Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

B.PLAN - SEMESTER–I EXAMINATION – WINTER 2015

Subject Code: 1015504 **Date: 22/12/2015**

Subject Name: Statistics and Quantitative Methods in Planning - I

Time: 10:30am to 12:30pm **Total Marks: 50**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 (a) Multiple choice question ***06***

1. "Sell of woolen cloths reduces during the month of summer" is example of which kind variation?
   a. Secular Trend
   b. Cyclic variation
   c. Seasonal variation
   d. Irregular variation
2. Average Growth rate can be calculated using which one of this method?
   a. Arithmetic Mean
   b. Harmonic Mean
   c. Geometric Mean
   d. Weighted Mean
3. 90,70,60,70,50,40,50,70,90,30,60– which are Mean and Mode in this data set?
   a. 40 and 90
   b. 60and 70
   c. 60.18 and 70
   d. None
4. In Standard normal distribution, if value of standard score (z) of any particular observation is less than zero. So what dose it suggest?
   a. Value of that observation is equal to mean.
   b. Value of that observation is greater than to mean.
   c. Value of that observation is less than to mean.
   d. None of the above.
5. Which one of these is not type of probability sampling?
   a. Stratified sampling
   b. Convenience sampling.
   c. Systematic sampling.
   d. Random sampling.
6. Why is it necessary to square the differences from the mean while calculating the population variance?
   a. So the extreme values will not affect the calculation.
   b. Because it is possible that N could be very small.
   c. Some of the differences will be positive and some will be negative.
   d. None of the above.

(b) Fill In the Blanks ***04***

1. Data before it is arranged and analyzed is called _____.
2. Cluster sampling is _____ type of sampling.
3. Interquartile range divides the whole data set in to _____ equal parts.
4. Survey is _____ mode of data collection.

Q.2 **(a)** Draw a line graph for given population data of three different Cities. ***05***

City/Year	**1991**	**2001**	**2011**
City A	4 Cr.	5 Cr.	5.5 Cr.
City B	3 Cr.	3.5 Cr.	4.5 Cr.
City C	2 Cr.	4.5 Cr.	6.5 Cr.

(b) A person wants to know the average monthly income for the person residing in Surat city, which is divided in to five Zones. Zone wise data of population and income is as given below. Calculate the average annual personal income for city. ***05***

	Average monthly Income	Population
A	21,000	500
B	16,500	750
C	12,000	1100
D	18,000	600
E	17,250	725

OR

(b) In one standard normal distribution, population mean (μ) is 400, and standard deviation (σ) is 75, find out the probability for given situations. (Include diagram in answers) (Use the table provided for Z-test) ***05***

1. Total probability of observations above 450.
2. Total probability of observations between 350 and 425.
3. Total probability of observations below 475.

Q.3 **(a)** Write short note ***05***

1. Explain: quantitative and qualitative data.
2. What measures and parameters should be consider while preparing the survey questioner for slum survey?

OR

Q.3 **(a)** Write short note

1. What are the different data sources? Explain with relevant examples.
2. Explain: Cyclic Variation, Irregular Variation(With example)

Q.4 (a) Construct a frequency distribution table for given data set and find out mean for the same. And Draw histogram and frequency polygon. ***05***

Class	Frequency
0-24	5
25-49	13
50-74	19
75-99	16
100-124	10
125-149	7

Q.4 (b) **Short Note:** Explain using Sketches: Kurtosis, Skewness, interfractile range. ***05***

OR

Q.4 (b) **Short note:** What is statistics and what is the importance of statistics in planning field? ***05***

Q.5 (a) Calculate the average percentage increase of population over a given time period, and use this to estimate the population of 2000. ***05***

1992	1993	1994	1995	1996
12500	13250	14300	15750	17600

OR

Q.5 (a) Calculate the population standard variance, population Standard Deviation and co efficient of variation for given data set. ***05***

86	90	95	104	113	120
135	164	169	174	180	188

(b) Four Bowl contains the three different colour of balls as given below. ***05***

Bowl / Colour	A	B	C	D
Black	4	7	5	3
Red	8	6	4	3
Green	3	2	6	9

If any one ball is selected randomly, then what is the probability of that ball is from bowl D or his colour is red.

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Standard Normal Probability distribution between Mean and Value of ‘z’

	0	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0	0	0.004	0.008	0.012	0.016	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	0.091	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	0.148	0.1517
0.4	0.1554	0.1591	0.1628	0.1664	0.17	0.1736	0.1772	0.1808	0.1844	0.1879
0.5	0.1915	0.195	0.1985	0.2019	0.2054	0.2088	0.2123	0.2157	0.219	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	0.258	0.2611	0.2642	0.2673	0.2704	0.2734	0.2764	0.2794	0.2823	0.2852
0.8	0.2881	0.291	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	0.334	0.3365	0.3389
1	0.3413	0.3438	0.3461	0.3485	0.3508	0.3531	0.3554	0.3577	0.3599	0.3621
1.1	0.3643	0.3665	0.3686	0.3708	0.3729	0.3749	0.377	0.379	0.381	0.383
1.2	0.3849	0.3869	0.3888	0.3907	0.3925	0.3944	0.3962	0.398	0.3997	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	0.437	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	0.475	0.4756	0.4761	0.4767
2	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	0.483	0.4834	0.4838	0.4842	0.4846	0.485	0.4854	0.4857
2.2	0.4861	0.4864	0.4868	0.4871	0.4875	0.4878	0.4881	0.4884	0.4887	0.489
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	0.492	0.4922	0.4925	0.4927	0.4929	0.4931	0.4932	0.4934	0.4936
2.5	0.4938	0.494	0.4941	0.4943	0.4945	0.4946	0.4948	0.4949	0.4951	0.4952
2.6	0.4953	0.4855	0.4956	0.4957	0.4959	0.496	0.4961	0.4962	0.4963	0.4964
2.7	0.4965	0.4966	0.4967	0.4968	0.4969	0.497	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	0.498	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	0.4987	0.4987	0.4987	0.4988	0.4988	0.4989	0.4989	0.4989	0.499	0.499