

**MANAGEMENT PROGRAMME****Term-End Examination****December, 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 is compulsory and carries 40 marks. Attempt both questions.*
  - (iii) *Use of calculator is permissible.*

**SECTION - A**

1. In what three categories statistical methods can be broadly classified. Which of these categories rely heavily on probability theory ? Why ?
2. Minimum day-time temperature in a cosmopolitan city was recorded every third day during June 2016 as under.

Day of June 2016	2 <sup>nd</sup>	5 <sup>th</sup>	8 <sup>th</sup>	11 <sup>th</sup>	14 <sup>th</sup>	17 <sup>th</sup>	20 <sup>th</sup>	23 <sup>rd</sup>	26 <sup>th</sup>	29 <sup>th</sup>
Temperature (°C)	31	33	34	31	32	34	34	34	33	32

Find :

- (a) Average day-time temperature in June 2016.
- (b) Median day-time temperature.
- (c) Mode day-time temperature.

3. Discuss different approaches to probability theory. All these approaches share some basic axioms. Clearly state these axioms.
  
4. For a population of 2000 students living in hostels, per head monthly mean expenditure on three meals a day is ₹ 500 with a variance of ₹ 81. Find the probability that a random sample of 36 students shows a per head mean expenditure of less than ₹ 495 per month.

(Given the required area under the standard normal curve from 0 to z is 0.4996)

5. The following table relate to marketing expenditure in Rs Lac and the corresponding sales of a product is Rs Crores. Estimate the marketing expenditure to attain a sales target of ₹ 40 Crores.

Marketing Expenditure	10	12	15	20	23
Product Sales	14	17	23	21	25

6. Write short notes on **any three** of the following :
  - (a) Identity matrix
  - (b) More than type ogive
  - (c) Poisson distribution
  - (d) Central limit theorem
  - (e) Seasonality

## SECTION - B

7. What is stratification ? How and why a sample based on stratification is more representative of the population ?
8. A sample survey of tax payers belonging to business class and professional class yielded the following results.

	Business Class	Professional Class
Sample size	$n_1 = 400$	$n_2 = 420$
Defaulters in Tax payment	$x_1 = 80$	$x_2 = 65$

Test the hypothesis at  $\alpha = 0.01$ . Level of significance that proportion of defaulters is the same for the two classes of tax payers. (Given the tabulated value of test statistic is 2.58)

---