

AMIETE – IT (Current & New Scheme)

Time: 3 Hours

June 2019

Max. Marks: 100

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE: There are 9 Questions in all.

- Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 minutes of the commencement of the examination.
- Out of the remaining EIGHT Questions, answer any FIVE Questions, selecting THREE questions from Part A and TWO questions from Part B. Each question carries 16 marks.
- Any required data not explicitly given, may be suitably assumed and stated

Q.1 Choose the correct or the best alternative in the following: (2×10)

a. A program needs to store the value -32000. Which of the following data types can be used to store this value?

- (A) short and int data types can be used
- (B) byte and int data types can be used
- (C) short and byte data types can be used
- (D) short, byte and int data types can be used

b. What is the outcome of the following Java code segment?

```
int i = -10;
int k = i < 0 ? -i : i;
System.out.println(k);
```

- (A) 0 is printed
- (B) 10 is printed
- (C) -10 is printed
- (D) Nothing is printed

c. The command line arguments to a Java program are passed as

- (A) Characters
- (B) String array
- (C) Character array
- (D) Custom classes

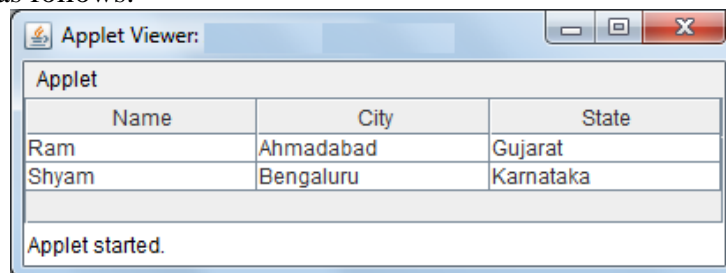
d. Consider the following code segment. Which one of the following statement is correct?

```
public class Test {
    private static int i = 10;
    protected static int j = 15;
    public static int k = 20;
    static int l = 25;
}
class Test1 extends Test{
    public static void main(String args[]){
        System.out.println(l); //Statement 1
        System.out.println(k); //Statement 2
        System.out.println(j); //Statement 3
        System.out.println(i); //Statement 4
    }
}
```

- (A) Compile time error occurs at Statement 1, Statement 2 and Statement 4
 (B) Compile time error occurs at Statement 4
 (C) Compile time error occurs at Statement 1 and Statement 4
 (D) Run time error at Statement 1, Statement 3 and Statement 4
- e. What is the output of the following Java code segment?
- ```
try {
 int i = 0 / 0;
 System.out.print("In try block.");
} catch (ArithmeticException ae){
 System.out.print("In Arithmetic Exception block.");
} catch (Exception e){
 System.out.print("In Exception block.");
} finally{
 System.out.print("In finally block.");
}
```
- (A) Runtime error  
 (B) "In Arithmetic Exception block. In Exception block In finally block." is printed  
 (C) "In try block. In Arithmetic Exception block. In Exception block. In finally block." is printed  
 (D) "In Arithmetic Exception block. In finally block." is printed
- f. What is the output of the following Java code segment
- ```
String s1 = "Hello";
String s2 = new String(s1);
System.out.print(s1.equals(s2) + " ");
System.out.print(s1 == s2);
```
- (A) true false is printed (B) true true is printed
 (C) false true is printed (D) false false is printed
- g. The fill ratio in a hash set determines
- (A) how full the hash set can be before it is reset completely
 (B) how full the hash set can be before it is resized downward
 (C) the capacity of the hash set
 (D) how full the hash set can be before it is resized upward
- h. Which one of the following is NOT an inline element in XHTML?
- (A) code (B) sub
 (C) ema (D) samp
- i. Assume that a width value of 24 needs to be set using the XHTML width attribute. Which of the following is the correct way to set it?
- (A) Width=24 (B) width="24"
 (C) WIDTH="24" (D) WIDTH=24
- j. OnBlur is a
- (A) Mouse event (B) Input control event
 (C) Keyboard event (D) Window event

PART A**Answer any THREE Questions. Each question carries 16 marks.**

- Q.2** a. Create a Java Class “Stack” that implements a stack that can hold a maximum of ten integers. Implement the push and pop methods for the stack and push integers 0 to 9 in the stack and pop each number and print the result. (8)
- b. Write a Java program that stores ten numbers in an array. Add a method that checks each number in the array, prints the value if it is a positive value and skips the value if it is a zero. If a negative number is encountered, the processing should be stopped immediately and a -1 should be returned by the method. (8)
- Q.3** a. Illustrate Java method overloading, method overriding and dynamic method dispatch using a parent class “Vehicle” and its child classes “Car” and “Truck”. (8)
- b. Create a Java class “Box” that contains the attributes length, breadth, height and volume. Create constructors for scenarios where all three values are supplied, a single value is supplied (for a cube) and no values are supplied. In case of no values, all attributes should be set to a negative value. Add a method to print the volume of the box. (8)
- Q.4** a. Create a method to perform division. Create a custom exception in Java and throw it when the denominator input value to the division method is 0. (8)
- b. Discuss the two different ways of creating Java threads with an example for each. (8)
- Q.5** a. Write a Java program to read a buffered input character stream with a Buffered Reader. (8)
- b. Write a Java program to find the duplicate words and their number of occurrences in a text. (8)
- Q.6** a. Assume that a website needs to use multiple layouts and needs to use AWT. Which layout manager would be best suited for this scenario and why? Justify with a detailed example. (8)
- b. Create a Swing applet that uses a JTable to show the names, cities and states in a table as follows: (8)



Name	City	State
Ram	Ahmadabad	Gujarat
Shyam	Bengaluru	Karnataka

Applet started.

PART B**Answer any TWO Questions. Each question carries 16 marks.**

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- Q.7** a. For an online-exam web application, list and discuss the issues involved in the site production phase of the web development process. (8)
- b. Assume that an XHTML web page that contains an image map of India needs to be created. When the user clicks on a state, the user should be taken to a page that describes the state details. Explain how this requirement can be addressed using Image maps. (8)
- Q.8** a. Compare the merits and demerits of Contrast by size, Contrast by value and Contrast by shape. (8)
- b. Assume that an online shopping website is being built. List and discuss the steps involved in creating this web site's information architecture in detail. (8)
- Q.9** a. Create an HTML form and a CGI program that collects the name and email of a person and prints a *Hello* message with the user name. (8)
- b. Give an example for an HTTP query message and response message and list the purpose of each element in the messages. (8)