V/ PHY (viii) (B) (PR)

2016

(5th Semester)

PHYSICS

EIGHTH (B) PAPER

(C Language and Numerical Methods)

(Pre-Revised)

Full Marks : 55

Time : 2½ hours

(PART : B—DESCRIPTIVE)

(*Marks* : 35)

The figures in the margin indicate full marks for the questions

1. *(a)* What are identifiers and keywords in C programs? Give examples. 3½

(b) Write down the structure and format of C programs. 3½

Or

(a) What are integer and floating point data types? How are they declared in C programs? 3

(b) If in a C program, *a* and *b* are declared as integer data type and *c* and *d* are declared as floating point data type, find out which of the following arithmetic statements are wrong and give reasons : 2

(i) $c = a / b$

(ii) $b + 5 \cdot 0$

(iii) $a / b * \% b$

(iv) $a \cdot b$

(c) What is declaration statement in C? Give its format. 2

2. What are the formatted and unformatted input/output functions in C programs? Show how they are used and expressed in C programs with examples. 3+4=7

Or

(a) What are library functions and user-defined functions in C programs? What are their benefits of using them? How are these functions declared in C programs? 3+1+1=5

(b) Write a simple C program to find the circumference and area of a circle. 2

3. What is structure in C programs? Discuss how it is used in C programs and explain its applications with example. 1+3+3=7

Or

What is an array in C programs? Write a simple C program using array to calculate average marks of 20 students. 2+5=7

4. What do you mean by interpolation? Use the Lagrange and the Newton divided difference formulas to calculate $f(3)$ from the following table : 1+3+3=7

x	0	1	2	4	5	6
$f(x)$	1	14	15	5	6	19

Or

Explain Newton-Raphson iterative method using illustrative figure. Find the three roots of the equation $x^3 - 4x + 1 = 0$ to 3 significant digits using Newton-Raphson method. 3+4=7

5. Explain Simpson's 1/3rd rule for numerical integration. Evaluate $\int_0^6 \frac{dx}{1+x^2}$ by using Simpson's 1/3rd rule. 3+4=7

Or

(a) State the first and second De Morgan's theorem. Also provide the equivalent logic circuits. 2+2=4

(b) Reduce the following Boolean functions : 1½+1½=3

(i) $A + \bar{A}B + AB$

(ii) $A\bar{B} + \bar{A}B + AB + \bar{A}\bar{B}$

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Subject Code :

V/ PHY (viii) (B) (PR)

Booklet No. A

Date Stamp .....

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To be filled in by the Candidate

DEGREE 5th Semester
(Arts / Science / Commerce / .....) Exam., **2016**

Subject .....
Paper .....

To be filled in by the Candidate

DEGREE 5th Semester
(Arts / Science / Commerce / .....) Exam., **2016**

Roll No. .....
Regn. No. .....

Subject .....
Paper .....

Descriptive Type
Booklet No. B .....

INSTRUCTIONS TO CANDIDATES

1. **The Booklet No. of this script should be quoted in the answer script meant for descriptive type questions and vice versa.**
2. **This paper should be ANSWERED FIRST and submitted within** *45 minutes* **of the commencement of the Examination.**
3. **While answering the questions of this booklet, any cutting, erasing, over-writing or furnishing more than one answer is prohibited. Any rough work, if required, should be done only on the main Answer Book. Instructions given in each question should be followed for answering that question only.**

Signature of Scrutiniser(s) *Signature of Examiner(s)* *Signature of Invigilator(s)*

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2016

(5th Semester)

PHYSICS

EIGHTH (B) PAPER

(C Language and Numerical Methods)

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(PART : A—OBJECTIVE)

(*Marks* : 20)

The figures in the margin indicate full marks for the questions

SECTION—I

(*Marks* : 5)

Put a Tick (✓) mark against the correct answer in the brackets provided : 1×5=5

1. Which of the following correctly shows the hierarchy of arithmetic operations in C?

(a) / + * − ( )

(b) * − / + ( )

(c) + − / * ( )

(d) / * + − ( )

2. Which one of the following is the only function all C programs must contain?

(a) start() ( )

(b) system() ( )

(c) main() ( )

(d) printf() ( )

3. In the given statement below, what does the 'pf' indicate?

Int (*pf)();

(a) pf is a pointer of a function which returns int ( )

(b) pf is a pointer ( )

(c) pf is a function pointer ( )

(d) pf is an array ( )

4. The number of significant digits in the number 204.020050 is

(a) 5 ( )

(b) 6 ( )

(c) 8 ( )

(d) 9 ( )

5. The decimal number equivalent of hexadecimal number ED2 is

(a) 2700 ( )

(b) 3794 ( )

(c) 232 ( )

(d) 353 ( )

SECTION—II

(*Marks* : 15)

Give short answers of the following questions : 3×5=15

1. In a C program statement given below, what will be the value of x ?

$$x = 2 + 4 * 2 / 8 \% 2 - 1$$

2. Using printf and scanf, write a simple C program to enter two integers and print their sum.

3. What are pointers in C programs? How are they declared?

4. What are absolute and relative errors? Give examples.

5. Explain trapezoidal rule for numerical integration.

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