are not immutable"; int result = str1.compareTo( str2 ); System.out.println(result); result = str2.compareTo( str3 ); System.out.println(result);</p>											
<p>c)</p>	<p><b>Write a Java applet to draw a bar chart for the following values.</b></p> <table border="1"><thead><tr><th>Year</th><th>2011</th><th>2012</th><th>2013</th><th>2014</th></tr></thead><tbody><tr><td>Turnover (Rs. crores)</td><td>110</td><td>120</td><td>170</td><td>160</td></tr></tbody></table> <p><b>Ans.</b> import java.awt.*; import java.applet.*;</p> <pre>/* &lt;applet code=BarChart width=400 height=400&gt; &lt;param name=c1 value=110&gt; &lt;param name=c2 value=120&gt; &lt;param name=c3 value=170&gt; &lt;param name=c4 value=160&gt; &lt;param name=label1 value=2011&gt; &lt;param name=label2 value=2012&gt; &lt;param name=label3 value=2013&gt;</pre>	Year	2011	2012	2013	2014	Turnover (Rs. crores)	110	120	170	160	<p>6M</p> <p>2M for Applet tag</p> <p>2M for</p>
Year	2011	2012	2013	2014								
Turnover (Rs. crores)	110	120	170	160								





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