

Bachelor of Arts in Economics Examination, 2019

(2nd Year 1st Semester)

COMPUTER APPLICATION

Time : Two hours

Full Marks : 30

1. Answer all the questions.

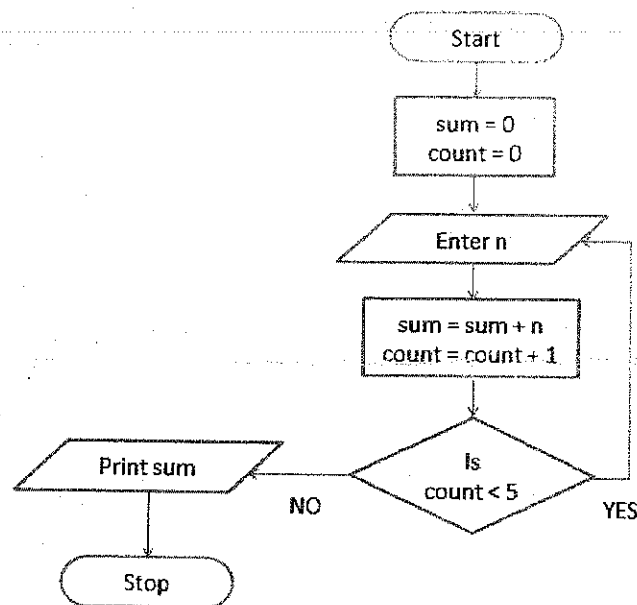
5×2=10

i) What is algorithm? How does it help a programmer to write code?

ii) Write short notes on data types.

iii) What is the output of $f(3)$ where : $y \leftarrow 5$ $f \leftarrow \text{function}(x) \{ y \leftarrow 2; y^2 + g(x) \}$ $g \leftarrow \text{function}(x) \{ x + y \}$

iv) Convert the following flow chart to the corresponding 'R' script.



v) Express your opinion about R programming system in present day economic analysis.

2. Answer any two questions from the following:

i) Write an R script to create a vector 'x' of n numbers; then create a vector 'y' containing the elements of $x > 17$. Input should be taken from user.

ii) Write an R script that takes the coefficients of a quadratic equation, and outputs an appropriate message for the cases of

- a) two distinct roots ($b^2 - 4ac > 0$)
- b) coincident roots ($b^2 = 4ac$) or
- c) complex roots ($b^2 < 4ac$)

5

iii) What is Recursive Function in R? Find the Sum of the series $1^2+2^2+3^2+\dots+n^2$, using a Recursive function in R.

1+4

iv) Write an R script to sort a set of data by 'Bubble Sort'. Algorithm for the 'Bubble Sort' is given below.

5

```
begin BubbleSort(list)
  for all elements of list
    if list[i] > list[i+1]
      swap(list[i], list[i+1])
    end if
  end for
return list
end BubbleSort
```

3. Answer any one from the following:

1×10=10

i) Write an R script to fit a straight line $Y=a+bX$ to the following data $X = [12,17,19,25,32,38,43]$; $Y = [65,78,82,92,90,97,100]$. Input should be taken from user.

ii) Write an R script to find median and mode of n numbers (input will be taken from user) without using any built-in function.

iii) Write an R script to calculate the mean deviation about mean from the following data

Weight (in K.G)	40-45	45-50	50-55	55-60	60-65
No. of Students	4	9	20	14	3