

**SVKM's NMIMS**  
**NMIMS – GLOBAL ACCESS SCHOOL FOR CONTINUING EDUCATION**

Programme: PGDBM/PGDITM/PGDSCM

Examination: June 2015  
Subject: Business Statistics

Semester: III  
Course : New  
Marks : 70  
Time: 3.00 p.m. to 6.00 p.m.

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- Instructions:
- 1) Candidates should read carefully the instructions printed on the question paper and on the cover of the answer-book, which is provided for their use
  - 2) Answer to each new question to be started on a fresh page
  - 3) Figures in brackets indicate full marks
  - 4) Required Statistical Tables attached
  - 5) **Only simple, ordinary calculators to be used.** No other electronic devices, cell-phones, laptops, etc., to be used.

**Q.1)** Attempt any 2 (two) out of 4 (four) **(Marks: 2x5 = 10)**

- a) State and briefly explain any 5 (five) **relevant points** about the importance of Business Statistics
- b) State any five **relevant characteristics** of a good measure of dispersion
- c) Find median for the following data

Marks <b>Below</b>	10	20	30	40	50	60	70
No. of students	15	35	60	84	106	120	125

- d) The mean and the variance of a Binomial Distribution are 3 and 2 respectively. Find the probability that the variate takes value less than or equal to 2

**Q.2)** Write short notes on: (any 2 out of 5) **(Marks: 2 x 5 = 10)**

- a) Characteristics of Binomial Distribution
- b) Scatter diagrams (draw relevant graphs as well)
- c) Relationship between Mean , Median , Mode in terms of Continuous Frequency Curve
- d) Histogram , Frequency Curve, Ogives
- e) Methods of collecting Primary Data

Q.3) Attempt any 3 (three) out of 5 (five) (Marks: 3x10 = 30)

Q.3a) Find Spearman's Rank Correlation Coefficient

Marks given by 1 <sup>st</sup> Judge	24	23	12	15	17	23	12	17
Marks given by 2 <sup>nd</sup> Judge	14	17	16	21	21	17	23	23

Q.3b) The I.Q. scores of 1,500 applicants for admission to a tuition-free graduate school are normally distributed with a mean of 125 and a standard deviation of 10. (i) what percentage of applicants have their I.Q. scores between 125 and 135? (ii) what are the limits of I.Q. for the middle 50% of the applicants?

Q.3c) The mean and the standard deviation of 50 observations taken in a laboratory were 30 and 2.3 respectively. Later on, it was discovered that one observation which was recorded as 25 should in fact have been 30. Find the correct mean and the correct standard deviation.

Q.3d) Odds in favour of A solving a certain problem is 4:6, and odds against B solving the same problem are 4:6. Odds in favour of both solving the same problem are 3:7. If both of them try to solve the same problem, what is the probability that (i) the problem will be solved? (ii) only one of them will solve the problem (iii) the problem will not be solved by both

Q.3e) Find Karl Pearson's Coefficient of Skewness for the following data:

Age	33-38	38-43	43-48	48-53
Frequency	10	10	51	30

Q.4) Attempt *both* the questions (Marks: 2x10 = 20)

Q.4a) An insurance company insured 2,000 scooter drivers, 4,000 car drivers and 6,000 truck drivers. The probability of their committing accidents is *respectively* 0.01, 0.03 and 0.15. One of the insured persons meets with an accident. What is the probability that he is a scooter driver?

Q.4b) Find the First and the Third Quartiles, 6<sup>th</sup> Decile, 31<sup>st</sup> Percentile, for the following data:

Marks ( <i>less than</i> )	10	20	30	40	50	60	70
No. of students	15	35	60	84	106	120	125

TABLE OF VALUES OF  $e^{-m}$

m	$e^{-m}$	m	$e^{-m}$	m	$e^{-m}$
0.1	0.90484	1.1	0.33287	2.5	0.08208
0.2	0.81873	1.2	0.30119	3.0	0.04979
0.3	0.74082	1.3	0.27253	3.5	0.03020
0.4	0.67032	1.4	0.24660	4.0	0.01832
0.5	0.60653	1.5	0.22313	5.0	0.00674
0.6	0.54881	1.6	0.20190	6.0	0.00248
0.7	0.49659	1.7	0.18268	7.0	0.00091
0.8	0.44932	1.8	0.16530	8.0	0.00034
0.9	0.40657	1.9	0.14957	9.0	0.00012
1.0	0.36788	2.0	0.13534	10.0	0.000045

TABLE OF AREA UNDER NORMAL CURVE

Z	0	1	2	3	4	5	6	7	8	9
0.0	0.0000	0.0040	0.0080	0.0120	0.0160	0.0199	0.0239	0.0279	0.0319	0.0359
0.1	0.0398	0.0438	0.0478	0.0517	0.0557	0.0596	0.0636	0.0675	0.0714	0.0753
0.2	0.0793	0.0832	0.0871	0.0910	0.0948	0.0987	0.1026	0.1064	0.1103	0.1141
0.3	0.1179	0.1217	0.1255	0.1293	0.1331	0.1368	0.1406	0.1443	0.1480	0.1517
0.4	0.1554	0.1591	0.1628	0.1664	0.1700	0.1736	0.1772	0.1808	0.1844	0.1879
0.5	0.1915	0.1950	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.2190	0.2224
0.6	0.2257	0.2291	0.2324	0.2357	0.2389	0.2422	0.2454	0.2486	0.2517	0.2549
0.7	0.2580	0.2611	0.2642	0.2673	0.2703	0.2734	0.2764	0.2794	0.2823	0.2852
0.8	0.2881	0.2910	0.2939	0.2967	0.2995	0.3023	0.3051	0.3078	0.3106	0.3133
0.9	0.3159	0.3186	0.3212	0.3238	0.3264	0.3289	0.3315	0.3340	0.3365	0.3389
1.0	0.3413	0.3438	0.3461	0.3486	0.3508	0.3531	0.3554	0.3577	0.3599	0.3621
1.1	0.3643	0.3666	0.3686	0.3708	0.3729	0.3749	0.3770	0.3790	0.3810	0.3830
1.2	0.3849	0.3869	0.3889	0.3907	0.3825	0.3844	0.3862	0.3880	0.3897	0.4015
1.3	0.4032	0.4049	0.4066	0.4082	0.4099	0.4115	0.4131	0.4147	0.4162	0.4177
1.4	0.4192	0.4207	0.4222	0.4236	0.4251	0.4265	0.4279	0.4292	0.4306	0.4319
1.5	0.4332	0.4345	0.4357	0.4370	0.4382	0.4394	0.4406	0.4418	0.4429	0.4441
1.6	0.4452	0.4463	0.4474	0.4484	0.4495	0.4505	0.4515	0.4525	0.4535	0.4545
1.7	0.4554	0.4564	0.4573	0.4582	0.4591	0.4599	0.4608	0.4616	0.4625	0.4633
1.8	0.4641	0.4649	0.4656	0.4664	0.4671	0.4678	0.4686	0.4693	0.4699	0.4706
1.9	0.4713	0.4719	0.4726	0.4732	0.4738	0.4744	0.4750	0.4756	0.4761	0.4767
2.0	0.4772	0.4778	0.4783	0.4788	0.4793	0.4798	0.4803	0.4808	0.4812	0.4817
2.1	0.4821	0.4826	0.4830	0.4834	0.4838	0.4842	0.4846	0.4850	0.4854	0.4857
2.2	0.4861	0.4864	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.4890
2.3	0.4893	0.4896	0.4898	0.4901	0.4904	0.4906	0.4909	0.4911	0.4913	0.4916
2.4	0.4918	0.4920	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
2.5	0.4938	0.4940	0.4941	0.4943	0.4945	0.4946	0.4948	0.4950	0.4951	0.4952
2.6	0.4953	0.4955	0.4956	0.4957	0.4959	0.4960	0.4961	0.4962	0.4963	0.4964
2.7	0.4965	0.4966	0.4967	0.4968	0.4969	0.4970	0.4971	0.4972	0.4973	0.4974
2.8	0.4974	0.4975	0.4976	0.4977	0.4977	0.4978	0.4979	0.4979	0.4980	0.4981
2.9	0.4981	0.4982	0.4982	0.4983	0.4984	0.4984	0.4985	0.4985	0.4986	0.4986
3.0	0.4987	0.4987	0.4987	0.4988	0.4988	0.4989	0.4989	0.4989	0.4990	0.4990
3.1	0.4990	0.4991	0.4991	0.4991	0.4992	0.4992	0.4992	0.4992	0.4993	0.4993
3.2	0.4993	0.4993	0.4994	0.4994	0.4994	0.4994	0.4994	0.4995	0.4995	0.4995
3.3	0.4995	0.4995	0.4995	0.4996	0.4996	0.4996	0.4996	0.4996	0.4996	0.4997
3.4	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4997	0.4998
3.5	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998
3.6	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998	0.4998
3.7	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.8	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999	0.4999
3.9	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000	0.5000