B.Sc. Part-III Honours Examination, 2021

Sub : PHSA Paper : VIIIB(Practical) FM : 50

Computer program may be written in C or FORTRAN.

Group-A : Answer all questions.

1. Write algorithm and computer program to compute the prime numbers between 205 and 308. (Algorithm – 4, Program - 6) 10

2. Write algorithm and computer program to compute the sum of the following series

$$y=2x+(2/3)x^3+(2/5)x^5+(2/7)x^7+\ldots \qquad (-1<x<1)$$

accurate upto four decimal places. (Algorithm – 4, Program – 6) 10

3. Write a computer program to compute the median of the following numbers. 5

2.5, -5.6, -1.5, 3.4, -1.2, 3.6, 6.1, 4.2

Group – B : Answer all questions.

1. Write algorithm and computer program to compute the root of the equation

$$x \sin(x) = 0$$

using bisection method, in the range $-10<x<-2$, correct upto third decimal place. (Algorithm – 4, Program – 6) 10

2. Write algorithm and computer program to fit the following data to a straight line $y=ax+b$

x	-4.4	-3.3	-2.2	-1.1	1.05	2.4	3.12
y	5.28	3.96	2.64	1.32	-1.26	-2.88	-3.74

(Algorithm – 4, Program – 6) 10

3. Write a computer program to compute the following integral using Simpson's One-Third rule. 5

$$\int_{-\pi/3}^{\pi/3} x^3 \tan(x)\, dx$$