MODEL TEST PAPER FOR AMIE EXAMS
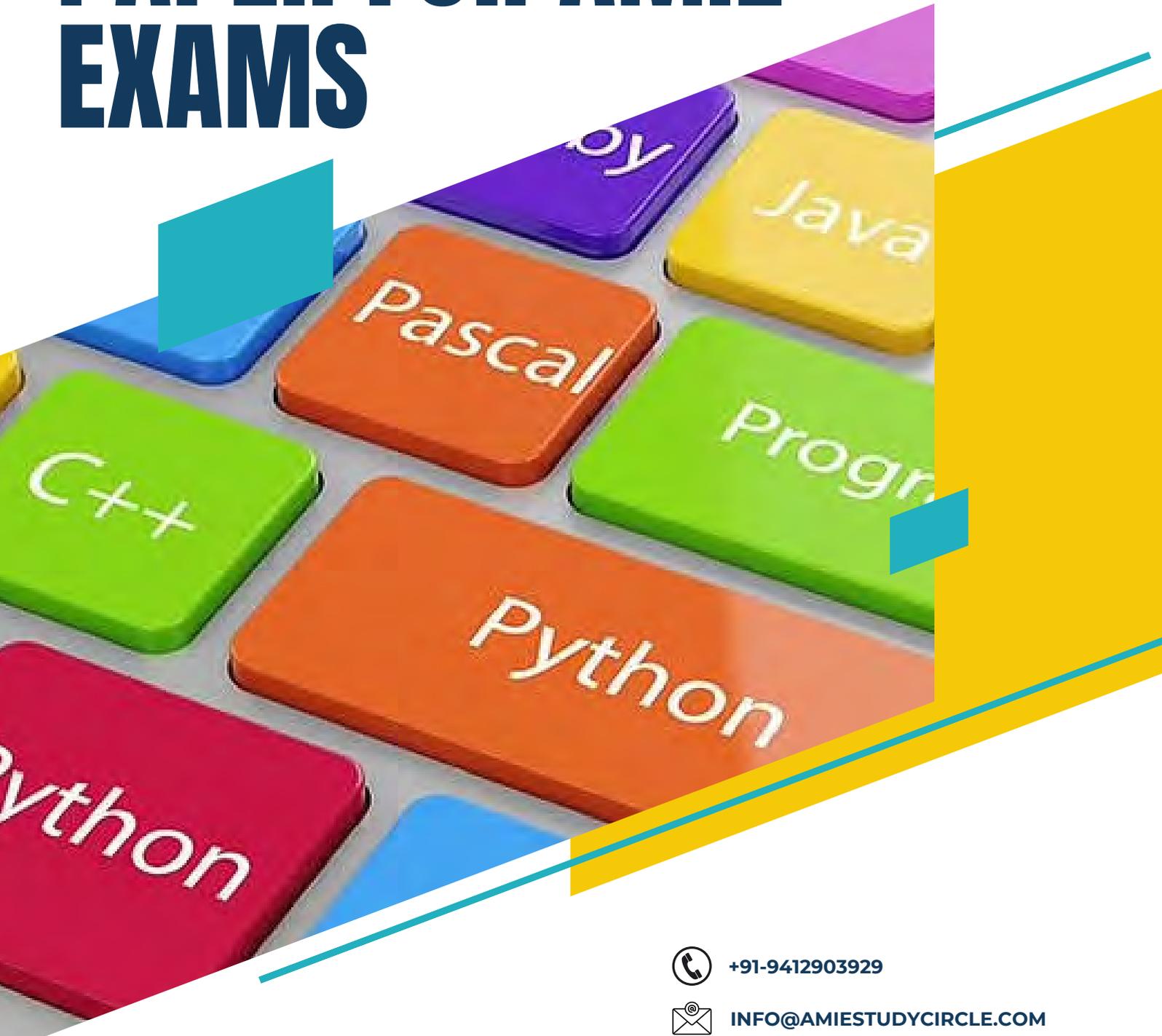
PROGRAMMING LANGUAGES

TEST PAPER 1

PROGRAMMING LANGUAGES

Time: *Three Hours*

Maximum Marks: *100*

Answer five questions, taking ANY TWO from Group A, any two from Group B and all from Group C.

All parts of a question (a, b, etc.) should be answered at one place.

Answer should be brief and to-the-point and be supplemented with neat sketches.
Unnecessary long answer may result in loss of marks.

Any missing or wrong data may be assumed suitably giving proper justification.

Figures on the right-hand side margin indicate full marks.

Group A

1. (a) List five high level programming languages. State one feature of each of the five high level languages.   6

    (b) What is structured programming? Explain the relevant constructs using pseudo-code. Highlight the advantages and disadvantages of structured programming.   8

    (c) Explain the difference between static and dynamic binding by giving suitable examples.   6

2. (a) Define calling a function. What is "call by value" parameter passing in C program? How is it differ from "call by reference". Write a program segment to show these two types of parameter missing.   8

    (b) What is algorithm? Develop an algorithm to test whether a given number is a prime number.   6

    (c) What are the various storage classes available in "C"? Give one example of each.   6

3. (a) What are default constructor, copy constructor, dynamic constructor, conversion constructor and explicit constructor? What is scope resolution operator?   8

(b) What is the basic concepts of object oriented programming? Define   6
polymorphism and encapsulation in respect to object oriented programming.

(c) What are dynamic binding and early binding? What are the differences   6
between new and malloc?

4. (a) Write a C/C++ program to print 1 to 100 numbers without using loop.   8

(b) Write a C/C++ program to print Fibonacci series of given range.   6

(c) Write a C program to print Pascal triangle.   6

Group B

5. (a) Explain CAR, CDR and CONS operators to manipulate lists in LISP.   8

(b) For a given list L = (W X Y Z), what is output/effect of the following LISP   6
expression?

(car L) (cdr L) (cddr L) setq (car (L), 23) (rplacd L 45)

(c) Write a LISP function that uses COND to write a function which multiplies   6
a number 5 if it is greater than 7, subtracts 2 if it equals 3, and adds 23 to it
otherwise.

6. (a) Express the following expression in LISP: 8
$A + B * C + D \div (E + F)$

(b) Write a LISP function which uses DO loops to print out the first ten   6
products of the multiples of 3 and 4 i.e. (3 x 4) = 12, (6 x 8) = 48.

(c) What is LISP meta language? Give the set of rules.   6

7. (a) What is execution? How is it handled in JAVA?   6

(b) What are the applications of wrapper classes?   6

(c) What is a thread in Java? Describe the complete life-cycle of a thread.   8
Explain your answer using a labelled state model.

8. (a) Discuss the steps involved in loading and running a remote applet.   6

(b) Write a Java program to implement bubble sort algorithm.   8

(c) Write a Java program to find second highest number in an integer list   6
without sorting the array.

Group C

9. Answer the following in brief: 20

(i) What is thunk?

(ii) What is the difference between reference and pointer data type in C++ ?

(iii) What is associativity of operators? Give an example?

(iv) What is garbage?

(v) What is the output of the following code:

```
# include <stdio.h>
int main ( )
{       int a, b, c, d;
        a = 3;
        b = 5;
        c = a, b ;
}       d = (a, b);
printf("c = %d", c
printf("\n\nd = %d", d);
return 0;
```

(vi) Determine the output of following code:

```
int main ()
{       char for * p1, *p2 ;
printf ("p1 : % d\n\n p2 : %d",
size of (p1), size of (p2));
return 0;
}
```

(vii) Write the output of code given below ;

```
# include <stdio.h>
int main ()
{    inta [5]= {l,2,3,4,5};
int * ptr = (int *) (a + 1);
```

```
printf("%d%d", *(a + l), *(ptr – 1));
return 0;
}
```

(viii)   What is a Java virtual machine?

(ix)   Write any four attributes of a good language.

(x)   What are the C++ tokens?

(Refer our course material for answers)