Subject: - Java Programming (22412)

SYLLABUS

Chapter No.	Name of chapter	Marks With Option
1	Basic Syntactical Constructs in Java	10
2	Derived Syntactical Constructs in Java	18
3	Inheritance, Interface and Package	12
4	Exception Handling and Multithreading	12
5	Java Applets and Graphics Programming	10
6	Managing Input/Output/Files in Java	08
7		
8		
9		
10		
	Total Marks: -	70

COURSE OUTCOME (CO)

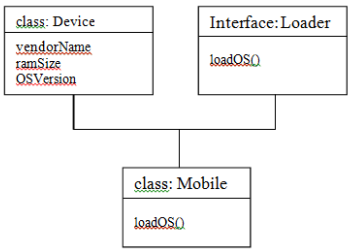
COURSE: - Java Programming (22412)

PROGRAMME: - Information Technology

CO. NO.	Course Outcome
CO- 412.01	Develop Programs using Object Oriented methodology in java
CO- 412.02	Apply concept of inheritance for code reusability.
CO- 412.03	Develop Programs using Multithreading.
CO- 412.04	Implement Exception Handling.
CO- 41205	Develop Programs using Graphics and Applet.
CO- 412.06	Develop Programs for handling I/O and file streams.

BOARD THEORY PAPER PATTERN FOR JPR (22412)

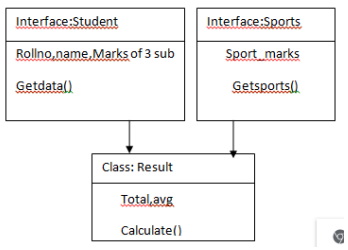
Q.1		**Attempt any FIVE** **5*2=10**
	a)	Give syntax and example of following math functions. i) sqrt () ii) pow ()
	b)	Enlist access specifiers in Java.
	c)	Name the methods from wrapper class for following task i) To convert string objects to primitive int. ii) To convert integer object to string object.
	d)	State the use of static keyword
	e)	Enlist any 4 keywords used for exception handling in Java.
	f)	Give syntax of <param> tag to pass parameters to an Applet.
	g)	Give any two methods from File class with their usage.
Q.2		**Attempt any THREE** **3*4=12**
	a)	Write a program to find largest between two numbers using ***'?:'*** operator.
	b)	Define class Student with suitable data members create two objects using two different constructors of the class.
	c)	Describe life cycle of thread with suitable diagram.
	d)	Write a program to copy content of one file into another file.
Q.3		**Attempt any THREE** **3*4=12**
	a)	Write a program to divide any positive even integer by 2 using bitwise shift operator.
	b)	State need of interface with suitable examples.
	c)	Give usage of following methods : i) drawOval() ii) getFont() iii) drawArc() iv) getFamily()
	d)	Enlist types of stream classes and describe methods for reading and writing data for each type.
Q.4		**Attempt any Three** **3*4=12**

	a)	Describe types of variables in Java with their scope.
	b)	Write a program to initialize object of a class student using parameterized constructor.
	c)	Write a program to create package Maths having two classes as addition and subtraction. Use suitable methods in each class to perform basic operations.
	d)	Differentiate between Java Application and Java Applet (any 4 points)
	e)	Write a program to count number of words from a text file using stream classes.
Q.5		**Attempt any TWO** **2*6=12**
	a)	Write a step to declare and define two and three dimensional arrays of a class.
	b)	Implement following inheritance:  splay details of devices from loadOS() method of class Mobile.
	c)	Write a program to define two threads for displaying even and odd numbers respectively with a delay of 500 ms after each number.
Q.6		**Attempt any TWO** **2*6=12**
	a)	Write a program to define class Employee with members as id and salary. Accept data for five employees and display details of employees getting highest salary.
	b)	Describe types of Errors and Exceptions in details.
	c)	Design an Applet to pass username and password as parameters and check if password contains more than 8 characters.

CLASS TEST - I

PAPER PATTERN

Unit No.	Name of the Unit	Course Outcome (CO)
1	**Basic Syntactical constructs in Java**	**CO-412.1**
2	**Derived Syntactical constructs in Java**	**CO-412.2**
3	**Inheritance, Interface and Package**	**CO-412.3**

Q.1	**Attempt any FOUR** **4*2=8Marks**	Course Outcome (CO)
a)	What is Bytecode? Explain JVM with respect to Portability	**CO-412.1**
b)	List the advantages of vector over arrays.	**CO-412.2**
c)	Define Package. List any 2 built-in Packages from Java API along with their use.	**CO-412.3**
d)	What is interface? How to create it?	**CO-412.3**
e)	Explain any 2 methods of String class	**CO-412.2**
f)	Explain any 2 tools available in JDK	**CO-412.1**
Q.2	**Attempt any THREE** **3*4=12 Marks**	
a)	Differentiate between String class & StringBuffer class	**CO-412.2**
b)	Explain following features of java: (i)Robustness (ii) Compiled & Interpreted (iii) Distributed (iv) Platform-independent	**CO-412.1**
c)	Explain Dynamic Method Dispatch with example.	**CO-412.3**
d)	Write a program to implement following inheritance 	**CO-412.3**

CLASS TEST - II

PAPER PATTERN

Unit No.	Name of the Unit	Course Outcome (CO)
4	**Exception Handling and Multithreading**	**CO-412.4**
5	**Java Applets and Graphics Programming**	**CO-412.5**
6	**Managing Input/Output/Files in Java**	**CO-412.6**

Q.1	**Attempt any FOUR** **4*2=8Marks**	Course Outcome (CO)
a)	State different types of errors.	**CO-412.4**
b)	Explain Synchronization with respect to threading	**CO-412.5**
c)	Define Thread? What is Thread Priority?	**CO-412.4**
d)	Define the term Applet.	**CO-412.5**
e)	List any two input stream classes from character stream	**CO-412.6**
f)	Write syntax and example of following method:drawPoly()	**CO-412.5**
Q.2	**Attempt any THREE** **3*4=12 Marks**	
a)	Explain the Lifecycle of an Applet	**CO-412.5**
b)	Write a program to raise user defined exception if user name is less than 6 characters &password doesn't match.	**CO-412.4**
c)	Write a Procedure to accept parameters to an applet with suitable example	**CO-412.5**
d)	What are the Stream classes? List any two InputStream classes from character stream.	**CO-412.6**

1. Basic Syntactical Constructs in Java

Position in Question Paper **Total Marks-10**

Q.1.a) 2-Marks.
Q.2.a) 4Marks.
Q.3.a) 4Marks.
Q.4.a) 4Marks.

Descriptive Questions

1. Explain features of java.
2. Explain following concepts:i)Bytecode ii)JVM
3. Explain typecasting with its types, syntax and example
4. Define class and object. Write syntax to create class and object with example
5. Explain JDK.Write any 4 tools available in JDK.
6. What do you mean by dynamic initialization of a variable?
7. List different data types in java.
8. State the use of for-each version of for loop with example.
9. Explain why java is called truly Object Oriented programming?
10. State and explain scope of variables with example.
11. Describe break and continue statement with example.
12. Write all primitive datatypes available in java with their storage size in bytes.
13. Write a program to find sum of digits of number.
14. Describe arithmetic operators with example.
15. Write any four mathematical functions used in java
16. Write general syntax of any two decision making statements with example.
17. Explain the concept of labelled loops with example.
18. Explain following operator with example i)Left shift ii)Right shift
19. Give syntax and use of instanceof operator with example
20. Explain ternary (?:)operator with syntax and example.
21. Write a program to print all prime numbers from 1 to 50.
22. Develop a program to implement fibbonacci series using for loop control.
23. Write a program to print following output:

```
* * * *
 * * *
  * *
   *
```

MCQ Question

(Total number of Question=Marks*3=10*3=30)

Note: Correct answer is marked with **bold.**

1. Following option leads to the portability and security of Java.
   a. Bytecode is executed by JVM
   b. The applet makes the Java code secure and portable
   c. Use of exception handling
   d. Dynamic binding between objects
2. _____of the following is not a Java features?
   a. Dynamic
   b. Architecture Neutral
   c. Use of pointers
   d. Object-oriented
3. _____ is used to find and fix bugs in the Java programs.
   a. JVM
   b. JRE
   c. JDK
   d. JDB
4. _____of the following is a valid declaration of a char?
   a. char ch = '\utea';
   b. char ca = 'tea';
   c. char cr = \u0223;
   d. char cc = '\itea';
5. ____of the following tool is used to generate API documentation in HTML format from doc comments in source code?
   a. javap tool
   b. javaw command
   c. Javadoc tool
   d. javah command
6. ____of the following for loop declaration is not valid?
   a. for (int i = 99; i >= 0; i / 9)
   b. for (int i = 7; i <= 77; i += 7)
   c. for (int i = 20; i >= 2; - -i)
   d. for (int i = 2; i <= 20; i = 2* i)
7. Command to execute a compiled java program is :
   a. javac
   b. java
   c. run
   d. execute
8. _____of these is necessary condition for automatic type conversion in Java?
   a. The destination type is smaller than source typeb.
   b. **The destination type is larger than source type**
   c. The destination type can be larger or smaller than source type
   d. None of the mentioned
9. Literal can be of which of these data types?
   a. Integer
   b. Float

c. Boolean
d. all of the mentioned

10._____of these cannot be used for a variable name in Java?
a. Identifier
c. identifier & keyword
b. Keyword
d. none of the mentioned

11._____ of these is an incorrect string literal?
a. “Hello World”
b. “Hello\nWorld”
c. “\”Hello World\””
d. "Hello world"

12.This of the following is not OOPS concept in Java.
a. Inheritance
c. Polymorphism
b. Encapsulation
d. Compilation

13.These selection statements test only for equality.
a. If
c. if & switch
b. **Switch**
d. none of the mentioned

14.These are selection statements in Java.
a. if()
c. continue
b. for()
d. break

15.The following loops will execute the body of loop even when condition controlling the loop is initially false.
a. do-while
c. For
b. while
d. none of the mentioned

16.These jump statements can skip processing the remainder of the code in its body for a particular iteration.
a. Break
c. Exit
b. Return
d. continue

17. This of the following statement is incorrect:
a. switch statement is more efficient than a set of nested ifs
b. two case constants in the same switch can have identical values
c. switch statement can only test for equality, whereas if statement can evaluate any type of boolean expression
d. it is possible to create a nested switch statements

18._____provides runtime environment for java byte code to be executed?
a. JDK
c. JRE
b. JVM
d. JAVAC

19._____ is known as father of Java Programming Language?

a. James Gosling
c. Charles Babbage
b. M.P.Java
d. Blais Pascal

20.Byte code in Java is:

a. Code generated by a Java compiler
c. Name of Java source code file
b. Code generated by a Java Virtual Machine
d. Block of code written inside a class

21._____of the following are not Java keywords

a. double
c. then
b. Switch
d. instanceof

22._____of these have highest precedence?

a. ()
c. *
b. ++
d. >>

23.Java language was initially called as ____.

a. Sumatra
c. Oak
b. J++
d. Pine

24._____of these is not a bitwise operator

a. &' Operator
c. |=' Operator
b. &=' Operator
d. <=' Operator

25.This statement transfer execution to different parts of your code based on the value of an expression.

a. If
c. Nested if
b. Switch
d. If-else-if

26.The Type Conversions available in Java language are:

a. Narrowing Type Conversion
c. A and B
b. Widening Type Conversion
d. None of the above

27.The result of a Narrowing type conversion is?

a. Loss of data
c. Corruption of data
b. Addition of data
d. None of the above

28.Explicit Type Conversion in Java refers to ___?

a. Narrowing Type Conversion
c. No Type Conversion
b. Widening Type Conversion
d. None of the above

29.Division operator has ____ precedence over multiplication operator.

a. Heighest
b. Least
c. Equal
d. None of these

30. The full form of JVM is:

a. Java Very Large Machine
b. Java Verified Machine
c. Java Very Small Machine
d. Java Virtual Machine.

2. Derived Syntactical Constructs in Java

Position in Question Paper **Total Marks-18**

Q.1.b) 2-Marks.
Q.1.c) 2-Marks.
Q.2.b) 4Marks.
Q.4.b) 4Marks.
Q.5.a) 6Marks.
Q.6.a) 6Marks.

Descriptive Questions

1. Explain Garbage collection in java .
2. What is constructor? Explain its types with example.
3. Explain finalize() in java.
4. Explain the significance of this keyword.
5. Describe access control parameters with suitable example.
6. State the three uses of final keyword.
7. Differentiate between String class and StringBuffer class with example.
8. Explain use of following methods:
   i) indexOf( ) ii)charAt( ) iii)substring( ) iv)replace()
9. Explain Varargs with suitable example.
10. What is Vector?Explain any two methods of it.
11. Explain following methods of Vector class:
    i)elementAt( )ii)addElelmentAt( )iii)insertElementAt() iv)removeAll()
12. List advantages of vector over array.
13. Differentiate between vector and array.
14. Write a program to implement vector class and it's methods for adding and removing elements.
15. What are the wrapper classes? Write any four methods of Integer wrapper class.
16. What is command line argument? Explain with example.
17. List various wrapper classes.
18. Write a program to add 2 int,2 float,2 String objects to a vector. Remove element as specified by user and display the list.

MCQ Question

(Total number of Question=Marks*3=18*3=54)

Note: Correct answer is marked with **bold**

1. This is false about constructor.
   a) Constructors cannot be synchronized in Java
   b) Java does not provide default copy constructor
   c) Constructor can have a return type
   d) "this" and "super" can be used in a constructor

2. What is true about constructor?
   a) It can contain return type
   b) It can take any number of parameters
   c) It can have any non-access modifiers
   d) Constructor cannot throw an exception

3. What would be the behaviour if one parameterized constructor is explicitly defined?
   a) Compilation error
   b) Compilation succeeds
   c) Runtime error
   d) Compilation succeeds but at the time of creating object using default constructor, it throws compilation error.

4. _____is an incorrect array declaration
   a) int arr[] = new int[5]
   b) int [] arr = new int[5]
   c) int arr[] = new int[5]
   d) **int arr[] = int [5] new**

5. ____ of these class object can be used to form a dynamic array?
   a)ArrayList
   b)Map
   c) Vectord.
   d)ArrayList & Vector

6. Which of these methods is used to add elements in vector at specific location?
   a) add()
   b) set()
   c)AddElement()
   d)addElement()

6. We can use ……feature to convert primitive data types to wrapper class types automatically.
   a)autoboxing
   b)unboxing
   c)annotations
   d) Both A and B

7. _____the following method call returns negative if S1<S2, positive if S1>S2 and zero if S1 is equal to S2.
   a)S2.compareTo(S1) c)compare S1 To S2
   b)S1.compareTo(S2) d)S1.compare(S2
8. If you need to extract more than one character at a time you can use the …….
   a)CharAt() c)MultipleChar()
   b)getChars() d) getBytes()
9. ……method is used to remove any leading or trailing white space that may have inadvertently been entered by the user.
   a)trim() b)remove()
   c)replace() d)length()
10. The …… method concatenates the string representation of any other type of data to the end of the invoking StringBuffer object.
   a)append() c)setLength()
   b) concat() d) convert()
12. The …… method is used to convert object numbers to primitive numbers.
   a)Constructor **c)typeValue()**
   b) String() d) Parsing
13. The … method converts data from its internal format into a human- readable form.
   a)convert() c)compare()
   b) valueOf() d)getValue()
14. We can convert numeric string to primitive number using …….
   a) parsing methods b)constructor methods
   c)wrapper classes d) abstract classes
15. The method ……. sets the length of the string S1 to n. If n<S1.length() S1 is truncated. If n>S1.length() zeros are added to S1.
   a) S1.setLength(n) c)S1.LengthAdd(n)
   b) S1.AddLength(n) d)S1.Append(n)
16. What allows the programmer to destroy an object x?
   a) x.finalize()
   b) x.delete()
   c) Runtime.getRuntime().gc()
   d)Only the garbage collection system can destroy an object.
17. Which statement is true?
   a)Programs will not run out of memory.
   b) Objects that are referred to by other objects will never be garbage collected.
   c)Objects that will never again be used are eligible for garbage collection.
   d) Objects that can be reached from a live thread will never be garbage collected.
18._____ of these keywords is used to make a class?

a) class
c)int
b)struct
d) none of the mentioned

19. _____of the following is a valid declaration of an object of class Box?
a) Box obj = new Box();
c) obj = new Box();
b)Box obj = new Box;
d) new Box obj;

21. ____of these operators is used to allocate memory for an object?
a) malloc
c)new
b) alloc
d) give

22. ____of these statement is incorrect?
a) Every class must contain a main() method
b)Applets do not require a main() method at all
c) There can be only one main() method in a program
d) main() method must be made public

23._____ of the following statements is correct?
a) Public method is accessible to all other classes in the hierarchy
b) Public method is accessible only to subclasses of its parent class
c) Public method can only be called by object of its class
d) Public method can be accessed by calling object of the public class

24. _____of this method is given parameter via command line arguments?
a) main()
c) Any method
b) recursive() method
d) System defined methods

25._____ of these data types is used to store command line arguments?
a) Array
c) String
b) Stack
d) Integer

26. How many arguments can be passed to main()?
a) Infinite
c) System Dependent
b) Only 1
d) None of the mentioned

27. ___of these cannot be declared static?
a) class
c) variable
b) object
d) method

28. _____of these keywords is used to prevent content of a variable from being modified?
a) final
c) constant
b) last
d) static

29. String in Java is a?
a) class
c) variable
b) object
d) character array

30. ____ of these method of String class is used to obtain character at specified index?

a) char()
c) charat()
b) Charat()
d) charAt()

31. _____of these method of String class can be used to test to strings for equality?
a) isequal()
c) equal()
b) isequals()
d) equals()

32. _____of the following statements are incorrect?
a) String is a class
b) Strings in java are mutable
c) Every string is an object of class String
d) Java defines a peer class of String, called StringBuffer, which allows string to be altered

33. _____ is the process of defining two or more methods within same class that have same name but different parameters declaration?
a) method overloading
c) method hiding
b) method overriding
d) none of the mentioned

34. _____of these can be overloaded?
a) Methods
c) All of the mentioned
b) Constructors
d) None of the mentioned

35. ____is the process of defining a method in terms of itself, that is a method that calls itself?
a) Polymorphism
c) Encapsulation
b) Abstraction
d) Recursion

36._____of the following is a method having same name as that of its class?
a) finalize
c) class
b) delete
d) constructor

37. ___is the return type of Constructors?
a) int
c) void
b) float
d) none of the mentioned

38. _____keyword is used by the method to refer to the object that invoked it?
a) import
c) abstract
b) catch
d) this

39. _____operator is used by Java run time implementations to free the memory of an object when it is no longer needed?
a) delete
c) new
b) free
d) none of the mentioned

40.The function is used to perform some action when the object is to be destroyed is:
a) finalize()
c) main()
b) delete()
d) none of the mentioned

41. ____of the following statements are incorrect?
a) default constructor is called at the time of object declaration
b) constructor can be parameterized
c) finalize() method is called when an object goes out of scope and is no longer needed
d) finalize() method must be declared protected

42. _____is not the use of "this" keyword in Java?
a) Passing itself to another method
b) Calling another constructor in constructor chaining
c) Referring to the instance variable when local variable has the same name
d) Passing itself to method of the same class

43. ____of these access specifiers must be used for main() method?
a) private
c) protected
b) public
d) none of the mentioned

44. ___of these is used to access a member of class before object of that class is created?
a) public
c) static
b) private
d) protected

45. ____of these is used as a default for a member of a class if no access specifier is used for it?
a) private
c) public, within its own package
b) public
d) protected

46. The process by which we can control what parts of a program can access the members of a class.
a) Polymorphism
c) Encapsulation
b) Abstraction
d) Recursion

47. The following is not an access modifier?
a) Public
c) Protected
b) Private
d) Void

48. All the variables of class should be ideally declared as?
a) private
c) protected
b) public
d) default

49. How can a protected modifier be accessed?
a) accessible only within the class
b) accessible only within package
c) accessible within package and outside the package but through inheritance only
d) accessible by all

50. How many copies of static and class variables are created when 10 objects are created of a class?

a) 1, 10
c) 10, 1
b) 10, 10
d) 1, 1

51. ___of these is the method which is executed first before execution of any other thing takes place in a program?
a) main method
c) static method
b) finalize method
d) private method

52. ____ is the process of defining more than one method in a class differentiated by parameters?
a) Function overriding
c) Function doubling
b) Function overloading
d) None of the mentioned

53. ____of these data type can be used for a method having a return statement in it?
a) void
c) float
b) int
d) both int and float

54. The following statement is incorrect:
a) Two or more methods with same name can be differentiated on the basis of their parameters data type
b) Two or more method having same name can be differentiated on basis of number of parameters
c) Any already defined method in java library can be defined again in the program with different data type of parameters
d) If a method is returning a value the calling statement must have a variable to store that value.

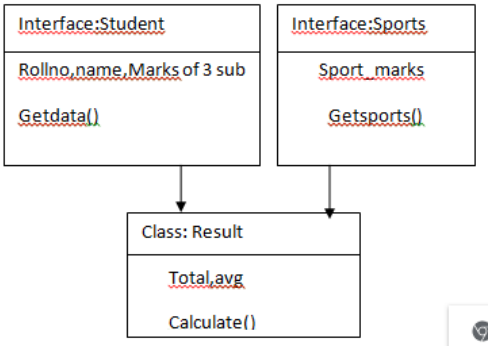
3. Inheritance, Interfaces and Packages

Position in Question Paper **Total Marks-12**

Q.1.d) 2-Marks.
Q.3.b) 4-Marks.
Q.4.c) 4Marks.
Q.5.b) 6Marks.

Descriptive Questions

1. What is inheritance?List types of inheritance.
2. Explain constructor overloading in java.
3. Explain dynamic method dispatch with example.
4. State the use of super with respect to inheritance.
5. Explain abstract class with suitable example.
6. Define interface.State the need and write the syntax of interface with example.
7. Explain with example how to achieve multiple inheritance with interface.
8. Explain Runnable interface with example.
9. Differentiate between abstract class and interface.
10. What is package?How to create it?List any 4 buit-in packages form java API along with their use.
11. How to add class to a user-defined package? Explain with example.
12. How to add interface to a package?
13. Explain static import with suitable example.
14. Create a package college which contains teacher class with name and designation as members with methods accept( )and display( ).Write test class outside the package to access teacher class.
15. Write a program to implement following inheritance:



MCQ Question

(Total number of Question=Marks*3=12*3=36)

1. _____keyword must be used to inherit a class?
   a) super
   b) this
   c) extent
   d) extends
2. A class member declared protected becomes a member of subclass of which type
   a) public member
   b) private member
   c) protected member
   d) static member
3. ____ of these is correct way of inheriting class A by class B?
   a) class B + class A {}
   b) class B inherits class A {}
   c) class B extends A {}
   d) class B extends class A {}
4. _____is not type of inheritance?
   a) Single inheritance
   b) Double inheritance
   c) Hierarchical inheritance
   d) Multiple inheritance
5. Using which of the following, multiple inheritance in Java can be implemented?
   a) Interfaces
   b) Multithreading
   c) Protected methods
   d) Private methods
6. All classes in Java are inherited from which class?
   a) java.lang.class
   b) java.class.inherited
   c) java.class.object
   d) java.lang.Object
7. In order to restrict a variable of a class from inheriting to subclass, how variable should be declared?
   a) Protected
   b) Private
   c) Public
   d) Static
8. ____of the following is used for implementing inheritance through an interface?
   a) inherited
   b) using
   c) extends
   d) implements
9. ___of the following is used for implementing inheritance through class?
   a) inherited
   b) using
   c) extends
   d) implements
10. ___keyword can be used in a subclass to call the constructor of superclass?
    a) super
    b) this
    c) extent
    d) extends
11. ____is the process of defining a method in a subclass having same name & type signature as a method in its superclass?

a) Method overloading
b) **Method overriding**
c) Method hiding
d) None of the mentioned

12. _____of these keywords can be used to prevent Method overriding?
a) static
b) constant
c) protected
d) final

13. ____is supported by method overriding in Java?
a) Abstraction
b) Encapsulation
c) Polymorphism
d) None of the mentioned

14. ____keyword is used to define an abstract class?
a) abst
b) abstract
c) Abstract
d) abstract class

15. If a class inheriting an abstract class does not define all of its function then it will be known as?
a) Abstract
b) A simple class
c) Static class
d) none of the mentioned

16._____ is not a correct statement?
a) Every class containing abstract method must be declared abstract
b) Abstract class defines only the structure of the class not its implementation
c) Abstract class can be initiated by new operator
d) Abstract class can be inherited

17._____of these packages contains abstract keyword?
a) java.lang
b) java.util
c) java.io
d) java.system

18.____of these class is superclass of every class in Java?
a) String class
b) Object class
c) Abstract class
d) ArrayList class

19.____of these method of Object class can clone an object?
a) Objectcopy()
b) copy()
c) Object clone()
d) clone()

20.____of these method of Object class is used to obtain class of an object at run time?
a) get()
b) void getclass()
c) Class getclass()
d) None of the mentioned

21.___of these keywords can be used to prevent inheritance of a class?
a) super
b) constant
c) class
d) final

22._____of these keywords cannot be used for a class which has been declared final?

a) abstract
c) abstract and extends
b) extends
d) none of the mentioned

23.___of these keywords is used to define packages in Java?
a) pkg
c) package
b) Pkg
d) Package

24. _____of this access specifies can be used for a class so that its members can be accessed by a different class in the same package?
a) Public
c) No Modifier
b) Protected
d) All of the mentioned

25. ____ of these is a mechanism for naming and visibility control of a class and its content?
a) Object
c) Interfaces
b) Packages
d) None of the Mentioned.

26. ____ of the following is the correct way of importing an entire package 'pkg'?
a) import pkg.
c) import pkg.*
b) Import pkg.
d) Import pkg.*

27. _____of these access specifiers can be used for a class so that its members can be accessed by a different class in the different package?
a) Public
c) Private
b) Protected
d) No Modifier

28. Following is an incorrect statement about packages?
a) Package defines a namespace in which classes are stored
b) A package can contain other package within it
c) Java uses file system directories to store packages
d) A package can be renamed without renaming the directory in which the classes are stored

29. ___of the following package stores all the standard java classes?
a) lang
c) util
b) java
d) java.packages

30. ___of these can be used to fully abstract a class from its implementation?
a) Objects
c) Interfaces
b) Packages
d) None of the Mentioned

31. ___of the following is the correct way of implementing an interface salary by class manager?
a) class manager extends salary {}
b) class manager implements salary {}
c) class manager imports salary {}
d) none of the mentioned

32. ____ of the following is an incorrect statement about packages?

a) Interfaces specifies what class must do but not how it does

b) Interfaces are specified public if they are to be accessed by any code in the program

c) All variables in interface are implicitly final and static

d) All variables are static and methods are public if interface is defined public

33. An interface with no fields or methods is known as a _____.

a) Runnable Interface

b) Marker Interface

c) Abstract Interface

d) CharSequence Interface

34. ____keyword is used for accessing the features of a package?

a) package

b) import

c) extends

d) export

35. Dynamic dispatch is a feature that

a) selects which polymorphic operation to call at run time

b) selects which polymorphic operation to call at compile time

c) Both a and b

d) None

36. Overloaded methods in java

a) Compiler uses method signature to determine which method to invoke. They may have different functionality

b) They are not available in fundamental classes

c) They have the same name and signature

d) none

4. Exception Handling and Multithreading

Position in Question Paper **Total Marks-12**

Q.1.e) 2-Marks.
Q.2.c) 4-Marks
Q.5.c) 6-Marks.
Q.6.b) 6-Marks.

Descriptive Questions

1. Enlist the use of following UI components.
2. Design the registration form using following UI components.
3. State and explain different types of errors?
4. Define Exception. Explain the types of Exception in java
5. Explain the following with respect to Exception handling:
   i)try ii)catch iii)throw iv)throws v)finally
6. Explain nested try catch with suitable example.
7. Write note on chained exceptions.
8. Write a program to accept a password from user and throw "Authentication failure" Exception if the password is incorrect.
9. Differentiate between throw and throws clause.
10. Define thread.
11. Explain the Lifecycle of thread with suitable diagram.
12. Write a java program for implementing Runnable interface.
13. What is Thread priority?Write their default values and methods to change them.
14. Explain synchronization with suitable example.
15. Explain inter-thread communication with suitable example.
16. Explain Deadlock.

MCQ Question

1. When Exceptions in Java does arise in code sequence?
a) Run Time c) Can Occur Any Time
b) Compilation Time d) None of the mentioned
2. Which of these keywords is not a part of exception handling?
a) try **c) thrown**
b) finally d) catch
3. Which of these keywords must be used to monitor for exceptions?
a) try c) throw
b) finally d) catch
4. Which of these keywords must be used to handle the exception thrown by try block in some rational manner?
a) try c) throw
b) finally **d) catch**
5. Which of these keywords is used to manually throw an exception?
a) try **c) throw**
b) finally d) catch
6. What will be the output of the following Java program?

```
1.    class exception_handling
2.    {
3.       public static void main(String args[])
4.       {
5.          try
6.          {
7.             System.out.print("Hello" + " " + 1 / 0);
8.          }
9.          catch(ArithmeticException e)
10.          {
11               System.out.print("World");
12.          }
13.       }
14.    }
```

a) Hello c) HelloWorld
b) World d) Hello World
7. What will be the output of the following Java program?

```
1.    class exception_handling
2.    {
3.       public static void main(String args[])
4.       {
5.          try
```

```
6.          {
7.              int a, b;
8.              b = 0;
9.              a = 5 / b;
10.               System.out.print("A");
11.             }
12.             catch(ArithmeticException e)
13.             {
14                  System.out.print("B");
15.             }
16.         }
17.     }
```

a) A
b) B
c) Compilation Error
d) Runtime Error

8. Which of the following keywords is used for throwing exception manually?
a) finally
b) try
c) throw
d) catch

9. Which of the following classes can catch all exceptions which cannot be caught?
a) Runtime Exception
b) Error
c) Exception
d) Parent Exception

10. Which of the following is a super class of all exception type classes?
a) Catchable
b) Runtime Exceptions
c) String
d) Throwable

11. Which of the following operators is used to generate instance of an exception which can be thrown using throw?
a) thrown
b) alloc
c) malloc
d) new

12. Which of the following keyword is used by calling function to handle exception thrown by called function?
a) throws
b) throw
c) try
d) catch

13. Which of the following handles the exception when a catch is not used?
a) finally
b) throw handler
c) default handler
d) java run time system

14. Which part of code gets executed whether exception is caught or not?
a) finally
b) try
c) catch
d) throw

15. Which of the following should be true of the object thrown by a thrown statement?
a) Should be assignable to String type
b) Should be assignable to Exception type
c) Should be assignable to Throwable
d) Should be assignable to Error type

At runtime, error is recoverable.

a) True **b) False**

16. Which of these is a super class of all exceptional type classes?

a) String **c) Throwable**

b) Runtime Exceptions d) Cacheable

17. Which of these class is related to all the exceptions that can be caught by using catch?

a) Error c) Runtime Exception

b) Exception d) All of the mentioned

18.Which of these class is related to all the exceptions that cannot be caught?

a) Error c) Runtime Exception

b) Exception d) All of the mentioned

19.Which of these handles the exception when no catch is used?

a) Default handler c) throw handler

b) finally d) Java run time system

20.What exception thrown by parseInt() method?

a) ArithmeticException c) NullPointerException

b) ClassNotFoundException **d) NumberFormatException**

21.Which of these keywords is used to generate an exception explicitly?

a) try **c) throw**

b) finally d) catch

22.Which of these class is related to all the exceptions that are explicitly thrown?

a) Error **c) Throwable**

b) Exception d) Throw

23.Which of these operator is used to generate an instance of an exception than can be thrown by using throw?

a) new c) alloc

b) malloc d) thrown

24.Which of these keywords is used to by the calling function to guard against the exception that is thrown by called function?

a) try **c) throws**

b) throw d) catch

25.Which of these clause will be executed even if no exceptions are found?

a) throws c) throw

b) finally d) catch

26.A single try block must be followed by which of these?

a) finally **c) finally & catch**

b) catch d) none of the mentioned

27.Which of these exceptions handles the divide by zero error?

a) ArithmeticException c) IllegalAccessException

b) MathException d) IllegarException

28.Which of these exceptions will occur if we try to access the index of an array beyond its length?
a) ArithmeticException
b) ArrayException
c) ArrayIndexException
d)ArrayIndexOutOfBoundsException

29.What is the use of try & catch?
a) It allows us to manually handle the exception
b) It allows to fix errors
c) It prevents automatic terminating of the program in cases when an exception occurs
d) All of the mentioned

30.Which of these keywords are used for the block to be examined for exceptions?
a) try
b) catch
c) throw
d) check

31.Which of these keywords are used for the block to handle the exceptions generated by try block?
a) try
b) catch
c) throw
d) check

32.Which of these keywords are used for generating an exception manually?
a) try
b) catch
c) throw
d) check

33.Which of these statements is incorrect?
a) try block need not to be followed by catch block
b) try block can be followed by finally block instead of catch block
c) try can be followed by both catch and finally block
d) try need not to be followed by anything

34.Which of these method is used to implement Runnable interface?
a) stop()
b) run()
c) runThread()
d) stopThread()

35.Which of these method is used to begin the execution of a thread?
a) run()
b) start()
c) runThread()
d) startThread()

36.Which of these statement is incorrect?
a) A thread can be formed by implementing Runnable interface only
b) A thread can be formed by a class that extends Thread class
c) start() method is used to begin execution of the thread
d) run() method is used to begin execution of a thread before start() method in special cases

37.Which of these method of Thread class is used to find out the priority given to a thread?
a) get()
b) ThreadPriority()
c) getPriority()
d) getThreadPriority()

38.Which of these method of Thread class is used to Suspend a thread for a period of time?
a) sleep()
c) suspend()

b) terminate()
d) stop()

39.Which function of pre-defined class Thread is used to check weather current thread being checked is still running?

a) isAlive()
c) isRunning()
b) Join()
d) Alive()

40.What will be the output of the following Java code?

```
1.  class multithreaded_programing
2.  {
3.      public static void main(String args[])
4.      {
5.          Thread t = Thread.currentThread();
6.          t.setName("New Thread");
7.          System.out.println(t);
8.      }
9.  }
```

a) Thread[5,main]
c) Thread[main,5,main]
b) Thread[New Thread,5]
d) Thread[New Thread,5,main]

41. What is the priority of the thread in output in the following Java program?

```
1.  class multithreaded_programing
2.  {
3.      public static void main(String args[])
4.      {
5.          Thread t = Thread.currentThread();
6.          t.setName("New Thread");
7.          System.out.println(t.getName());
8.      }
9.  }
```

a) main
c) New Thread
b) Thread
d) Thread[New Thread,5,main]

42.What is the name of the thread in output in the following Java program?

```
1.  class multithreaded_programing
2.  {
3.      public static void main(String args[])
4.      {
5.          Thread t = Thread.currentThread();
6.          System.out.println(t.getPriority());
7.      }
8.  }
```

a) 0
c) 4
b) 1
d) 5

43.What is the name of the thread in output in the following Java program?

```
1.  class multithreaded_programing
```

```
2.    {
3.       public static void main(String args[])
4.       {
5.          Thread t = Thread.currentThread();
6.          System.out.println(t.isAlive());
7.       }
8.    }
```

a) 0
c) true
b) 1
d) false

44.What is multithreaded programming?
a) It's a process in which two different processes run simultaneously
b) It's a process in which two or more parts of same process run simultaneously
c) It's a process in which many different process are able to access same information
d) It's a process in which a single process can access information from many sources

45.Which of these are types of multitasking?
a) Process based
c) Process and Thread based
b) Thread based
d) None of the mentioned

46.Thread priority in Java is?
a) Integer
c) double
b) Float
d) long

47.What will happen if two thread of the same priority are called to be processed simultaneously?
a) Anyone will be executed first lexographically
c) None of them will be executed
b) Both of them will be executed simultaneously
d) It is dependent on the operating system

48.Which of these statements is incorrect?
a) By multithreading CPU idle time is minimized, and we can take maximum use of it
b) By multitasking CPU idle time is minimized, and we can take maximum use of it
c) Two thread in Java can have the same priority
d) A thread can exist only in two states, running and blocked

5. Java Applets and Graphics Programming

Position in Question Paper **Total Marks-10**

Q.1.f) 2-Marks.
Q.3.c) 4-Marks.
Q.4.d) 4-Marks.
Q.6.c) 6-Marks.

Descriptive Questions

1. What is an Applet? Explain applet features.
2. Differentiate between applet and application.
3. Explain life cycle of an applet with diagram.
4. Explain applet attributes.
5. Write an applet to display message "Welcome".
6. Write an applet to set background with red color and foreground with blue color
7. Write short note on Applet tags
8. Explain <PARAM>tag with suitable example.
9. Explain how to pass parameters to an Applet.
10. Explain following methods with suitable example:
    i)drawPoly() ii)drawRect( ) iii)drawOval() iv)fillOval()
11. Explain any four methods of Graphics class.
12. Write java program to display triangle filled with red color.
13. Explain following methods:i)getFont() ii)setFont() iii)getFamily() iv)getFontName()
14. Write an applet to accept username in the form of parameter and print "Hello<UserName>"
15. Explain following methods with suitable example:
    i)drawRect() ii)drawArc( ) iii)drawRoundRect() iv)drawLine()
16. Explain following methods with suitable example:i)SetColor() ii)SetForeGround.
17. State the use of Font class. Write syntax to create an object of Font class. Describe methods of Font class.
18. Write a Program to design an applet to create three circles filled with three different colors.

MCQ Question

1. Which of these functions is called to display the output of an applet?
a) display() c) displayApplet()
b) paint() d) PrintApplet()

2. Which of these methods can be used to output a string in an applet?
a) display() **c) drawString()**
b) print() d) transient()

3. Which of these methods is a part of Abstract Window Toolkit (AWT)?
a) display() c) drawString()
b) paint() d) transient()

4. Which of these modifiers can be used for a variable so that it can be accessed from any thread or parts of a program?
a) transient c) global
b) volatile d) No modifier is needed

5. Which of these operators can be used to get run time information about an object?
a) getInfo **c) instanceof**
b) Info d) getinfoof

6. What is the Message is displayed in the applet made by the following Java program?

```
1.  import java.awt.*;
2.  import java.applet.*;
3.  public class myapplet extends Applet
4.  {
5.     public void paint(Graphics g)
6.     {
7.        g.drawString("A Simple Applet", 20, 20);
8.     }
9.  }
```

a) A Simple Applet c) Compilation Error
b) A Simple Applet 20 20 d) Runtime Error

7.. What is the length of the application box made by the following Java program?

```
1.  import java.awt.*;
2.  import java.applet.*;
3.  public class myapplet extends Applet
4.  {
5.     public void paint(Graphics g)
6.     {
7.        g.drawString("A Simple Applet", 20, 20);
8.     }
9.  }
```

a) 20 c) 100
b) 50 d) System dependent

8. What is the length of the application box made the following Java program?

```
1.  import java.awt.*;
2.  import java.applet.*;
3.  public class myapplet extends Applet
4.  {
5.     Graphic g;
6.     g.drawString("A Simple Applet", 20, 20);
7.  }
```

a) 20 **c) Compilation Error**
b) Default value d) Runtime Error

9. What will be the output of the following Java program?

```
1.  import java.io.*;
2.  class Chararrayinput
3.  {
4.     public static void main(String[] args)
5.     {
6         String obj  = "abcdefgh";
7.        int length = obj.length();
8.        char c[] = new char[length];
9.        obj.getChars(0, length, c, 0);
10.         CharArrayReader input1 = new CharArrayReader(c);
11.         CharArrayReader input2 = new CharArrayReader(c, 1, 4);
12.         int i;
13.         int j;
14.         try
15.         {
16            while((i = input1.read()) == (j = input2.read()))
17.           {
18.              System.out.print((char)i);
19.           }
20          }
21.       catch (IOException e)
22.       {
23.          e.printStackTrace();
24        }
25        }
26.  }
```

a) abc c) abcde
b) abcd **d) none of the mentioned**

10. Which of these package is used for text formatting in Java programming language?
a) java.text c) java.awt.text
b) java.awt d) java.io

11. Which of this class can be used to format dates and times?
a) Date **c) DateFormat**
b) SimpleDate d) textFormat

12. Which of these method returns an instance of DateFormat that can format time information?
a) getTime() c) getTimeDateinstance()
b) getTimeInstance() d) getDateFormatinstance()

13. Which of these class allows us to define our own formatting pattern for dates and time?
a) DefinedDateFormat c) ComplexDateFormat
b) SimpleDateFormat d) UsersDateFormat

14. Which of these formatting strings of SimpleDateFormat class is used to print AM or PM in time?
a) a c) c
b) b d) d

15. Which of these formatting strings of SimpleDateFormat class is used to print week of the year?
a) w c) s
b) W d) S

16. 7. What will be the output of the following Java program?

```
1.  import java.text.*;
2.  import java.util.*;
3.  class Date_formatting
4.  {
5.     public static void main(String args[])
6.     {
7        Date date = new Date();
8        SimpleDateFormat sdf;
9.       sdf = new SimpleDateFormat("mm:hh:ss");
10.        System.out.print(sdf.format(date));
11.    }
12.  }
```

Note : The program is executed at 3 hour 55 minutes and 4 sec (24 hours time).
a) 3:55:4 **c) 55:03:04**
b) 3.55.4 d) 03:55:04

17. What will be the output of the following Java program?

```
1.  import java.text.*;
2.  import java.util.*;
3.  class Date_formatting
4.  {
```

```
5.      public static void main(String args[])
6.      {
7           Date date = new Date();
8           SimpleDateFormat sdf;
9.          sdf = new SimpleDateFormat("hh:mm:ss");
10.           System.out.print(sdf.format(date));
11.       }
12.   }
```

Note : The program is executed at 3 hour 55 minutes and 4 sec (24 hours time).

a) 3:55:4 c) 55:03:04

b) 3.55.4 **d) 03:55:04**

18. What will be the output of the following Java program?

```
1.  import java.text.*;
2.  import java.util.*;
3.  class Date_formatting
4.  {
5.      public static void main(String args[])
6.      {
7           Date date = new Date();
8           SimpleDateFormat sdf;
9.          sdf = new SimpleDateFormat("E MMM dd yyyy");
10.           System.out.print(sdf.format(date));
11.       }
12.   }
```

Note: The program is executed at 3 hour 55 minutes and 4 sec on Monday, 15 July(24 hours time).

a) Mon Jul 15 2013 c) 55:03:04 Mon Jul 15 2013

b) Jul 15 2013 d) 03:55:04 Jul 15 2013

19. What will be the output of the following Java program?

```
1.  import java.text.*;
2.  import java.util.*;
3.  class Date_formatting
4.  {
5.      public static void main(String args[])
6.      {
7           Date date = new Date();
8           SimpleDateFormat sdf;
9.          sdf = new SimpleDateFormat("z");
10.           System.out.print(sdf.format(date));
11.       }
12.   }
```

Note : The program is executed at 3 hour 55 minutes and 4 sec on Monday, 15 July(24

hours time).
a) z
b) Jul
c) Mon
d) PDT

20. What does AWT stands for?
a) All Window Tools
b) All Writing Tools
c) Abstract Window Toolkit
d) Abstract Writing Toolkit

21. The graphics class provides methods to draw a number of graphical figure including
i) Text ii) Lines iii) Images iv) Ellipse
a) i, ii and iii only
b) ii, iii and iv only
c) i, iii and iv only
d) All i, ii, iii and iv

22. The ……. method is called to clear the screen and calls the paint( ) method.
a) update( )
b) paint( )
c) repaint( )
d) reupdate( )

23. The …….. method is automatically called the first time the applet is displayed on the screen and every time the applet receives focus.
a) update( )
b) paint( )
c) repaint( )
d) reupdate( )

24. The ……. method is defined by the AWT which causes the AWT runtime system to execute a call to your applet's update( ) method.
a) update( )
b) paint( )
c) repaint( )
d) reupdate( )

25. Text field can be created by which of the following methods.
i) TextField( ) ii) TextFieldString( ) iii) TextField(int) iv) TextField(string, int)
a) i, ii and iii only
b) ii, iii and iv only
c) i, ii and iv only
d) all i, ii, iii and iv

26. In java applet, we can display numerical values by first converting them into string and then using the …… method.
a) paint( )
b) drawstring( )
c) draw( )
d) convert( )

27. We can change the text to be displayed by an applet by supplying new text to be displayed by an applet by supplying new text to the applet through a …… tag.
a) <edit>
b) <change>
c) <replace>
d) <param>

28. Which of the following is/are the possible values for alignment attribute of Applet tag.
i) Top ii) Left iii) Middle iv) Baseline
a) i, ii and iii only
b) ii, iii and iv only
c) i, iii and iv only
d) all i, ii, iii and iv

29. The …….. attribute of applet tag specifies the amount of horizontal blank space the browser should leave surrounding the applet.
a) SPACE=pixels
b) HSPACE=piexls
c) HWIDTH=piexls
d) HBLANK=pixels

30. …. attribute of applet tag specify the width of the space on the HTML page that will reserved for the applet.

a) WIDTH=pixels
c) HWIDTH=piexls
b) HSPACE=piexls
d) HBLANK=pixels

6. Managing Input/Output/Files in Java

Position in Question Paper **Total Marks-08**

Q.1.g) 2-Marks.
Q.2.d) 4Marks.
Q.3.d) 4Marks.
Q.4.e) 4Marks.

Descriptive Questions

1. Define Stream? What is the use of stream classes.
2. Explain byte stream classes in detail.
3. Explain methods of InputStream.
4. Write a program to demonstrate the use of ByteArrayInputStream.
5. Explain two InputStreamClasses from character stream.
6. Write methods of FileReader class.
7. Write a program to copy the contents from one file to another file.
8. Write note on I/O Exceptions.
9. Write a java program that reads a text file and prints every nth character from the file where 'n' should be passed as a command line argument.
10. Write two methods of character stream classes.

MCQ Question

1. Which of these is used to perform all input & output operations in Java?
a) streams c) classes
b) Variables d) Methods

2. Which of these is a type of stream in Java?
a) Integer stream **c) Byte stream**
b) Short stream d) Long stream

3. Which of these classes are used by Byte streams for input and output operation?
a) InputStream c) Reader
b) InputOutputStream d) All of the mentioned

4. Which of these classes are used by character streams for input and output operations?
a) InputStream c) ReadStream
b) Writer d) InputOutputStream

5. Which of these class is used to read from byte array?
a) InputStream c) ArrayInputStream

b) BufferedInputStream **d) ByteArrayInputStream**

6. What will be the output of the following Java program if input given is 'abcqfghqbcd'?

```
1.  class Input_Output
2.  {
3.     public static void main(String args[]) throws IOException
4.     {
5.        char c;
6. BufferedReader obj = new BufferedReader(new InputStreamReader (System.in));
7.        do
8.        {
9.           c = (char) obj.read();
10           System.out.print(c);
11.        } while(c != 'q');
12.     }
13.  }
```

a) abcqfgh **c) abcq**

b) abc d) abcqfghq

7. What will be the output of the following Java program if input given is "abc'def/'egh"?

```
1.  class Input_Output
2.  {
3.     public static void main(String args[]) throws IOException
4.     {
5.        char c;
6.  BufferedReader obj = new BufferedReader(new InputStreamReader(System.in));
7.        do
8.        {
9.           c = (char) obj.read();
10          System.out.print(c);
11.       } while(c!='\'');
12.    }
13.  }
```

a) abc' c) abc'def/'egh

b) abcdef/' d) abcqfghq

8. What will be the output of the following Java program?

```
1.  class output
2.  {
3.     public static void main(String args[])
4.     {
5.        StringBuffer c = new StringBuffer("Hello");
6.        System.out.println(c.length());
7.     }
8.  }
```

a) 4
b) 5
c) 6
d) 7

9. Which exception is thrown by read() method?
a) IOException
b) InterruptedException
c) SystemException
d) SystemInputException

10. Which of these is used to read a string from the input stream?
a) get()
b) getLine()
c) read()
d) readLine()

11. Which of these class is used to read characters and strings in Java from console?
a) BufferedReader
b) StringReader
c) BufferedStreamReader
d) InputStreamReader

12. Which of these class is implemented by FilterInputStream class?
a) InputStream
b) InputOutputStream
c) BufferedInputStream
d) SequenceInputStream

13. What will be the output of the following Java program if input given is “Hello stop World”?
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```
1.  class Input_Output
2.  {
3.     public static void main(String args[]) throws IOException
4.     {
5.        string str;
6.        BufferedReader obj = new BufferedReader(new
InputStreamReader(System.in));
7.        do
8.        {
9.           str = (char) obj.readLine();
10                                          System.out.print(str);
11.        } while(!str.equals("strong"));
12.     }
13.  }
```

a) Hello
b) Hello stop
c) World
d) Hello stop World

14. What will be the output of the following Java program?

```
1.  class output
2.  {
3.     public static void main(String args[])
4.     {
5.        StringBuffer c = new StringBuffer("Hello");
6.        StringBuffer c1 = new StringBuffer(" World");
7.        c.append(c1);
8.        System.out.println(c);
```

```
9.      }
10.   }
```

a) Hello
b) World
c) Helloworld
d) Hello World

15. What will be the output of the following Java program?

```
1.   class output
2.   {
3.      public static void main(String args[])
4.      {
5.        StringBuffer s1 = new StringBuffer("Hello");
6.        s1.setCharAt(1,x);
7.        System.out.println(s1);
8.      }
9.   }
```

a) xello
b) xxxxx
c) Hxllo
d) Hexlo

16. What will be the output of the following Java program if input given is “abc’def/’egh”?

```
1.   class Input_Output
2.   {
3.      public static void main(String args[]) throws IOException
4.      {
5.         char c;
6.  BufferedReader obj = new BufferedReader(new InputStreamReader(System.in));
7.         do
8.         {
9.            c = (char) obj.read();
10             System.out.print(c);
11.         } while(c != '\'');
12.      }
13.   }
```

a) abc’
c) abc’def/’egh
b) abcdef/’
d) abcqfghq

17. Which of these class contains the methods print() & println()?
a) System
c) BUfferedOutputStream
b) System.out
d) PrintStream

18. Which of these methods can be used to writing console output?
a) print()
c) write()
b) println()
d) all of the mentioned

19. Which of these classes are used by character streams output operations?
a) InputStream
c) ReadStream
b) Writer
d) InputOutputStream

20. Which of these class is used to read from a file?

a) InputStream
c) FileInputStream
b) BufferedInputStream
d) BufferedFileInputStream

21. What will be the output of the following Java program?
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```
1.  class output
2.  {
3.      public static void main(String args[])
4.      {
5.          String a="hello i love java";
6.          System.out.println(indexof('i')+" "+indexof('o')+" "+lastIndexof('i')+"
"+lastIndexof('o') ));
7.      }
8.  }
```

a) 6 4 6 9
c) 7 8 8 9
b) 5 4 5 9
d) 4 3 6 9

22. Which of these class contains the methods used to write in a file?
a) FileStream
c) BUfferedOutputStream
b) FileInputStream
d) FileBufferStream

23. Which of these exception is thrown in cases when the file specified for writing is not found?
a) IOException
c) FileNotFoundException
b) FileException
d) FileInputException

24. Which of these methods are used to read in from file?
a) get()
c) scan()
b) read()
d) readFileInput()

25. Which of these values is returned by read() method is end of file (EOF) is encountered?
a) 0
c) -1
b) 1
d) Null

26. Which of these exception is thrown by close() and read() methods?
a) IOException
c) FileNotFoundException
b) FileException
d) FileInputOutputException

27. Which of these methods is used to write() into a file?
a) put()
c) write()
b) putFile()
d) writeFile()

28. What will be the output of the following Java program?

```
1.  import java.io.*;
2.  class filesinputoutput
3.  {
4.      public static void main(String args[])
5.      {
6.          InputStream obj = new FileInputStream("inputoutput.java");
```

```
7.          System.out.print(obj.available());
8.      }
9.  }
```

Note: inputoutput.java is stored in the disk.

a) true
b) false

c) prints number of bytes in file
d) prints number of characters in file