

**MAR THOMA RESIDENTIAL SCHOOL**  
**SECOND TERM EXAMINATION 2018-2019**

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**CLASS: XI**

**MARKS:70**

**SUBJECT: COMPUTER SCIENCE**

**TIME: 3 HRS**

**PART- I (20 Marks)**

Answer *all* questions

**Question 1**

a) State Idempotent Law and prove it with the help of a truth table (1)

b) Write the dual of the Boolean expression (1)

$$A ( B + C ) ( C' + D' )$$

c) Draw logic circuit for (1)

$$A + ( ABC )' + ( AB + BC )'$$

d) What is Recursion? What are the types of Recursion? (1)

e) Simplify the following expression by using Boolean laws (1)

$$ABC + AB'C + AC'$$

**Question 2**

a) Differentiate between Instance variable and Class variable. (2)

b) What is Boolean hasNext() function? (2)

c) What is EX-OR logic gate? Write the truth table of EX-OR for two input signals (2)

d) Perform the following operation (2)

i.  $1001010.101 + 1011.001$

e) Define DeMorgan's theorem and prove it with a truth table (2)

**Question 3**

Write a program in Java to find the sum of the following series using a function

Products(int,int) to return the product of two numbers to the main function to find the sum of

the series.  $S=(2*4)+(3*5)+\dots+(9*11)$  (5)

**PART- II (50 MARKS)**

Answer *six* questions in this part, choosing *two* questions from *Section A*, *two* from *Section B* and *two* questions from *Section C*

**SECTION -A .**

Answer *any two* questions

**Question 4**

a) What is Pass by Reference method? Explain with an example

b) Draw the truth table for

i.  $A'BC' + AC' + A'BC$

ii.  $AB'C' + (A+B)(B+C)$

c) Subtract the Octal number  $(1457)_8$  from  $(6213)_8$

**Question 5**

a) Write a program in Java by using function overloading technique that computes and displays perimeter of a square, rectangle and circle

perimeter of a square =  $4*s$

Perimeter of a rectangle =  $2*(l+b)$

Perimeter of a circle =  $2*3.14*r$

b) Simplify the following expression by using Boolean laws and draw the logic gate for the reduced expression

$$A'C + A'B + A'BC' + AC$$

c) Add the Hexadecimal number  $(2E3D)_{16}$  and  $(ABC5)_{16}$

**Question 6**

a) Write a program in Java to enter 10 different numbers in a single dimensional array. Pass the array to a function to arrange the numbers in ascending order using Bubble Sort and print them

b) How does Tautology differ from Contradiction? Give one example of each.

c) Perform the following operation

$$101011101 * 101$$

**SECTION B**  
Answer *any two* questions

**Question 7**

(10)

Define a class called Student to check whether a student is eligible for taking admission in Std XI

Instance variable/data members

String name: to store name

int mm,scm,comp: to store maths,science and computer marks respectively

Methods

Student() – parameterized constructor to initialize the data members

Check() – to check the eligibility with the following conditions

Display() – to print the eligibility

Marks	Eligibility
90 or more in all subjects	Science with Comp
Average marks 90% or more	Bio-science
Average marks 80% or more & less than 90%	Commerce

Write the main method to create an object of a class, accept the values and call all the member methods

**Question 8**

An Automorphic number is a number which is present in the last digit(s) of its square. Write a program in Java to enter a number and check whether it is an Automorphic number or not. The number is passed to a function Check() and it returns the result to the main function. (10)

**Question 9**

Write a program in Java to generate the elements of Fibonacci series upto the given limit using a recursive function (10)

**SECTION C**  
Answer *any two* questions

**Question 10**

- a) Write a note on ASCII and ISCII code (3)
- b) Perform the following operation (2)
- 101000101 / 100

**Question 11**

- a) Subtract the Hexadecimal number  $(6ABC)_{16}$  from  $(EBC5)_{16}$  (2)
- b) Add the Octal number  $(7676)_8$  and  $(7545)_8$  (2)
- c) Define Impure functions. (1)

**Question 12**

What is Constructor overloading? Explain with an example (5)