

Seat No. : _____

ZS-113

May-2014

M.Sc.. Sem.-II

410 : Statistics (Computer Programming)

Time : 3 Hours]

[Max. Marks : 70

Instruction : All questions carry equal marks.

1. (a) Explain classification of computer systems in detail. Discuss applications of computers in various fields.

OR

Discuss different generations of a computer system over a period of time. Explain the terms :

- (i) Computer Hardware
- (ii) Source Program
- (iii) Algorithms
- (iv) Machine language
- (v) System software

- (b) Economic Order Quantity is to be calculated from the equation $Q = \sqrt{\frac{2RS}{I}}$, where R is the yearly requirement, S is the setup cost and I is carrying cost per item. The values of R, S and I for fifteen items in a factory are given. Draw a flow chart to compute Economic Order Quantity for each of these items.

OR

Draw the flow chart for obtaining probability of r.v. x where $x \in b(x, p)$.

2. (a) Discuss input-output statements with suitable examples.

OR

Discuss different standard data types with suitable examples.

- (b) Let X be a r.v. with the following probability distribution :

X :	3	6	9
P (X = x) :	$\frac{1}{6}$	$\frac{1}{2}$	$\frac{1}{3}$

Write a c++ program to compute E(x).

OR

Write a C++ program to obtain sum of the digits of a given number N, where N = 968.

3. (a) Discuss (i) If statement (ii) Nested if else statement (iii) Multiple statements within if (iv) If else statement with examples.

OR

Discuss Logical operators and conditional operators with suitable examples.

- (b) Write a C++ program to obtain sum of the series :

$$\frac{1}{1} + \frac{1}{3} + \frac{1}{5} + \dots + \frac{1}{21}$$

OR

Write a C++ program to evaluate the following function :

A function f(x) is given by

$$f(x) = \begin{cases} x(x-5)(x-6) & \text{if } 0 \leq x < 5 \\ (x-5)(x-6)(x-7) & \text{if } 5 \leq x < 7 \\ 0 & \text{if } x \geq 7 \end{cases}$$

4. (a) What is the purpose of while statement ? When is the logical expression is evaluated in it ? What is the minimum number of times that a while loop can be execute ? Discuss with suitable examples.

OR

Define 'For Loop'. What is the purpose of do-while statement ? When is the logical expression evaluated in it ? What is the minimum number of times that a do-while loop can be executed ?

- (b) An engineer has selected from a handbook two empirical formulas that give the safe loading in two ranges of the slinness ratio.

$$S = \begin{cases} 17000 - 0.485 R^2, & \text{for } R < 120 \\ \frac{18000}{1 + \frac{R^2}{18000}}, & \text{for } R \geq 120 \end{cases}$$

Where S = Safe loading per square inch,

R = Slimness ratio

Write a computer program to find the safe loading to be calculated for slinness ratio of 20 to 200 in steps of 5.

OR

Write a computer program in C++ to obtain simple interest for all combinations of the following deposits, interest rates and years of deposits.

Deposit : 100, 200, 300, 400, 500

Rate : 5%, 6%

Years : 1, 2, 3, 4

5. Answer the following : (any **fourteen**)

- (a) Define arrays.
- (b) What are pointers ?
- (c) What is meant by 'structures' ?
- (d) What is the conversion of Octal No. $(45.58)_8$ into corresponding decimal no. ?
- (e) What is the conversion of Octal No. $(705)_8$ into Hexadecimal no. ?
- (f) Find the conversion of Hexadecimal No. $(CDE)_{16}$ into corresponding decimal no.
- (g) What is the conversion of Hexadecimal no. $(BED)_{16}$ into corresponding Octal no. ?
- (h) Find the conversion of decimal no. $(236.5)_{10}$ into Hexadecimal no.
- (i) Obtain conversion of Hexadecimal No. $(ACEF)_{16}$ into corresponding Binary no.
- (j) Obtain the conversion of decimal no. $(425.25)_{10}$ into corresponding Binary no.

- (k) What is the conversion of Binary no. $(11110011.10101)_2$ into corresponding Hexadecimal no. ?
- (l) Find decimal equivalent of Binary no. $(1111.101011)_2$.
- (m) Find the conversion of Binary no. $(11101.1111)_2$ into corresponding Octal no.
- (n) How the equation $y = \frac{2/x_1 + x_2/15 (x_3 + x_4)}{(x_5^2 + x_6^2 + x_7^2)/4}$ can be converted into C++ statement ?
- (o) If x is an integer, what will be the value of x after the operation

$$x = 9/7 + (100/8 * 6) / 2 ?$$
- (p) Find $(1111)_2 + (0111)_2$.
