R16

Time: 3 hours   **Max. Marks: 75**

Answer any Five Questions
All Questions Carry Equal Marks
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1.a) R functionality is divided into number of packages. Briefly discuss them.
  b) What are the limitations of R?
  c) Illustrate explicit coercion of R objects.   [5+5+5]

2.a) How are complex numbers handled in R?
  b) Discuss the principal functions reading data into R and functions for writing data to files.
                                                                                  [7+8]
3.a) Explain the scoping rules of variables.
  b) Compare and contrast matrices with vectors.
  c) Illustrate common vectorized operations.   [5+5+5]

4.a) How to find runs of consecutive 1's in binary data vector? Write code to find runs of length 2 in (1, 0, 0, 1, 1, 1, 0, 1, 1) and discuss the output.
  b) Illustrate selection function which on vectors.   [8+7]

5.a) Discuss the applications of recursive lists.
  b) How to merge data frames? Explain with an example.   [7+8]

6.a) Demonstrate the usage of aggregate and cut functions on tables and factors.
  b) Suppose we have n independent events, and the ith event has the probability p_i of occurring. Write R code to find the probability of exactly one of these events ccurring. [Read the input from the user into vector]   [7+8]

7.a) "R is very much object oriented program in outlook." Support or oppose this statement with proper justification.
  b) Implement a generic function on S3 class.   [8+7]

8. Write suitable R code to perform statistical analysis on the following odor data in a chemical process: [15]

Odor	Temperature	Ratio	Height
66	-1	-1	0
58	-1	0	-1
65	0	-1	-1
-31	0	0	0
39	1	-1	0
17	1	0	-1
7	0	1	-1
-35	0	0	0
43	-1	1	0
-5	-1	0	1
43	0	-1	1
-26	0	0	0
49	1	1	0
-40	1	0	1
-22	0	1	1

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