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M.Sc (I Sem.)

Sl. No. 100058

M.Sc (I Semester) EXAMINATION, DECEMBER 2017

Physics

PHY-H02/105

Paper - PHY-H02/105

COMPUTER PROGRAMMING

Time Allowed : Three Hours Maximum Marks : 100

Note :

(1) No supplementary answer-book will be given to any candidate. Hence the candidates should write their answers precisely in the main answer-book only.

(2) All the parts of one question should be answered at one place in the answer-book. One complete question should not be answered at different places in the answer-book.

(3) Write your roll number on question paper before start writing answers of questions.

*Attempt **all five** questions.*

The paper consists of **two** parts.

Part A : Question No. 1 contains 10 short answer questions. Each question is of two marks.

Part B : Attempt all four questions having internal choice. The limit of each answer is five pages. Each question is of 20 marks.

PART - A

1. (a) What is the difference between a synthesized and an inherited attribute ?

   (b) What is the metalanguage ?

   (c) What do you understand by lexical analysis ?

   (d) What are the design issues for two-way selection statements ?

   (e) What are the three semantic models of parameter passing ?

   (f) What is the overloaded subprogram ?

   (g) Write a statement or a set of statements of Sum of the odd integers between 1 and 99 using a for statement. Assume the integer variables sum and count have been defined.

   (h) What is the output of following :

```
if(!1) printf("Yes\n"); else printf("No\n");
```

   (i) How will you define a char array with character : "Your Name" ?

   (j) Write down any use of enum datatype.

PART - B

2. (a) Define attribute grammar. What is the primary use of attribute grammar ? Write the basic features of attribute grammar.

   (b) What are the two distinct goals of syntax analysis ?

OR

Prove that the following grammar is ambiguous :

```
<S> → <A>
<A> → <A> + <A> | <id>
<id> → a | b | c
```

3. Consider the following program written in C syntax :

```
void fun (int first, int second) {
first += first;
second += second;
}
void main() {
int list[2] = {1, 3};
fun (list[0], list[1]);
}
```

For each of the following parameter-passing methods, what are the values of the list array after execution ?

(i) Passed by value

(ii) Passed by reference

(iii) Passed by value-result

OR

(a) Describe the deep-access method and shallow-access method of implementing dynamic scoping.

(b) Consider the following C program :

```
int fun(int *i) {
*i += 5;
return 4;
}
void main() {
int x = 3;
x = x + fun(&x);
}
```

What is the value of x after the assignment statement in main ? Assuming,

(i) operands are evaluated left to right.

(ii) operands are evaluated right to left.

4. Distinguish between the terms fatal error and nonfatal error. Write a C program to do binary calculations (+, –, *, /, which are given in input expression.) with integers. There are 3 operations on 4 numbers. Output should as follows :

Input : 2+3+4+5 Input : 2/3+4*5 Input : 3/3+4/4

Output : 14 Output : 20 Output : 2

OR

Write down a C-program which can calculate the value of π using rand( ) function. Explain your expressions with comments.

5. Write a C-program which can struct a class for complex number. Also define functions for the addition and subtraction of the variables declared in above class.

OR

Write a C-program using array, which can calculate the mean, median and mode for given data.

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