

05005
00000**MANAGEMENT PROGRAMME****Term-End Examination****June, 2017****MS-008 : QUANTITATIVE ANALYSIS FOR
MANAGERIAL APPLICATIONS***Time : 3 hours**Maximum Marks : 100**(Weightage 70%)*

- Note :** (i) *Section A has six questions, each carrying 15 marks. Attempt any four questions from this section.*
- (ii) *Section B has two questions, each carrying 20 marks. Attempt both the questions from this section.*
- (iii) *Use of scientific calculator is permitted.*

SECTION - A

- Define a matrix. Discuss some special matrices. Give examples of some business applications of matrices and determinants.
- You are given the frequency distribution of 292 workers of a factory according to their average weekly income. Calculate Quartile deviation and its coefficient from the following data :

| Weekly income (₹) | Below 1350 | 1350-1370 | 1370-1390 | 1390-1410 | 1410-1430 | 1430-1450 | 1450-1470 | 1470-1490 | 1490-1510 | 1510-1530 | 1530 and above |
|-------------------|------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|----------------|
| No of workers | 8 | 16 | 39 | 58 | 60 | 40 | 22 | 15 | 15 | 9 | 10 |

3. Among the examinees in an examination 30%, 35% and 45% failed in Statistics, in Mathematics and in at least one of the subjects respectively. An examinee is selected at random. Find the probabilities that
- He failed in Mathematics only
 - He passed in Statistics if it is known that he failed in Mathematics.
4. The mean length of life of a certain cutting tool is 41.5 hours with a standard deviation of 2.5 hours. What is the probability that a simple random sample of size 50 drawn from this population will have a mean between 40.5 hours and 42 hours ?
(Given : $P(0 \leq z \leq 1.414) = 0.4251$; $P(0 \leq z \leq 2.828) = 0.4980$)
5. A leading company engaged in the production of detergents had vacancies of salesman for which (N =) 15 persons were called for personal interview. The interview board consisted of sales manager and a Psychologist. The ranks given by the two to all the 15 candidates who attended the interview. Using the two set of ranks, compute the coefficient of rank correlation.

| | | | | | | | | | | | | | | | |
|-----------------------|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|
| Sr No in Interview | 1 | 2 | 4 | 5 | 8 | 9 | 10 | 11 | 13 | 14 | 15 | 17 | 18 | 19 | 20 |
| Ranking Sales Manager | 1 | 3 | 2 | 4 | 6 | 5 | 7 | 9 | 8 | 11 | 10 | 12 | 14 | 13 | 15 |
| Ranking Psychologist | 2 | 3 | 1 | 5 | 4 | 6 | 8 | 7 | 9 | 10 | 12 | 11 | 13 | 14 | 15 |

6. Write short notes on any three of the following :
- (a) Central limit theorem
 - (b) Coefficient of variation
 - (c) Stratified sampling
 - (d) Least square criteria
 - (e) Polynomial function

SECTION - B

7. What is probability sampling and non-probability sampling ? Briefly describe the four designs of probability sampling.
8. The following data gives the number of aircraft accidents that occurs during the various days of a week. Find whether the accidents are uniformly distributed over the week.

| Days | SUN | MON | TUE | WED | THU | FRI | SAT |
|-----------------|-----|-----|-----|-----|-----|-----|-----|
| No of Accidents | 14 | 16 | 8 | 12 | 11 | 9 | 14 |

Given χ^2 at 6 d.f. = 12.59
