PSG COLLEGE OF TECHNOLOGY, COIMBATORE – 641 004

DEPARTMENT OF APPLIED MATHEMATICS AND COMPUTATIONAL SCIENCES

**18XW47– Mathematical Computing Lab**

IV Sem. – M. Sc (SWS)

Internal Lab Test I - 20/02/2021

Name: Username:

Roll No: Password:

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1. (a) Create two user defined functions say "sarea" and "heirad". The function sarea is to compute the surface area of a cylinder if its height and radius are given and the function heirad is to find the height and radius when a relation between them and the surface area are given.

   Using the above functions, answer the following

   (i) Determine the surface area of a cylinder whose height and radius are $h=10\,cm$ and $r=2\,cm$respectively.

   (ii) Determine the height $h$ and radius $r$ if $2h-20r=0$ and the $Surface\,area=100\,cm^2$.

   The formula to find the surface area = $2\pi r^2+2\pi rh$.

   (b) Plot the function $y=\frac{x^2+1}{5x-3}$, $-4\le x\le 4$, with dotted red line, circle marker with yellow edge and green face, 3 units line width and 14 units marker size.

2. (a) Write a MATLAB program that allows a user to enter a string containing a distribution name (Binomial," "Geometric," "Poisson" distributions only) and then their corresponding parameters. Print out mean and variance of the distribution that is entered by the user. Also, be sure to handle the case of an illegal distribution name. The formulae to find mean and variance are given in the following table

| **Distributions** | **Parameters** | **Mean** | **Variance** |
|---|---|---|---|
| **Binomial** | $n, p$ | $np$ | $np(1-p)$ |
| **Geometric** | $p$ | $\frac{1}{p}$ | $(1-p)/p^2$ |
| **Poisson** | $\lambda$ | $\lambda$ | $\lambda$ |

   (b) Write a program to display the even numbers from 1 to 1000 which are divisible by both 5 and 7, but not by 3.