

B. Sc. (Honours) Semester-IV Examination 2017
Statistics (Honours)
Course: BSC-42
(Statistical Computing)

Time : Three Hours

Full Marks : 40

Questions are of value as indicated in the margin

Answer **any four** questions

1. (a) Let K be a decimal number and its binary equivalent be $(x_n x_{n-1} \dots x_1 x_0)_2$. Then write the expression of K in terms of $x_n, x_{n-1}, \dots, x_1, x_0$ when (i) K is a proper fraction (ii) K is a real number. 4
- (b) Suppose x_2 and x_{10} denotes the binary and decimal representation of a number x . Now if $a_{10} = 60$ and $b_2 = (110010)_2$, find $(a_{10} | b_{10})_2, (b_{10} | a_{10})_2, (a_2 + b_2)_{10}, (a_{10} \times b_{10})_2$. 6
2. (a) Write down the flow chart to find the roots of a quadratic equation. 4
- (b) Write down the rules for constructing character constants in C. 2
- (c) Temperature of a city in Fahrenheit degrees is input through the keyboard. Write a program to convert this temperature into centigrade degrees. 4
3. (a) Use for loop to print the following figure in C. 4

3	4	5	6	7
*	5	6	7	8
*	*	7	8	9
*	*	*	9	10
- (b) Write down the general form of for loop. 2
- (c) Write a C-code to find the square of factorial value of any positive integer entered through keyboard. 4
4. (a) Write a program in C to print the first 40 terms of the following series by taking the initial value (0.2, 0.3) 5

$$x_{n+1} = x_n(1 - x_n) + y_n$$

$$y_{n+1} = y_n + x_n y_n - x_n^2$$
- (b) Using C programming language, calculate the first four central moments for an user input data. 5
5. (a) Write a C-program to compute the value of the following integration by using trapezoidal rule. 5

$$I = \int_1^4 \sqrt{1+x^{10}} dx$$
- (b) Write a code on C to find a root of the equation $x^3 = \cos x$. 5
6. Write a program to compute the determinant of a square matrix. 10
7. Write a C program to generate 100 samples from a F (4,5) distribution. Compute the mean and s.d. of these samples. Save the output in a file. 10