

ADCA / MCA (II Year)

Term-End Examination

June, 2008

## CS-08 : NUMERICAL & STATISTICAL COMPUTING

Time : 3 hours

Maximum Marks : 75

**Note :** Question number 1 is **compulsory**. Attempt any **three** questions from the rest. Use of calculator is allowed.

1. (a) Construct a pie diagram to represent the following data about percentage break-up of the cost of construction of a house in Delhi. 3

Item	Expenditure
Labour	25%
Bricks	15%
Cement	20%
Steel	15%
Timber	10%
Supervision	15%

- (b) Four cards are drawn from a pack of 52 cards without replacement. What is the probability that they are all of different suit? 3
- (c) The mean age of a group of 100 persons was 32.02. Later it was found that age 57 was misread as 27. Find the corrected mean. 3

- (d) Two dice are thrown. Find the probability that 3
- (i) the first dice shows 6.
  - (ii) the sum of the numbers shown by the dice is exactly 6.
- (e) If regression coefficient of X on Y is 0.85 and regression coefficient of Y on X is 0.89 then find the correlation coefficient between X and Y. 3
- (f) What value will be stored in the location K at the end of the following sequence of codes : 3
- ```
K = 2  
DO 10 J = 2, 4  
    DO 10 N = J+1, 5  
10 K = K - J*N  
PRINT *, K
```
- (g) Write a subroutine program to calculate the mean of n real numbers using common statement. 3
- (h) Write the error in the following statements : 3
- (i) 75-23 is integer constant
  - (ii) X#NS is an integer variable
  - (iii) KING is real variable
- (i) Write arithmetic assignments for the following : 3
- (i)  $\frac{A}{B+C}$
  - (ii)  $\sqrt{B^2 - 4AC}$
  - (iii)  $\alpha (\beta + \gamma)$

- (i) In which order will the elements of an array  
A (-1 : 1, 2 : 3) be stored ? 3
2. (a) From 10 observations on price X and supply Y of a commodity, the following summary figures were obtained :  $\Sigma X = 130$ ,  $\Sigma Y = 220$ ,  $\Sigma X^2 = 2288$ ,  $\Sigma XY = 3467$ . Compute the line of regression of Y on X and estimate the supply when price is 16 units. 5
- (b) If the salary of a person in the base year is Rs. 4,000 per annum and the year salary is Rs. 6,000, by how much should his salary rise to maintain the same standard of living if the CPI is 400 ? 5
- (c) The means and standard deviations of two brands of bulbs are given as
- |                    | Brand I (hrs.) | Brand II (hrs.) |
|--------------------|----------------|-----------------|
| Mean               | 800            | 770             |
| Standard deviation | 100            | 60              |
- Calculate a measure of relative dispersion for two brands. 5
3. (a) Write a FORTRAN program to calculate correlation coefficient of Pearson's. 5
- (b) A can solve a problem of statistics in 4 out of 5 chances and B can solve it in 2 out of 3 chances. If both A and B try the problem, find the probability that the problem will be solved. 5

- (c) The incidence of an occupational disease in an industry is such that the workmen have a 20% chance of suffering from it. What is the probability that out of 6 workmen, 4 or more will contract the disease ? 5
4. (a) Box-I contains three defective and seven non-defective balls, Box-II contains 1 defective and 9 non-defective balls. What is the probability that Box-I was chosen given a defective ball is drawn ? 5
- (b) From the marks secured by 120 students in Section A, 120 in Section B of a class, the following measures are obtained :
- A :  $\bar{X} = 46.83$ , S.D. = 14.8, Mode = 51.67
- B :  $\bar{X} = 47.83$ , S.D. = 14.8, Mode = 47.07
- Determine which distribution of marks is more skewed. 5
- (c) Explain the general form of IF statement with one example. 5
5. (a) Calculate mean deviation from the mean for the following data : 5
- |           |    |    |    |    |    |    |
|-----------|----|----|----|----|----|----|
| Marks     | 10 | 15 | 20 | 30 | 40 | 50 |
| Frequency | 8  | 12 | 15 | 10 | 3  | 2  |
- (b) Define the following statements : 6
- (i) END FILE
  - (ii) REWIND
  - (iii) BACKSPACE

- (c) In a meeting after everyone had shaken hands with everyone else, it was found that 66 handshakes were exchanged. How many members were present in the meeting ?

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