



MBA IN RURAL MANAGEMENT
MBA RM Batch-5 (1st Year)

Quantitative Analysis for Development Practitioners



Max. Marks : 70

Time allowed : 3 hrs

Roll No.

Note: The question paper contains 9 questions out of which the candidate is required to **attempt any 5 questions**. All questions carry equal marks.

- Q1. Define statistics, and explain the importance and scope of statistics. Also explain the various quantitative and statistical techniques which could be used to solve problems pertaining to rural research and also help in taking the managerial decisions. **(14)**
- Q2. (a) Explain the measures of central tendency and measures of variation and their uses in analysis of rural statistical data. **(6)**
 (b) The number of people who visited in a departmental store over a thirty day period were counted and a frequency distribution table was generated as shown below:

Class Interval	Frequency (f)
0-<10	1
10-<20	2
20-<30	3
30-<40	5
40-<50	6
50-<60	9
60-<70	4

Draw a cumulative frequency curve, or an *ogive*. **(8)**

- Q3. (a) What do you understand Data Classification, Tabulation and Presentation? **(6)**
 (b) The following set of numbers represent marks obtained by forty employees in an achievement test (out of 50).

10	17	15	22	11	16	19	24	29	18
25	26	32	14	17	20	23	27	30	12
15	18	24	36	18	15	21	28	33	38
34	13	10	16	20	22	29	29	23	31

Tabulate the data in a frequency distribution table. **(8)**



- Q4. The following table shows the profits earned by 75 Agribusiness Companies in two states of India.

Profit (Rs. Crore)	No. of Agribusiness Companies	
	State A	State B
20 – 30	12	8
30 – 40	26	28
40 – 50	27	30
50 – 60	10	9

- Find the mean, median, mode, 6th decile and 75th percentile of profits for each state. (10)
- Find the coefficient of variance for both the states and comment on their variability. (4)

- Q5. The accountant often estimate overheads based on level of production. At an ITC plant, they have collected information on overhead expenses and the bathes produced at different plants.

Overheads	191	170	272	155	280	173	234	116	153	178
Bathes Produced	40	42	53	35	56	39	48	30	37	40

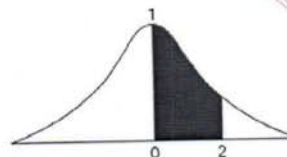
- Plot the results on a scatter diagram. (4)
 - Develop a linear equation depicting the relationship between overheads and batches produced for the cost accountants and draw that line on the scatter diagram. (6)
 - Predict the overhead expenses when 50 bathes are produced. (4)
- Q6. (a) Explain the normal distribution and its use in research. (6)
- (b) Assume that the mean height of students is an exact normal distribution with a mean 68.22 inches and a variance of 10.8 inches. How many students in a college of 1000 students would you expect to be over six foot tall? (8)
- Q7. Raju restaurant has been having average sales of 500 tea cups per day. Because of the devopment of bus stand nearby, it expects to increase its sales. During the first 12 days, the daily sales were as under:
550,570,490,615,505,580,570,460,600,580,530,526
On the basis of this sample information, can one conclude that Raju Restaurant's sales have increased? Use 5 per cent level of significance. (14)
- Q8. A sample survey indicates that out of 3232 births, 1705 were boys and the rest were girls. Do these figures confirm the hypothesis that the sex ratio is 50:50? Test at 5 % level of significance. (14)
- Q9. Explain any two (2) of the following: (7 x 2)
- Spearman's Rank Correlation Coefficient and its use.
 - Confidence intervals
 - Hypothesis testing
 - Sampling & Sampling Design



Students can use following tables in answering the questions

Table 1: Area Under Normal Curve

An entry in the table is the proportion under the entire curve which is between $z = 0$ and a positive value of z . Areas for negative values for z are obtained by symmetry.



Areas of a standard normal distribution

z	.0	.01	.02	.03	.04	.05	.06	.07	.08	.09
.0	.0000	.0040	.0080	.0120	.0160	.0199	.0239	.0279	.0319	.0359
.1	.0398	.0438	.0478	.0517	.0557	.0596	.0636	.0675	.0714	.0753
.2	.0793	.0832	.0871	.0910	.0948	.0987	.1026	.1064	.1103	.1141
.3	.1179	.1217	.1255	.1293	.1331	.1368	.1406	.1443	.1480	.1517
.4	.1554	.1591	.1628	.1664	.1700	.1736	.1772	.1808	.1844	.1879
.5	.1915	.1950	.1985	.2019	.2054	.2088	.2123	.2157	.2190	.2224
.6	.2257	.2291	.2324	.2357	.2389	.2422	.2454	.2486	.2517	.2549
.7	.2580	.2611	.2642	.2673	.2693	.2734	.2764	.2794	.2823	.2852
.8	.2881	.2910	.2939	.2967	.2995	.3023	.3051	.3078	.3106	.3133
.9	.3159	.3186	.3212	.3238	.3264	.3289	.3315	.3340	.3365	.3389
1.0	.3413	.3438	.3461	.3485	.3508	.3531	.3554	.3577	.3599	.3621
1.1	.3643	.3665	.3686	.3708	.3729	.3749	.3770	.3790	.3810	.3830
1.2	.3849	.3869	.3888	.3907	.3925	.3944	.3962	.3980	.3997	.4015
1.3	.4032	.4049	.4066	.4082	.4099	.4115	.4131	.4147	.4162	.4177
1.4	.4192	.4207	.4222	.4236	.4251	.4265	.4279	.4292	.4306	.4319
1.5	.4332	.4345	.4357	.4370	.4382	.4394	.4406	.4418	.4429	.4441
1.6	.4452	.4463	.4474	.4484	.4495	.4505	.4515	.4525	.4535	.4545
1.7	.4554	.4564	.4573	.4582	.4591	.4599	.4608	.4616	.4625	.4633
1.8	.4641	.4649	.4656	.4664	.4671	.4678	.4686	.4693	.4699	.4706
1.9	.4713	.4719	.4726	.4732	.4738	.4744	.4750	.4756	.4761	.4767
2.0	.4772	.4778	.4783	.4788	.4793	.4798	.4803	.4808	.4812	.4817
2.1	.4821	.4826	.4830	.4834	.4838	.4842	.4846	.4850	.4854	.4857
2.2	.4861	.4864	.4868	.4871	.4875	.4878	.4881	.4884	.4887	.4890
2.3	.4893	.4896	.4898	.4901	.4904	.4906	.4909	.4911	.4913	.4916
2.4	.4918	.4920	.4922	.4925	.4927	.4929	.4931	.4932	.4934	.4936
2.5	.4938	.4940	.4941	.4943	.4945	.4946	.4948	.4949	.4951	.4952
2.6	.4953	.4955	.4956	.4957	.4959	.4960	.4961	.4962	.4963	.4964
2.7	.4965	.4966	.4967	.4968	.4969	.4970	.4971	.4972	.4973	.4974
2.8	.4974	.4975	.4976	.4977	.4977	.4978	.4979	.4979	.4980	.4981
2.9	.4981	.4982	.4982	.4983	.4984	.4984	.4985	.4985	.4986	.4986
3.0	.4987	.4987	.4987	.4988	.4988	.4989	.4989	.4989	.4990	.4990



Table 2: Critical Values of Student's *t*-Distribution

d.f.	Level of significance for two-tailed test					d.f.
	0.20	0.10	0.05	0.02	0.01	
	Level of significance for one-tailed test					
	0.10	0.05	0.025	0.01	0.005	
1	3.078	6.314	12.706	31.821	63.657	1
2	1.886	2.920	4.303	6.965	9.925	2
3	1.638	2.353	3.182	4.541	5.841	3
4	1.533	2.132	2.776	3.747	4.604	4
5	1.476	2.015	2.571	3.365	4.032	5
6	1.440	1.943	2.447	3.143	3.707	6
7	1.415	1.895	2.365	2.998	3.499	7
8	1.397	1.860	2.306	2.896	3.355	8
9	1.383	1.833	2.262	2.821	3.250	9
10	1.372	1.812	2.228	2.764	3.169	10
11	1.363	1.796	2.201	2.718	3.106	11
12	1.356	1.782	2.179	2.681	3.055	12
13	1.350	1.771	2.160	2.650	3.012	13
14	1.345	1.761	2.145	2.624	2.977	14
15	1.341	1.753	2.731	2.602	2.947	15
16	1.337	1.746	2.120	2.583	2.921	16
17	1.333	1.740	2.110	2.567	2.898	17
18	1.330	1.734	2.101	2.552	2.878	18
19	1.328	1.729	2.093	2.539	2.861	19
20	1.325	1.725	2.086	2.528	2.845	20
21	1.323	1.721	2.080	2.518	2.831	21
22	1.321	1.717	2.074	2.508	2.819	22
23	1.319	1.714	2.069	2.500	2.807	23
24	1.318	1.711	2.064	2.492	2.797	24
25	1.316	1.708	2.060	2.485	2.787	25
26	1.315	1.706	2.056	2.479	2.779	26
27	1.314	1.703	2.052	2.473	2.771	27
28	1.313	1.701	2.048	2.467	2.763	28
29	1.311	1.699	2.045	2.462	2.756	29
Infinity	1.282	1.645	1.960	2.326	2.576	Infinity
