

Self Assessment Paper

GENERAL INSTRUCTIONS :

Answer **all** questions in Part I (compulsory) and six questions from Part-II, choosing **two** questions from Section-A, **two** from Section-B and **two** from Section-C.

All working, including rough work, should be done on the same sheet as the rest of the answer.

The intended marks for questions or parts of questions are given in brackets [].

PART I (20 MARKS)

Answer **all** questions

While answering questions in this Part, indicate briefly your working and reasoning, Wherever required.

Question 1

- (a) State the law represented by the following proposition and prove it with the help of a truth table
 $P \vee P = P$ [1]
- (b) Java is robust. Give reason. [1]
- (c) Which number system has base 16? [1]
- (d) Draw the logic diagram and truth table for two inputs XNOR gate. [1]
- (e) If $(\sim P \Rightarrow Q)$ then write its [1]
 - (i) Inverse
 - (ii) Converse

Question 2

- (a) If $A = 1, B = 0, C = 1$ and $D = 1$, find its. [2]
 - (i) Maxterm
 - (ii) Minterm
- (b) Define the term byte code. [2]
- (c) How many methods are there of performing binary subtraction? [2]
- (d) (i) What is the worst case complexity of the following code segment
for (int x = 1; x <= c; x++) [1]

```

{
    statements;
}
for (int y = 1; y <= a; y++)
{
    for (int z = 1; z <= b; z++)
    {
        statements;
    }
}

```

(ii) How would the complexity change if all the three loops went to N instead of a, b and c? [1]

(e) Define standard error. [2]

Question 3

The following function magicfun() is a part of some class. What will the function magicfun() return, when the value of n=7 and n=10, respectively? Show the dry run/working:

```

int magicfun(int n)
{
    if (n==0)
        return 0;
    else
        return magicfun(n/2) * 10 + (n % 2);
}

```

PART II (50 MARKS)

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

Section 'A'

Answer **any two** questions.

Question 4

(a) Convert $(78A)_{16}$ into decimal number. [2]

(b) Convert $(6012)_8$ into decimal number. [2]

(c) Convert $(100.101)_2$ into decimal number. [2]

AI (d) What is meant by keyword "throw"? [2]

(e) What are the two ways of invoking functions? [2]

Question 5

(a) A school intends to select candidates for an Inter-School Essay Competition as per the criteria given below.

The student has participated in an earlier competition and is very creative. [5]

The inputs are

INPUTS

(i) participated in competition earlier - A

(ii) is very creative - B

(iii) won prize in an inter-house competition - C

(iv) has excellent general awareness - D

(In all the above cases 1 indicates yes and 0 indicates no).

Output : X [1 indicates yes, 0 indicates no for all cases]

To know about more useful books for class-11 [click here](#)

Draw the truth table for the inputs and outputs given above and write the POS expression for X (A, B, C, D).

(b) Write any three differences between Half adder and Full Adder. [3]

(c) Convert the following Boolean expression into its canonical POS form [2]

$$F(A, B, C) = (B + C') \cdot (A' + B)$$

Question 6

(a) How to convert Binary number system to octal number system? [5]

AI (b) What are the various forms of algorithm? [2]

AI (c) What is fall through? [3]

Section 'B'

Attempt **any two** questions from this Section.

The answers in this Section should consist of the Programs in either Blue J environment or any program environment with Java as the base. Each program should be written using Variable descriptions/Mnemonic Codes such that the logic of the program is clearly depicted.

Flow-Charts and Algorithms are not required.

Question 7

A class Palin has been defined to check whether a positive number is a Palindrome number or not. [10]

The number 'N' is palindrome if the original number and its reverse are same. Some of the members of the class are given below :

Class Name	Palin
Data members/instance variables	
num	integer to store the number
revnum	integer to store the reverse of the number
Methods/Member functions	
Palin()	constructor to initialize data members with legal initial values
void accept()	to accept the number
int reverse(int y)	reverses the parameterized argument 'y' and stores it in 'revnum' using recursive technique
void check()	checks whether the number is a Palindrome by invoking the function reverse() and display the result with an appropriate message

Specify the class Palin giving the details of the constructor(), void accept(), int reverse(int) and void check(). Define the main() function to create an object and call the functions accordingly to enable the task.

Question 8

A class Adder has been defined to add any two accepted time [10]

Example : Time A - 6 hours 35 minutes

Time B - 7 hours 45 minutes

Their sum is - 14 hours 20 minutes (where 60 minutes = 1 hour)

The details of the members of the class are given below

Class Name	Adder
Data member/instance variable	

To know about more useful books for class-11 [click here](#)

a[]	integer array to hold two elements (hours and minutes)
Member functions/methods	
Adder()	constructor to assign 0 to the array elements
void readtime()	to enter the elements of the array
void addtime(Adder X, Adder Y)	adds the time of the two parameterized objects X and Y and stores the sum in the current calling object
void disptime()	displays the array elements with an appropriate message (i.e. hours = and minutes =)

Specify the class Adder giving details of the constructor(), void readtime(), void addtime(Adder, Adder) and void disptime(). Define the main() function to create objects and call the functions accordingly to enable the task.

Question 9

A class SwapSort has been defined to perform string related operations on a word input. Some of the members of the class are as follows [10]

Class Name	SwapSort
Data members/instance variables	
wrd	to store a word
len	integer to store length of the word
swapwrd	to store the swapped word
sortwrd	to store the sorted word
Member functions/Methods	
SwapSort()	default constructor to initialize data members with legal initial values
void readword()	to accepts a word in UPPER CASE
void swapchar()	to interchange/swap the first and last characters of the word in 'wrd' and stores the new word in 'swapwrd'
void sortword()	sorts the character of the original word in alphabetical order and stores it in 'sortwrd'
void display()	displays the original word, swapped word and the sorted word.

Specify the class SwapSort, giving the details of the constructor(), void readword(), void swapchar(), void sortword() and void display(). Define the main() function to create an object and call the functions accordingly to enable the task.

Section 'C'

Attempt **two** the questions from this Section.

The answers in this Section should consist of the Programs in either Blue J environment or any program environment with Java as the base.

Question 10

- [AI]** (a) Write a Java program that input a number and display it is Armstrong number or not. No need to specify main() method.

e.g. $153 = 1^3 + 5^3 + 3^3 = 1 + 125 + 27 = 153$

[4]

- [AI]** (b) Give any difference between super function and sub function.

[1]

Question 11

- [AI]** (a) What are Java Stream classes ?

[4]

- (b) Why does recursive function use the memory stack?

[1]

To know about more useful books for class-11 [click here](#)

Question 12

- (a) State the significance of the statement :

`FileWriter fileout = new FileWriter ("Book.txt", true);`

- AI** (b) What is freeware?
(c) What is Augmented Reality?
(d) Define phishing.
AI (e) Explain virus.

[1]
[1]
[1]
[1]
[1]
□□□

Finished Solving the Paper ?
Time to evaluate yourself !
<https://qrqo.page.link/YsTHi>

OR

SCAN THE CODE

For elaborate Solutions

**OSWAAL COGNITIVE
LEARNING TOOLS**

