SVKM's NMIMS

NMIMS – GLOBAL ACCESS SCHOOL FOR CONTINUING EDUCATION

Programme: PGDBM/PGDITM/PGDSCM

Examination: June 2017
Subject: Business Statistics

Date: 10.06.2017

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

Instructions :

1. Answer to each new question to be started on a fresh page.
2. Figures in bracket indicate full marks.

Q.1] Attempt any 2 (Two) out of 4 (Four) **(Marks : 2X5=10)**

a) Tabulate the following information and suggest a suitable title :
"Out of a total number of 2000 candidates interviewed for employment in a company. 628 were from Mumbai and the rest from Pune. Among the graduates from Mumbai, 350 were experienced and 80 were inexperienced, while the corresponding figures for undergraduates from Pune were 615 and 52 respectively. The total number of inexperienced candidates from Mumbai and Pune were 175 and 192 respectively".

b) Consider the following data :

I. Q. Group	:	10-30	30-50	50-70	70-90	90-110	110-130
Number of Students	:	4	10	14	12	8	6

Draw a histogram for this data and hence determine mode from it.

c) Means and standard deviations of the scores of a general knowledge test of two classes of different sizes of 25 and 75 are

$$\bar{x}_1 = 80,\ \bar{x}_2 = 60,\ \sigma_1 = 4,\ \sigma_2 = 8$$

Calculate the mean and the standard deviation for the students of the two classes taken together.

d) A committee of three members is to be formed from amongst 4 doctors, 3 engineers and 5 statisticians. Find the probability that it consists of (i) exactly one member of each kind, (ii) exactly two doctors, (iii) atmost 2 doctors.

Q.2] Write short notes on any 2 (two) out of 5 (five) **(Marks:2X5=10)**

a) Requisites of good measure of central tendency.

b) Properties of Karl Pearson's coefficient of correlation.

c) Various measures of dispersion.

d) Tabulation of data and its objectives.

e) Skewness and its various measures.

Q.3] **Attempt any 3 (Three) out of 5 (Five)** **(Marks : 3X10=30)**

a) 4 cards are drawn from a pack of 52 well shuffled playing cards. Find the probability that they contain
(i) exactly 2 face cards,
(ii) one card of each suit,
(iii) atleast one king card,
(iv) atmost one queen card.

b) Two fair dice are rolled simultaneously. Find mean and variance of variable Z which represents sum of the numbers on the uppermost faces of two dice.

c) It is observed that 40% of the students of a certain class wear glasses. If 5 students of this class are selected at random, what is the chance that among them (i) no one wears glasses, (ii) at least one wears glasses ?

d) Spearman's rank correlation is given to be -0.25. The sum of squares of differences between ranks is 105. Find the number of pairs in the data.

e) The regression equation of Y on X is $x + 2y = 5$ and that of X on Y is $2x + 3y = 8$.
Find (i) mean of x and mean of y,
(ii) Correlation coefficient, r,
(iii) σ_y when $\sigma^2_x = 12$.

Q.4] **Attempt both the questions.** **(Marks : 2X10=20)**

a) The heights of soldiers in a regiment of 10,000 soldiers in normally distributed with 68 inches and S.D. 3 inches. Find
(i) No. of soldiers whose height exceeds 74 inches.
(ii) No. of soldiers whose height is less than 65 inches,
(iii) least height of tallest 100 soldiers.

b) Draw less than type ogive for the following data :

Marks	:	30-40	40-50	50-60	60-70	70-80	80-90	90-100
Number of Students	:	8	15	32	24	18	10	5

From the graph, determine
i) median for the distribution,
ii) percentage of students getting marks more than or equal to 68.

III. Areas under the Normal Curve

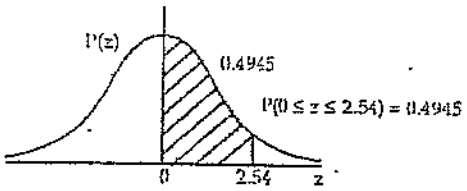

Table of Area

z→	0	1	2	3	4	5	6	7	8	9
.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	.2223
.6	.2257	.2291	.2324	.2357	.2389	.2422	.2454	.2486	.2518	.2549
.7	.2580	.2612	.2642	.2673	.2703	.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	.4849	.4951	.4952
2.6	.4953	.4955	.4956	.4957	.4959	.4960	.4961	.4962	.4963	.49.64
2.7	.4965	.4965	.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	.4390	.4990
3.1	.4990	.4991	.4991	.4991	.4992	.4992	.4992	.4992	.4993	.4993
3.2	.4993	.4993	.4994	.4994	.4994	.4994	.4994	.4995	.4995	.4995
3.3	.4995	.4995	.4995	.4996	.4996	.4996	.4996	.4996	.4996	.4997
3.4	.4997	.4997	4997	.4997	.4997	.4997	.4997	.4947	.4997	.4998
3.5	.4998	.4998	.4998	.4998	.4998	.4998	.4998	.4998	.4898	.4898
3.6	.4998	.4998	.4999	.4999	.4999	.4999	.4999	.4999	.4999	.4999
3.7	.4999	.4999	.4999	.4999	.4999	.4999	.4999	.4999	.4999	.4999
3.8	.4999	.4999	.4999	.4999	.4999	.4999	.4999	.4999	.4999	.4999
3.9	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000	.5000

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