

[This question paper contains 2 printed pages.]

Sr. No. of Question Paper : 2143 GC-3 Your Roll No.....

Unique Paper Code : 32223902

Name of the Paper : Computational Physics Skills

Name of the Course : B.Sc. (Hons.) Physics / B.Sc. (Prog.) CBCS – Skill Enhancement Course

Semester : III

Duration : 3 Hours

Maximum Marks : 50

Instructions for Candidates

1. Write your Roll No. on the top immediately on the receipt of this question paper.
2. Question No. 1 is compulsory.
3. Attempt 3 questions from each section.

1. Attempt any five questions : (5×1=5)
 - (a) Describe the fortran statement IMPLICIT NONE.
 - (b) Draw the flowchart symbols for input, decision, process and connector.
 - (c) Write at least 2 standard data types in fortran.
 - (d) Why it is necessary to declare the return type of a user defined function in fortran ?
 - (e) Write Latex statement to generate table of contents in a Latex document.
 - (f) Give Latex code to write any two greek letters within a text line.
 - (g) Write gnuplot statements to put labels on the X and Y axis.

SECTION – A

2. Draw a flow chart to read all elements of an array of real numbers of size 5×5. (5)
3. Write a program in fortran to read all elements of an array of real numbers of dimension 5×5 and find the average of all these elements. (5)

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4. Explain the syntax of goto statement in fortran and describe its merits and drawbacks. (5)
5. Write the syntax of two Nested Block IF statement in fortran. Give an example. (5)

SECTION – B

6. Describe the advantages and disadvantages of Latex. (5)
7. Write the Latex code for the following equation :

$$Y_0 = \frac{a \sin\left(n \frac{\phi}{2}\right)}{\sin \frac{\phi}{2}} \quad (5)$$

8. Write the output of the following Latex code

```

\begin{table}
\begin{tabular} {!|c|c|r}
\hline
$x$ & $y$ & $x^2$ & $y^2$\\
\hline
1 & 2 & 1 & 4\\
2 & 2 & 4 & 4\\
3 & 5 & 9 & 25\\
4 & 4 & 16 & 16\\
\hline
\end{tabular}
\end{table}

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9. Describe how to include graphics image files in Latex document. (5)

SECTION – C

10. Describe any five features of gnuplot. (5)
11. Describe the use of multiplot statement in gnuplot with examples. (5)
12. Explain how gnuplot input file is created and used for plotting. (5)
13. Write the gnuplot statements involved in plotting $f(x) = \sin(5x)/\sin(x)$ in the range $-2 < x < 2$ and saving the plot as .eps file. (5)